MORPHOSYNTACTIC FEATURES OF SELECTED BILINGUAL APHASIC AND AUTISTIC SPEECHES IN SOUTHWESTERN NIGERIA

BY

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ABSTRACT

Communication with, and speech rehabilitation of, Bilingual Aphasic Patients (BAPPs) and Bilingual Autistic Patients (BAUPs) have been characterised by difficulties arising from patients' deficiencies in the formal features in English as a Second Language (ESL). Previous studies on the patients' speech disorder have examined their phonological and pragmatic features, while the morphosyntax has remained underexplored in ESL situations. Morphosyntactic features of selected BAPPs' and BAUPs' speeches were therefore investigated in order to characterise the nature of speech impairments in BAPPs and BAUPs in Southwestern Nigeria.

Halle and Marantz' Distributed Morphology, which embodies the relationship between rules for deriving complex words and syntactic structures, and Chomsky's Principles and Parameters Theory, which provides interacting principles for assessing competence in natural language processing were adopted as framework. Ethnographic techniques were adopted. Using Kirkwood's sample size determination formula, 60 participants (40 BAPPs and 20 BAUPs) were systematically selected from University College Hospital, Ibadan (26); Adeoyo Teaching Hospital, Ibadan (6); Federal Medical Centre, Owo (8) (BAPPs); Treasure Delight International Centre, Ibadan (8) and Jesus' Kids Autistic Centre, Ibadan (12) (BAUPs). The facilities were selected through convenience sampling. Participants' speeches were elicited using Passage Reading Test (PRT-19), in-depth interviews (37), and participant observation (4). Participants' speeches were audio-recorded and transcribed, and sentences were morphosyntactically analysed.

The English word order and head parameters were preserved in BAPPs and in BAUPs. Lexical derivation was selectively impaired in BAPPs, whereas it was preserved in BAUPs. Also, tense and aspect were impaired in the speeches of both groups. Agreement was preserved in BAPPs but it was impaired in BAUPs. BAPPs and BAUPs both frequently omitted determiners in their speeches. While BAPPs omitted both the pronominal possessors (Pro-Gen) and nominal possessors (Nom-Gen), BAUPs correctly produced the Pro-Gen but omitted the Nom-Gen. Both BAPPs and BAUPs often omitted or substituted prepositional heads. Neither the BAPPs nor the BAUPs were able to self-generate Complementiser Phrases (CPs).The BAPPs were unable to replicate the CPs contained in the PRT whereas BAUPs replicated the base-generated complementisers. The BAUPs had difficulty with wh-movement whereas they correctly replicated wh in-situ. The syntax of non-finite constructions (PRO-inf and PRO-ing) was relatively preserved in both groups. They correctly self-generated such constructions irrespective of the position in the syntactic node, and they replicated similar structures in the PRT without difficulty. However, while the PRO-ing was unimpaired in aphasia, it was mildly impaired in autism. The BAUPs produced finite structures when presented with the PRO-ing. Morphological impairments in both conditions were characterised by omission and/or substitution of *f*-morphemes, while syntactic impairments were characterised by omission of lexical and functional heads, which frequently resulted in violation of the Projection Principle and Case Filter, and sometimes brought about meaning shift or loss in the participants' speeches.

The Bilingual Aphasic Patients' and Bilingual Autistic Patients' speeches were characterised by selective impairment, syntactic simplification and syntactic retransformation which show some preservation for the second language syntax. Avoidance of complex linguistic structures would enhance better communication.

Keywords: Bilingual aphasics in Nigeria, Bilingual autistics in Nigeria, Morphosyntactic disorders, Selective impairment, Syntactic simplification

Word count: 489

DEDICATION

This thesis is dedicated to the MOTHERS:

Mrs Bolanle B. Ojo

Mrs Bola V. Adepoju

and

Late Madam Olasunmade F. Adeboyeku
(My maternal grandmother)

CERTIFICATION

I certify that this research was carried out by Mr Akinyemi T. Akinmurele in the Department of English, University of Ibadan.

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ABBREVIATIONS

1SG: 1st person singular

1PL: 1st person plural

3SG: 3rd person singular

AGR: Agreement

APP: Aphasic participant

ASD: Autistic Spectrum Disorder

ASP: Aspect

AUP: Autistic participant

AUX: Auxiliary

CAST: Childhood Autism Spectrum Disorders Test

COMP: Complementiser

DET: Determiner

DP: Determiner Phrase

DSM-IV-TR: Diagnostic and Statistical Manual of Mental Disorders

ESL: English as a second language

GB: Government and Binding Theory

GEN: Genitive

HT: High Tone

IDI: In-depth Interview

INF: Infinitive marker

INFL: Inflection

L1:   First Language

L2:   Second Language

M-CHAT: Modified Checklist for Autism in Toddlers

MRI: Magnetic Resonance Imaging

NBAPP: Nigerian Bilingual Aphasic People

NBAUP: Nigerian Bilingual Autistic People

non ESL: English is not a second language

NP: Noun Phrase

PLWNC: People Living with Neurological Conditions

PO: Participant Observation

PP: Prepositional Phrase

PRT: Passage Reading Test

RCH: Researcher

SP: Structured Passage

TNS: Tense

LIST OF SYMBOLS

<> Expression not audible enough

(( )) Researcher's comment

:::   Pause

{ }   (Researcher's) Translation

*   Ungrammatical

ø   Null

CHAPTER ONE

GENERAL INTRODUCTION

1.1   Background to the study

Communication is a major requirement for the existence of human society. However, it is not possible without language. Language is the foremost instrument by which humans transfer knowledge, and it is the main means by which humans access the contents of anothers' minds. Thus, language plays pivotal roles in human lives. Despite this crucial role of language, some language users may not be able to maximally utilise language in order to participate effectively in social interactions. This occurs when they have language deficiency or language disability. In this regard, the linguistic competence of such language users may vary widely from other users in the same linguistic environment.

Linguistic competence refers to ideal language user's (innate) knowledge about the grammar (morphology, syntax, phonetics, phonology and semantics) of his or her language (Newby, 2011; Verpe, 2013). It is "a kind of subconscious schemata that exists within the minds of individuals" (Erton, 2017: 157). Following Erton's definition, linguistic competence may be described as a kind of underlying organisational pattern, a structure, a conceptual framework that enables the self to carry out his or her everyday actions. Linguistic competence is believed to play a big role within foreign language learners' language production including their use of morphology and syntax. Rofid (2018: 19) posits that linguistic competence has become the main goal in learning a second language or foreign language. In this light, linguists often relate linguistic incompetence (which denotes lack of mastery in language components) to second language factor. Rakha (2013: 10) asserts that second language learners have difficulties acquiring the core components of a second language (including its morphology and syntax) "no matter how much input they receive in the target language". For instance, research in English as a second language (ESL) environment (like Nigeria) has asserted that most second language

(L2) users of English often transfer some features of their first language (L1) into their English expression. However, such transfer is not often recorded in contexts where English is not a second language (non ESL situation), though English language users in such contexts may be also bilingual. Hence, distinction is often made between L1 competence and L2 competence. Thus, linguistics research has established a significant connection between the phenomena of linguistic competence and bilingualism.

Since the earliest days of language contacts across the globe, language deficiency has been repeatedly associated with bilingualism. Particularly, language deficiency is often explained through the lenses of the differences between features of first and second languages, as well as lack of mastery in a second language. As much as one cannot refute this fact, one also needs to bear in mind that impairment in language ability does not always result from lack of mastery in a second language. Deficiency in language use has also been found to be a consequence of damage to certain parts in the left hemisphere of the brain that are centrally involved in language functions. Particularly, these parts are the Broca's area, which is located in the posterior frontal lobe, and Wernicke's area, located in the temporal lobe (Reed, 2005; Döpke, 2006; Bunge and Crone, 2009). Studies on language impairments in relation to brain function have constituted the focus of Neurolinguistics —a branch of linguistics that deals mainly with the biological (neural) basis of the relationship of the human language and brain. Reports have shown that these neurological situations have always subjected the affected persons to increased psychological imbalance as they find it hard to participate in social interactions (Brülde, 2000; Davis *et al*., 2005; Hirtz *et al*., 2007; Pomeroy *et al*., 2011). In most cases, care and rehabilitation of people living with these disabilities have been very challenging.

To this effect, national governments as well as non-governmental organisations have come to the conclusion that there is need to adopt a multi-disciplinary approach to the care and rehabilitation of persons living with neurological disorders. Hence, experts from several fields are enjoined to contribute their quota towards achieving success in this regard (Bauman and Kemper, 2005; Altevogt *et al*., 2008; Pomeroy*et al*., 2011; Papathanasiou *et al*., 2013).

Aphasia and autism are examples of language deficiencies that result from brain damage. They are cases which seem to be increasing in Nigeria (Kanu, 2004; World Health Organisation, 2011; Bakare *et al.*, 2012). This calls for quick intervention. Victims of aphasia are called aphasics while people living with autism are described as autistics. People who suffer from these neurological disorders have been found to manifest language deficits (Vining, 2011; Papathanasiou *et al.*, 2013). Like many other neurological disorders, speech rehabilitation for aphasics and autistics require a lot of linguistic tasks. Considering this fact, the current study attempts an examination of the morphological and syntactic peculiarities of selected aphasic and autistic bilinguals in Nigeria, which is a culturally and linguistically diverse setting, where English is a second language.

1.2   Psycholinguistics

The exploration of the connection between language and human mind began to receive attention in the early twentieth century. This marks the birth of psycholinguistics which concerns, mainly, the investigation of the processes involved in human mind during the various stages of language acquisition and development. The sub-field of linguistics also examines the impact of various psychological issues on language. According to Garnham (1985: 1), psycholinguistics studies the mental mechanisms that make language use possible. He adds that the discipline is scientific, having its main goal on the derivation of a coherent theory of how language is produced and understood. This view is also supported by Gleason (2005) who avers that psycholinguistics is the meeting point of the fields of psychology and language, which makes it possible to discover and understand the psychological processes that make language acquisition and language use possible for human. Following Garnham (1985) and Gleason (2005) therefore, psycholinguistics is empirical approach towards understanding the mental faculty that form the basis of (human) linguistic competence.

The scope or concern of psycholinguistics includes language acquisition and learning; language skills (production, perception, processing and comprehension); language/brain relationship; language disorders and speech therapy; bilingualism; how language relates to thought and memory; and so on (Surakat, 2009). In second language situation,

psycholinguistic research investigates issues relating to competence (the abstract ability to speak a language) and deficiencies, where distinction is often made between error (incorrect feature in language acquisition) and mistake (non-systematic and usually unpredictable incorrect production in second language learning). Further, psycholinguistics investigates the influence of first language (L1) on second language (L2) learning.

Thus, psycholinguistic researchers talk of phenomena such as transfer, interference and interlanguage in describing second language learners' problems. This study, therefore, examines the morphosyntactic competence level as well as deficiencies in the speeches of selected Nigerian bilingual aphasics and autistics. Information about the participants' L1 influence on their use of the English morphology and syntax may provide clues to the development of rehabilitation strategies for them.

1.3   Neurolinguistics

Neurolinguistics is a branch of Neuroscience, which studies language-brain relations. It seeks to explain the neural bases for language knowledge and use. As a sub-field of linguistics, it straddles the borders between linguistics and other disciplines that are connected to the study of the mind/brain. These related fields are neurology, cognitive psychology, neuropsychology and cognitive neuroscience. Hence, neurolinguistics is an interdisciplinary enterprise. From the neuroscience perspective, neurolinguistics focuses on how the brain behaves in language processes, both in healthy and pathological conditions. From a linguistic standpoint, neurolinguistics aims at explaining how language structures are prompted in the brain. That is, how the patterns and rules of human languages are represented and grounded in the brain. The central topic in the history of neurolinguistics is the localisation of the cerebral structures responsible for the different linguistic processes (Bambini, 2012). However in recent times, attempts have been directed towards describing language problems that may result from damage to specific locations in the brain. In line with this focus in the field of neurolinguistics, this study investigates the morphosyntactic characteristics of selected Nigerian bilingual aphasic and autistic speeches in southwestern Nigeria.

1.4   Language disorders

Language disorders (otherwise labelled as language deficits) denote a number of problems with any function of language and communication. Such problems may manifest in the areas of oral expression or listening comprehension, which control human ability to communicate with one another. Such deficit may also manifest both in expression and in comprehension, and can have a major impact on the quality of life and education of a person living with such (Smith *et al*., 2004).

Primarily, language deficits are classified into expressive, receptive and mixed (Cirrin and Gillam, 2008). Expressive language disorders are marked by difficulty conveying information in speech, writing, sign language or gestures. Receptive language disorders are conditions in which a person has difficulties understanding what is said to them. Hence, they are otherwise called language comprehension deficits (Clark and Kamhi, 2010). When a language user has problems with language production and understanding what people say to him or her, such a person is said to suffer from mixed language disorder. Considering the nature of the three types of language disorder discussed above, it is evident that expressive language disorder is the most critical (as its manifestation is seen in the three types). Since language (production) is the means by which we have access to the minds of others (that is, by their expression), it is then necessary to address neurological problems that affect speech production. Hence, this study examines the peculiarities of language production of Nigerian bilingual aphasics and autistics with specific focus on morphology and syntax.

Language disorders are consequences of neurological disorders (also known as neuromuscular disorders) — the term which denotes any form of damage to the brain, spinal column or peripheral nerves. Neurological disorders (which inform the expression 'language disorders') are broadly categorised into two — acquired and developmental. Acquired neurological disorder refers to neurological imbalance that occurs as a result of physical injury to the brain, such as through car accidents and cerebral fractures (Massaro, 2001). Examples of acquired neurological disorders are ***aphasia***, anomia, agnosia and dysnomia, among others (Gupta and Singhal, 2011). Developmental disorders are brain impairements that result from congenial (or genetic) factors. Such disorders include

autism, cerebral palsy, Down syndrome and spinal bifida, among others. Among the long list of neurological disorders, there has been increase in cases of aphasia and autism in Nigeria recently. As a matter of fact, the World Head Organisation (2007, 2011) reports that the prevalence of aphasia (among other neurological conditions) in Nigeria is 0.05%. The implication of this percentage is that aphasia is found in 5 out of every 10,000 cases of neurological problems in Nigeria. Also, Bakare *et al*. (2012) avers that autism prevalence in Nigeria is 11.4%. This means that 114 in every 1,000 Nigerians are autistic. Therefore, this study focuses on aphasia and autism, which are examples of acquired and developmental disorders, respectively. People living with these disorders can manifest any of the three types of language deficits.

1.4.1 Aphasia

Aphasia is neurologically central language impairment, affecting not only the production or comprehension of speech but also one's ability to read or write. It is caused by physical damage to the language portions of the brain. Hence, it falls in the category of acquired language disorder. Aphasia is characterised by impaired language comprehension and production (Brookshire, 2003: 5). Garman (1990: 416) defines aphasia as "a long term, systematic impairment of linguistic abilities as a result of damage to brain tissues". According to Orange and Kertesz (1999), aphasia is characterised by variably impaired comprehension, paraphasias, word finding difficulty and and impairment of gesture. This description implies that aphasia characteristically affects language in terms of both production and comprehension. Similarly, American Speech-Language-Hearing Association (2011) submits that aphasia may affect all aspects of language.

Aphasia is commonly caused by cerebral vascular accident (CVA) or stroke, brain tumour, head trauma and neurodegenerative diseases. There are four main types of aphasia—Broca's, Wernicke's, conduction, and global aphasias. However, recent studies in aphasia have identified two other types, namely: anomic and transcortical aphasias. Transcortical aphasia is further classified into transcortical motor, transcortical sensory and mixed transcortical aphasias (Pedersen *et al*., 2004; Yavuzer, 2010). All these are discussed in the next chapter. People suffering from aphasia are termed aphasics and their speeches are described in this study as aphasic speeches.

According to Ashley *et al*. (2006), aphasia is also classified on the basis of speech fluency. Hence, they have identified fluent and nonfluent aphasias. The former (that is, fluent aphasia) is characterised by smooth flow of speech with varying degrees of deficits in comprehension (Yavuzer, 2010). Affected persons may also exhibit repetition, neologism and circumlocution. Yavuzer (2010) adds that in some cases, such condition may result to paraphasia (employing wrong words or using words in wrong and senseless combinations; for example using the word 'sister' for 'mother'). Typically, Wernicke's, conduction, transcortical-sensory, and anomic aphasias are grouped in the fluent category. On the other hand, the latter (that is, nonfluent aphasia) is marked by impaired flow of speech, effortful speech production, good comprehension skills and repetitive speeches. This is corroborated by McDowd *et al*. (2007) who say that the nonfluent aphasics make agrammatical or telegraphic speech (omitting function words). The authors claim that their subject said "pain… leg", whereas he wanted to say that he had pains in his legs. Nonfluent aphasia is mostly seen in Broca's, transcortical motor and global aphasias (Ashley *et al.*, 2006; McDowd *et al.*, 2007; Yavuzer, 2010). The following are extracts from interactions between a researcher and a victim of aphasia. The content of the extracts exemplify some features of aphasic speeches. Extract I below shows the case of fluent aphasic, while extracts 2 and 3 exemplify a speech pattern of non-fluent aphasics.

Extract 1: (Fluent aphasic)

> Examiner: Who is about to fall down?

> B.L: …I can't see well enough but I believe that either she or he will have some food that's not good for you and she's to get some for her, too . . .
> (Avruti, 2001: 89)

Extract 2: (Non-fluent aphasic)

> B.L: Wife is dry dishes. Water down! Oh boy! Okay. Awight. Okay… Cookie is down… fall, and girl, okay, girl… boy… um…

> Examiner: What is the boy doing?

> B.L: Cookie is . . . um . . . catch

> Examiner: Who is getting the cookies?

B.L: Girl, girl!

(Avruti, 2001: 87)

Extract 3: (Non-fluent aphasic)
Researcher: What happened to your mother?

Aphasic: Uh, oh, I guess six months… my mother pass away.

Researcher: So what are you doing now?

Aphasic: Write a letter (intends to say "I am writing a letter)

(Avruti, 2001: 92)

The context of the interaction in extracts 1 and 2 is a picture, known as `Cookie Theft Picture'. The picture shows a woman drying dishes, not noticing the events going on around her. Water is seen flowing out of the sink while a boy and a girl are taking cookies out of a jar. The boy, standing on a stool, is about to fall down. In extract 3, the researcher engaged the subject in a conversation that centered on family issues.

From the samples above, it is observed that the aphasic participant in extract 2 does not produce the expected continuous morphological inflection marking the lexical verbs 'dry', 'fall' and 'catch' (as 'drying dishes', 'falling down' and 'catching', respectively). Similarly, the participant in extract 3 does not inflect the verb 'pass' for the reqired past tense morpheme in the sentence. The researcher (from whose works the above sample have been cited) was silent on these morphosyntactic features that are manifest in aphasic speeches. Such features show the level of competence or deficiencies in language, and especially in second language situation where the L1 features may differ from the L2. Details about such morphosyntactic features may provide useful information about the peculiarities of aphasia in L2 situations, which may further be useful in enhancing communication with and rehabilitation of the aphasics. Thus, it is necessary to examine if this is common to all aphasics and to find out if such grammatical errors have a link to their neurological condition and bilingual situation or not. The study designs a reading test in which these grammatical items are included to examine the use of such grammatical items in Nigerian bilingual aphasic and autistic speeches.

The interest of this study is on language production; particularly the use of English morphology and construction of English sentences for communication and learning purposes, especially in L2 environments. The study focuses on Nigerians who are suffering from non-fluent aphasia; particularly the victims of Broca's aphasia. The choice of Broca's aphasia is motivated by the submission in the literature that the Broca's area is concerned with language production. This study hopes that these deviations among many others to be explored will be of vital use to speech pathologists and rehabilitation centres in Nigeria, who are working towards helping victims of this disorder to overcome their communication problems.

1.4.2 Autism

Autism is a neuro-developmental condition that often makes it hard to communicate with and relate to others. It is characterised by deficiency in social interaction and communication difficulties. In most cases, people living with autism (PLWA) display repetitive behaviour and interests (El-Kaliouby, Picard and Baron-Cohen, 2006: 228). The term 'neuro-developmental disorder' denotes a condition in which damage to the affected part of the brain does not occur as a result of physical injury. Rather it is biologically based, environmentally caused, genetically determined, or psychological in origin. In some cases, it is as a result of allergy (Autism Speaks, 2010).

Cabibihan *et al*. (2013) aver that autism is a life-long brain disorder that stems from (a combination of) genetic and environmental factors. They add that no cure has yet been found for autism. They, however, surmise that early intervention may improve the quality of life of PLWA. As a way of distinguishing the people living with this disorder from those suffering from other forms of neurological imbalances, neurologists as well as linguists have identified them, as well as their speeches, with the term autistic (Lord *et al*., 2004; Barua and Daley, 2008). Also, autistic traits are usually diagnosed along three key dimensions of impairment viz communication, behaviour/interest and social interaction. The following data culled from Ojo (2013) show that autistic speeches sharply deviate from the forms we have in English in terms of morphology and syntax.

Extract 4:

> Researcher: What were you doing at the venue of the competition?
>
> Subject: I dancing, I dancing
>
> Researcher: Did you play with her?
>
> Subject: No
>
> Researcher: Why didn't you play with her?
>
> Subject: Because she i not my friend
>
> Researcher: Why is she not your friend?
>
> Subject: he not our school.
>
> <div align="center">(Ojo, 2013: 114-116)</div>

Extract 5:

> Researcher: Read this passage
>
> Subject: As I come back from church yesiday… I decide to watch   om of my dirty clothe …I cannot quarrel God in heaven for   bringing the rain…
>
> <div align="center">(Ojo, 2013: 120-123)</div>

Similar to what obtains in the aphasic speeches presented above, autistics also manifest inability to produce inflection for past tense morpheme (as seen in 'come' instead of 'came' and 'decide' instead of 'decided'). Also from the samples, autistic speeches appear to be characterised by NP duplication as well as *aux*-deletion. Ojo's focus is on the phonological features of these speeches; hence she neglects their morphosyntactic uniqueness. This study, therefore, explores the features of Nigerian bilingual autistic speeches with a view to assessing and describing their competence and deficiencies in their use of English as a second language.

Generally, literature on aphasia (see Smith *et al.*, 2004 and Papathanasiou *et al.*, 2013) and autism (Hirtz *et al.*, 2007; Cirrin and Gillam, 2008) have established that both disorders can fall into any of the three classes of language deficits (expressive, receptive or mixed, discussed above), depending on the affected part of the brain. Hence, they both manifest language deficiency though the cause of the former differs from that of the latter. However, the sample speeches in each case above give a clue that the English language

speeches of aphasics and autistics seem to deviate from what obtains in morphological and syntactic patterns of Standard (Nigerian) English. This study, therefore, examines the morphological and syntactic features of aphasia and autism with a view to identifying the specific language deficiencies that characterise the morphology and syntactic configuration of the English speeches of people living with these disorders. Bearing in mind that the two selected disorders are both consequences of neural impairment and that they differ in their causes, the study intends to find out the common linguistic features (if any) of speeches of Nigerian bilingual aphasics and autistics as well as their differences (if any); which may probably be as a result of the differences in their causes.

1.5   Bilingualism

The topics of language acquisition among humans (especially in contact situations) have led linguists into the field of bilingualism, the study of individuals or societies that use more than one language. Although bilingualism is not a discipline such as psycholinguistics or sociolinguistics, it is a term that will be found mainly in studies from these two areas. 'Bilingualism' designates any situation of being capable of understanding and/or producing utterances in a second language (Karahan, 2005; Wardhuagh, 2006). In language contact situations, language users are regarded as bilinguals, and they range from people who are equally proficient in two languages (equilingual- Karahan, 2005: 1153) to those who only possess certain skills in a foreign language, such as reading or listening comprehension. In relation to the present study, Nigeria, like many other nations of the world, is a multilingual society; hence its citizens are largely bilingual (at least in their native languages and English). Thus the participants selected for this study have two language systems in their speech repertoire — their indigenous languages (largely Yoruba) and the English language (their L2). Thus, the variety of English used for this study is that (variety) which Kachru (1982) calls the outer circle. This is based on the idea that Nigeria belongs to the outer circle of users of the English language, where English is not just a second language but also an official languages. The bilingual participants in this study use the English language in these two contexts.

Psycholinguistic research has identified different types of bilingualism. These include, simultaneous (parallel) versus consecutive (sequential); earlychildhood (infant) versus late

(adolescence or adult); perfect (balanced) versus imperfect (incipient); subtractive versus additive; coordinate versus compound; and so on (Karahan, 2005; Wardhaugh, 2006). These dichotomies are significant especially because they determine or influence the degree of bilingual individual's competence in the two or more languages. For instance, a child who is exposed to a second language from infancy (early, simultaneous bilingualism) will have more proficiency in both first and second languages when compared with a late, adult bilingual; all things remain the same. Therefore, the age at which a person is exposed to the other language is a major variable to consider in terms of his/her competence and performance. This assertion follows the view held in the Critical Age Hypothesis (Lenneberg, 1967; Levelt *et al*., 1999; Arabski and Wojtaszek, 2010) that while all human languages are learnable for the normal person, the degree of learnability diminishes with age. The sociolinguistic landscape of Nigeria in recent times may be gradually tending towards simultaneous bilingualism as many young Nigerian children are being interacted with in the English language right from infancy. However, most Nigerians are still consecutive bilinguals. Thus, the participants in this study are consecutive bilinguals.

Evidence from the literature suggests that bilingualism itself does not negatively affect first language development in children; those with language impairment inclusive (Thordardottir *et al*. 1997; White, 2003; Mikulecky, 2008). Rather, the manner and availability of input in each language all influence language learning. This view is also supported by Döpke (2006) who asserts that bilingualism is not one of the varied and complex reasons for which people have difficulties with language development. However, the type of language deficit and the severity of the language disorder often worsen language learning for those with language impairment. This view is also supported by Kohnert (2010) that bilingual children with language impairments may learn language at a slower pace and to a lesser extent than their typically developing bilingual peers, but they do learn language to the same level as their monolingual peers with language learning difficulties. Petersen *et al*. (2012: 116) further add that available researches suggest that bilingualism does not negatively impact of on language development in people living with language disorders. However, previous studies among normal ESL users have reported that ESLs' problems result from L1 interference, especially in cases where the linguistic

features of their L1 is different from that of their L2. The current study, therefore, assumes that the speeches of aphasics and autistics in bilingual settings may show peculiarities that differ from the speeches of those in a monolingual situation, and that these peculiarities may result from their L1 influence. To examine this, the participants recruited into the study are above the age of 9 years. It is assumed that people who have attained this age could be regarded as linguistic adults and they must have used the English language for more than a period of five years, which is the consensus time frame for attaining fluency in second language learning (Hill and Flynn, 2006; Gandour *et al*., 2007).

1.6   Nigerian English

Sociolinguistic has established that 'sociolinguistic chemistry' is essential in language contact situations, and usually, it may result in a diglossic situation, language shift, language attrition or even language death. In some other instances, it may yield positive outcomes such as emergence of a pidgin, a creole, or even the birth of a new language (Sebba, 1997). One of the most notable contacts of languages and their resultant effect is the advent, implantation and continued effect of the English language in Nigeria. Environmental influences, deriving from linguistic and socio-cultural factors in Nigeria, have combined to produce the variety of English that is found in the country. Although the variety has undergone domestication, localisation, and nativisation, it, however, maintains social acceptability and international intelligibility. The Nigerian English variety is in the outer circle of Kachru's concentric circles, a framework for conceptualising English as a world language.

Most studies have examined the phonological, lexico-semantic and pragmatic features of Nigerian English usage. Few studies have paid attention to its syntactic peculiarities. These include 'deviation' (Lawal, 2013: 74) in terms of tense, agreement and aspect marking, omission and substitution of prepositions, and violation of selectional restriction rules, among others. (These are further discussed in section 2.8). This study, therefore, investigates the manifestation of Nigerianism in the morphosyntactic deficiencies/competence of Nigerian bilingual aphasic and autistic speeches.

1.7   Morphosyntax

Morphology is a branch of linguistics that studies word formation. It concerns not only how words are shaped but also how the shapes of words may be systematically adjusted in order to accomplish communicative tasks (Payne, 2006). Morphology studies word formation, including the ways new words are formed, and the way in which forms of words are varied depending on how they are used in sentences. Syntax refers to the stringing of words to form phrases, clauses and sentences. It is a branch of grammar that deals with the ways in which words, with or without appropriate inflections (van Valin, 2001: 8) are arranged to arrive at meaning within a sentence. Lieber (2009) defines morphology as the study of how words are put together. This definition is not an attempt to equate morphology with syntax; rather, morphology should be considered as a component part of syntax. Hence, linguists often talk about morphology and syntax together, and this is so because, in some cases, a communicative job that is performed by word shapes (morphology) in one language could sometimes be performed by combinations of words (syntax) in another. Also, the systematic adjustment of word shapes sometimes has syntactic implication. For example, the mapping of 'character' into 'characterise' (verb), 'characterisation' (noun), 'characteristic' (adjective/noun) and 'characteristically' (adverb) will bring about a change in grammatical class as well as use in sentence construction. This morphology/syntax interaction engenders the concept of morphosyntax.

van Valin (2001) posits that the set of morphosyntactic properties with which a word form is associated by the rules of morphology is the only factor mediating its syntactic distribution. This connection between morphology and syntax motivates the choice of the two levels of language which constitute the focus of the study. Syntax and morphology make up what is traditionally referred to as grammar. van Valin (2001: 10) adds that "an alternative term for it is morphosyntax", which recognises the explicit relationship between morphology and syntax. In this sense, morphosyntax is conceived as how meaningful units combine to form words and sentences. Considering morphology and syntax as core components of grammar, it is therefore, crucial to explore the ways in which aphasic and autistic speeches deviate from what obtains in the English language pattern. Such details may be useful in designing rehabilitation strategies for the affected

persons. In addition, information about aphasics' and autistics' competence and/or deficiencies in the production of the English morphosyntax in English as a second language situation, like Nigeria, will provide explanation for both cognitive and neuroanatomical representation of these components of language in the bilingual brain.

1.8   Statement of the problem

There exist a number of studies on aphasia and autism. These studies have examined linguistic features such as pragmatics, vocabulary development, semantics and phonology. Wiener, Connor and Obler (2004), for instance, investigate the cognitive auditory comprehension process at the lexical and semantic levels in the speeches of people living with Wernicke's aphasia. The study establishes that deficits in Wernicke's area inhibit auditory comprehension. Similarly, Young *et al*. (2005) examine comprehension deficits among people living with Pragmatic Language Disorders (PLDs). They report that PLDs are characterised by low understanding of non-literal sequences, poor command of indirect speech acts and conversational conventions. Wiener *et al.* (2004), Young *et al*. (2005) and Gandolfi (2008) have mainly studied comprehension in aphasia, neglecting the production aspect of language use, and thus creating a gap in research. The competence of a language user is not just determined by language comprehension ability. In the actual sense, a user of a language is acclaimed competent when he is able to produce grammatical and acceptable structures and he can comprehend the same. Thus, there is need to investigate the production competence or deficiencies in the speeches of people living with neurological disorders.

McDuffie, Yoder and Yoder (2005) are also notable for their investigation of competence in relation to language production and comprehension. They attempt identifying a predictive model of vocabulary comprehension and production in a group of young children living with autism. They report that both comprehension and production are predictors of cognitive delay in their participants' speeches. However, autism is not just a childhood condition. During childhood and up until the age of 21, persons with autism can receive educational services through the school systems and local agencies (Lawer and Mandell, 2009). Therefore, the observed speech patterns among young autistic children, who are still within the Critical Period of language acquisition (Lenneberg, 1967; Levelt *et*

al., 1999) cannot sufficiently account for speech patterns of older people who suffer from the same neurological condition. As part of the several attempts to remedy the communication problems of autistic people, therefore, it is required that a study is carried out among older peple who have grown beyond the critical age, in order to shed light on specific areas that should be addressed in solving their problems. Linguistic evidence from such group will provide vital information on the linguistic competence and/or linguistic problems of such group.

Duffy (2000), Llussà (2010) and Hessler *et al*. (2010) are also notable studies in language production (and comprehension) among people living with neurological conditions (PLWNC). These authors are remarkable for their contributions to the description of phonetic and phonological features of (PLWNC). Duffy (2000), for instance, reports that the distinctive speech characteristics of aphasics are primarily phonatory, articulatory, and prosodic; imprecise articulation is often evident secondary to reduced range of articulatory movement. Llussà (2010) adopts Grodzinsky's (2000) Trace-Delete Theory to examine intonational patterns and comprehension in Broca's aphasia. The study concludes that Broca's aphasics are able to distinguish intonational contours. Hence, they do not show disrupted phonological abilities. Hessler *et al*. (2010) also investigate the impairment of auditory phonetics in relation to speech reading in individuals with aphasia. The study finds (among others) that discriminating pairs of non-words is difficult for individuals with aphasia.

These studies (Duffy, 2000; Llussà, 2010; and Hessler *et al*., 2010) have only explored the phonological features of people living with aphasia and autism, while they have left out the morphosyntactic features of aphasic and autistic speeches. Such details, still missing in the literature, are crucial for a comprehensive understanding of the linguistic peculiarities of aphasic and autistic people. Also, the studies were carried out in non ESL situations. Bilingual aphasics and autistics, especially in the Nigerian context, may exhibit (morphological and syntactic) peculiarities which may not be observable in the speeches of aphasics and autistics that have English as their first language. Thus, adequate description of language feature of people living with neurological conditions in bilingual

situations will require consideration for their L2 for successful, suitable rehabilitation strategies to be put in place.

The few studies on aphasia and autism in ESL situations like Nigeria have investigated areas of pragmatics (Akinola, 2013) and phonology (Salami, 2008; Sunday, 2008; Ojo, 2013). Akinola (2013) adopted Jacob Mey's (2001) Pragmatic Act to look into the pragmatic aspect of doctor-aphasics interactions with a view to identifying linguistic tools employed by doctors vis-à-vis linguistic roles of aphasics towards the diagnosis. In his conclusion, he claims that "aphasics such as Wernicke's are linguistically competent just like other patients' interactions with medical practitioners" (Akinola, 2013: ii). It has been established in the literature that a damage to specific areas of the brain results in difficulty in language use — production and comprehension (Reed, 2005; Döpke, 2006). On this note, Akinola's conclusion that aphasics are linguistically competent is in doubt (perhaps, at least at the levels of morphology and syntax). Hence, this study is set to examine the specific forms of incompetence that characterise the speeches of people living with aphasia as well as autism.

Salami (2008) examines phonetic disorders and their impacts on the English speeches of patients with tongue lesion. Similarly, Sunday (2008) attempts a contextualisation of phonological features of the speeches of bilingual Nigerian adult aphasics while Ojo (2013) carries out a study on the phonological problems of autistic people in Nigeria. Like Salami (2008) and Sunday (2008), Ojo (2013) finds that metathesis and epenthesis, among other phonological deficiencies, characterise the speeches of people living with autism. It should be noted however, that while these studies have provided vital information about some linguistic features of aphasics and autistics, they have left some gap in research in that they have not accounted for the morphological and syntactic features of people living with these disorders.

Linguistic features of neurological disorders (in this case, aphasia and autism) could be investigated at all linguistic levels (that is, the phonetic/phonological, morphological and syntactic, lexical/vocabulary and pragmatic levels). Scholars' interests so far have been on phonology and pragmatics while syntax (with its twined grammatical component, morphology) has remained unexplored particularly in English as second language

situation like Nigeria. For the purpose of adequate assessment and description therefore, it is necessary to widen the scope of the studies on aphasia and autism by investigating into the morphological and syntactic patterns of the speeches of people living with these disorders in ESL situations. Further, it is expected that a user of English as a second language is able to construct simple, correct and grammatically acceptable sentences. Hence, this study focuses on morphology and syntax as levels of language study. These two levels of language usage are pertinent to daily human communication yet they have remained underexplored in bilingual settings like Nigeria.

An appraisal of the available linguistic studies on aphasia and autism reveals that lack of information on the morphosyntactic features of aphasic and autistic speeches in Nigeria has left a gap in research. Apart from this, the existing studies have examined linguistic features in aphasia and autism separately. There has hardly been any comparative study of both. It is important to note that aphasia and autism are both neurological disorders, though they differ in causes and classification. Then it bothers the mind whether or not the difference in their causes and classification results in difference in the language deficiencies manifested by the affected persons. Such knowledge about these disorders, which may provide linguistic clues to the victims' rehabilitation, is still missing in the literature. Also, such knowledge should provide explanations for both the cognitive and neuroanatomical representation of language in the bilingual brain. The current study seeks to provide this knowledge. This study, therefore, attempts a comparative description of the morphosyntactic features of selected Nigerian bilingual aphasic and autistic speeches. The findings of the study on this subject matter will be useful in attending to the communications needs of Nigerian bilingual aphasics and autistics.

1.9   Aim and objectives of the study

The study aims to investigate selected Nigerian bilingual aphasic and autistic speeches with particular attention paid to morphology and syntax as core components of grammar and consider the features of such speeches vis-à-vis what obtains in English. The specific objectives of the study are to:

i.   examine if there is any ground on which the morphology and syntax of both Nigerian bilingual aphasic and autistic speeches agree with core components of Universal Grammar;

ii.   establish a common ground in the morphological and syntactic features of the two disorders;

iii.   ascertain in what way(s) the morpho-syntactic features of one differ from those of the other; and

iv.   describe the nature of impairment in Nigerian bilingual aphasics' and autistics' use of the English functional categories.

These linguistic details are needed for any successful rehabilitation programme targeted at aphasic and autistic patients.

1.10   Research questions

The study provides answers to the following specific questions:

i.   To what extent do the morphology and syntax of both Nigerian bilingual aphasic and autistic speeches agree with the principles of Universal Grammar?

ii.   What are the morphological and syntactic peculiarities that are common to both aphasic and autistic speeches?

iii.   In what ways are aphasic speeches different from autistic speeches in terms of morphology and syntactic structures?

iv.   What is the nature of impairment in Nigerian bilingual aphasics' and autistics' production of the English functional categories?

1.11   Scope of the study

The study is limited to the southwest of Nigeria. Basically, it focuses on morphology and syntactic structures, which are areas of language study that have remained underexplored since the inception of neurolinguistics and psycholinguistics as branches of applied linguistics. More particularly, the study examines core components of Universal Grammar (word order and head parameters), lexical derivation and functional categories.

1.12   Significance of the study

Mental and neurological disorders (MNDs) are not just an individual's health challenge but a burden affecting societies at large. Rick *et al*. (2005: 46) state that countries, policy makers and organisations require detailed information on neurological disorders to launch control and management programmes. National Audit Office (2015) further maintains that people with challenging neurological conditions need a wide range of services across various disciplines in order to meet the demands of living. These demands of living include health, housing, social services, transport, employment benefits and education. Therefore, giving a lucid description of the morphological and syntactic characteristics of the selected acquired and developmental deficiencies will provide important clues about the underlying pathophysiology and localisation of neurological diseases. Also since aphasia, and particularly autism are termed learning disabilities (McDuffie *et al*., 2005; Scott and Winnie, 2007), speech pathologist, therapists as well as special educators will find the study relevant as a guide to help people with such disabilities to learn and to recover.

Furthermore, following Petersen's (2012) assertion that there is a dearth of research in the area of language disorders in a bilingual world, this study contributes to existing literature on the relationship between fields of learning such as medicine, linguistics, psychology, neurology and sociology. Also it widens the scope of knowledge needed in understanding the communication and learning needs of victims of the selected and other related disorders.

The affected persons under consideration in this study live in a bilingual society where English is used alongside their indigenous languages as medium of instruction and interaction. In this case, a study such as this is needed to enhance adequate support for the victims of these ailments in a bilingual setting as Nigeria.

The study hopes to identify the ways in which the sentence constructions of the affected persons deviate from acceptable forms in English. Identifying such deviation will inform the help that can be rendered to these people. It is, therefore, hoped that the findings of this study will be of vital use to speech pathologists and rehabilitation centres that are working towards helping victims of these disorders to overcome their communication

problems. This will in turn aid doctor-patient (for the aphasics) or special educator-autistic (for the autistics) interaction, and the recovery of the affected persons.

1.13   Summary

Providing explanation for how cognitive and sensorimotor domains relate to language impairments/deficits has been of interest since the early days of neurology and neurolinguistics. However, there has hardly been any interaction between research on developmental disorders and those acquired after (physical) neurological injury; particularly in bilingual setting. In filling this gap, of particular interest here is the morphosyntax of selected bilingual autistic and aphasic speeches in Nigeria.

This chapter has provided needed background knowledge to aid reader's understanding of this work; it particularly states the problem addressed with the limits within which the problem is addressed as well as the objectives of the study. In furtherance of the same, the next chapter presents a review of related literature as well as the theoretical framework adopted for the study.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.0   Introduction

This chapter contains a review of relevant literature on sub-themes related to its focus. Also, the chapter presents a review of the theories adopted for the study as well as other concepts related to the study.

2.1   Literature review

2.1.1   Language acquisition

Language acquisition is the process of learning a (native or second) language; the process by which humans acquire the capacity to perceive, produce and use words to understand and communicate. Fromkin *et al*. (2003) view language acquisition as the construction of the grammar of language to which the acquirer/learner is exposed. Thus, exposure to a language is the primary basis of language acquisition, and a continued exposure gradually enhances the acquirer to internalise the substances, forms and norms of the language. Thus, the internalisation of linguistic norms (whether in childhood or adulthood) in a natural environment is regarded as language acquisition. In other words, language acquisition refers is the process by which one learns learn to speak, write or even use sign language in meaningful ways to communicate.

There are different theories of language acquisition. Some of these theories are psychology-based while few are within (psycho)linguistic domain. Mainly, behaviourism is notable among psychology-based theory of language acquisition while Universal Grammar (which emphasises linguistic competence and performance) approaches language acquisition from (psycho)linguistic standpoint. Behaviourists argue that language acquisition and development are learned behaviours. They believe that human

learn (language) by associating events (*classical conditioning*) and through rewards and punishments (*operant conditioning*) (Staddon and Cerutti, 2003; McLeod, 2008). Another aspect of behaviourism is that we learn by observation and imitation (Carroll, 2004). Infants may learn, over repeated exposures, to associate an object with a sound or word, and they may as well learn language by observing caregivers and imitating their sounds.

Chomsky, Belletti and Rizzi (2002) contend that behaviourism cannot adequately explain how infants and children learn language. They argue that children naturally learn rules of language and apply them in their own way to put words together in new ways, creating meaningful sentences they have never heard before. Chomsky, Belletti and Rizzi (2002) however maintain that such sentences are often inaccurate at first. From a biolinguistic perspective, Chomsky, Belletti and Rizzi (2002: 11, 67) argue that one must be born with a language acquisition device, an area in the human brain that makes learning language a natural event. As evidence, they point to the idea that children all over the world learn language in similar ways, regardless of their culture or the language they learn to speak. According to this view, children are able to learn the 'superficial' grammar of a particular language because all intelligible languages are founded on a "deep structure" of grammatical rules that are universal and that correspond to an innate capacity of the human brain.

2.1.2   Stages in language acquisition

2.1.2.1 Stages in first language acquisition

Following the behaviourist school of thought, language acquisition is a biologically controlled behaviour; it has a critical period for acquisition and regular sequence of milestones or 'stages' during development (See Critical Period Hypothesis; Lenneberg, 1967; Levelt *et al*., 1999). Robertson and Ford (2009) posit that all (normal) children go through same stages of acquisition in same order; however, the rate of progression through the stages can vary increasing complexity and originality of a child's utterances. Carroll (2004), Golinkoff and Hirsh-Pasek (2006), Robertson and Ford (2009), Vij *et al*. (2009), and Kosur (2012) have shown that there are six stages of first language acquisition. These are:

Prelinguistic/cooing stage: Cooing involves a syllable-like noise, occurring in repeated sequences but with no clear intonational melodies (Vij *et al*., 2009). Vij *et al.* (2009) aver that this stage appears when a child is about 6 months old. Golinkoff and Hirsh-Pasek (2006) and Kosur (2012) also aver that all infants coo using the phonemes from every language, comprising mostly vowel sounds, and that children show a lot of tongue and lip activities. Kosur (2012) adds that the child produces a great array of syllables involving many different vowel sounds, causing enjoyment for both herself and her parents (Golinkoff and Hirsh-Pasek, 2006).

The babbling stage: Babbling is often regarded the first sign systematically showing an influence of the language that the child is exposed to. Carroll (2004) maintains that babbling appears at around 9 months. At this stage, the child starts to selectively use the phonemes from their first language. Consonants are also introduced along with vowels and the child begins to correlate words with objects or people. Carrol (2004) maintains that babbling helps the child to practise articulatory control and to explore the correspondence between articulatory movements and resulting sound. However, outsiders listening would not be able to tell what language the baby is learning because there are no recognisable words. Golinkoff and Hirsh-Pasek (2006) add that if babbling is not possible for medical reasons, children will still end up with normal pronunciation skills, although with some delay.

One word utterance/holophrases stage: Golinkoff and Hirsh-Pasek (2006) report that at around 12 months, children start using (fairly complex) words. The striking features of language production at this stage are single-word utterances (holophrases). The child moves on to make his/her first words, which may convey the meaning of whole sentences. This is usually accompanied by intonational melodies. Thus, a child begins production of single-word utterances around the end of their first year. While the number of such (single-)words in the child's repertoire grows steadily, there is no clear meaning in the child's utterances yet because his/her words appear in the same kind of situation. Vij *et al.* (2009), however, maintains that it appears that the meaning of words dawns on the child's mind. Thus, acquisition of semantics may be said to begin at this stage. Vij *et al* (2009) exemplify this, saying that when a child says: "*Doll,*" the holophrase could mean:

I want that doll.

I see a doll.

The doll is doing something.

I know who made that noise, the doll, *and so on.*

<div align="right">Vij *et al.* (2009: 157)</div>

Two-word utterance stage: This stage of language development usually begins when a child is about between a year and a half and two years of age, and language production is largely characterised by two-word utterances. Like holophrases, such words also convey the meaning of full sentences. For example, instead of the holophrase, Doll, cited above, the child may say:

want doll	I want that doll.
dommy doll	Mommy takes the doll.
doll do	The doll is doing something.
make doll	I know who made that noise, the doll, *and so on.*

<div align="right">Vij *et al.* (2009: 159)</div>

The authors add that each word in the two-word utterances may initially be uttered separately, with each word having its own intonation peak. As the child develops, the two words start sounding as forming a unit, having one intonation peak. However, it is not certain whether children organise these utterances in terms of word categories (like noun, verb, and adjective) or whether they operate with semantic notions. As noted by Bates *et al.* (2002), it is certain that the ordering of words in such two-word utterances seems to reflect mostly the order of words in full-fledged sentences. It is also remarkable that children, like adults, use their hands when they communicate verbally, in which case, the utterance and gesture complement each other as the child communicates. For instances, the child may say *Give me* while pointing to a doll to mean Give me the doll. Ventriglia (2004) adds that while the child's verbal capacity develops and utterances get to be more complex, gestures remain crucial in order to interpret certain utterances.

Telegraphic stage: At this stage, children start making multi-word utterances. However, these utterances are dominantly content words, lacking function words. Hence, the stage is

called 'telegraphic' because children's speeches have patterns like the way in which people used to write telegrams. Another major feature of language production at this stage is that inflectional endings (in addition to closed-class words) are initially missing. As the child grows and his/her language develops, sentences get longer and more varied, showing evidence of various kinds of inflection rules and transformations. Thus, emergence of the telegraphic stage marks the beginning of a rapid development toward *syntactic adulthood* (Jonsson, 2010; Gan, 2014).

Normal speech stage: By about 5-6 years of age, children have almost normal speech with good command over syntax and semantics. Later in this stage, development of vocabulary and pragmatics takes place.

Vij *et al*. (2009), Arabski and Wojtaszek (2010) as well as Kosur (2012) posit that by age 7-8 years, syntax and morphology in children's speech have become 'mature' and stabilised. It therefore implies that while children below the age of 6 years may be suitable for phonology investigation, they will not be suitable for morphology and/or syntax studies. Hence, the autistic people selected for this study are those that are above the age of 9 years. They are considered suitable for the study because, going by Vij *et al.* (2009) and Kosur (2012), children above the age of 9 years have grown past the critical period. Thus, their language deficiencies can be investigated whether they live with or without brain impairment. Hence, implication(s) of brain impairment on their language patterns can be objectively investigated.

2.1.2.2.   Stages in second language learning

Language acquisition research has established that Second language learning differs from first language acquisition. Lenneberg (1967) asserts that there is a critical period for acquiring language. The *Critical Period Hypothesis* (Lenneberg, 1967) states that there is a time frame for learning new language, and once that time is over, language acquisition becomes much more difficult. This assertion is further buttressed by Levelt *et al*. (1991) who posit that language acquisition becomes more difficult as one grows, and that it is especially more difficult for adults learning a new language. Second language acquisition researches have identified the following stages in second language learning.

Stage I: Pre-production

The pre-production stage is a period when a learner takes in the new language but does not speak it. The stage is also called "the silent period," (Robertson and Ford, 2009). Literature agrees that this period often lasts six weeks or longer, depending on the individual. According to Lardiere (2010), English language learners may have up to 500 words in their receptive vocabulary. At this stage, the learner listens attentively and learning is better enhanced when they engage in some writing practice. At this stage also, they are able to respond to pictures and other visuals, and they understand and duplicate gestures and movements to show comprehension. It is recommended that teachers, at this stage, should focus attention on building a receptive vocabulary by engaging the learner in listening comprehension activities. English language learners at this stage will need much repetition of English. They will benefit from a playmate who speaks their language.

Stage II: Early production

While emphasis on listening and absorbing the new language continues in this stage, a learner, at this stage, begins to speak using short words and sentences. Gandour *et al.* (2007) assert that this stage may last up to six months and learners will develop a receptive and active vocabulary of about 1000 words. During this stage, learners can usually speak in one- or two-word phrases. Lardiere (2010) adds that there will be many errors in the early production stage. They can use short language chunks that have been memorised although these chunks may not always be used correctly.

Stage III: Speech emergence

At the end of the early production stage, learners would have developed a vocabulary of about 3,000 words (Robertson and Ford, 2009). Thus, at the speech emergence stage, learners can communicate with simple phrases and sentences, ask simple questions. Although speech becomes more frequent, and words as well as sentences are longer, they may or may not be grammatically correct. Also, learners rely heavily on context clues and familiar topics. It is striking that teacher's support play exceptionally crucial role in the learning process at this stage (Gandour *et al.,* 2007).

Stage IV: Beginning fluency

Speech is fairly fluent in social situations with minimal errors. According to Arabski and Wojtaszek (2010), new contexts and academic language are challenging and the individual will struggle to express themselves due to gaps in vocabulary and appropriate phrases.

Stage V: Intermediate fluency

Robertson and Ford (2009) posit that there are very few errors, and the individual is able to demonstrate higher order thinking skills in the second language such as offering an opinion or analysing a problem. They add that the English language learners at the intermediate fluency stage have a vocabulary of 6000 active words. They begin to use more complex sentences when speaking and writing and are willing to express opinions and share their thoughts. At this stage, learners will use strategies from their native language to learn content in English. Many learners may be translating written assignments from native language. They should be expected to synthesise what they have learned and to make inferences from that learning. This is the time for teachers to focus on learning strategies. Learners in this stage will also be able to understand more complex concepts.

Stage VI: Advanced fluency

The second language learner communicates fluently in all contexts and can manoeuver successfully in new contexts and when exposed to new academic information. At this stage, the learner may still have an accent and use idiomatic expressions incorrectly at times, but he/she is essentially fluent and comfortable communicating in the second language. It takes learners from 5-7 years of exposure to a second language to achieve cognitive academic language proficiency in the (second) language (Hill and Flynn, 2006). Learners at this stage may be near-native ability in their performance in the learning content. However, learners need continued support from classroom teachers.

It is generally accepted among psycholinguists that a critical period for L1 acquisition exists. Accroding to Qingxin (2012), the ability to learn a language is limited to the years before puberty after which, most probably as a result of maturational processes in the brain, this ability diminishes. Deng and Zhu (2016) further support this, asserting that when a child enters adolescence, his or her brain has fully matured and the nervous system is no longer flexible, which makes it be more and more difficult to learn a language. It is

commonly maintained that children who are older than two years old and younger than adolescence (10– 12 years old) and whose brains are malleable are in the critical period for language acquisition (Arabski and Wojtaszek, 2010; Deng and Zhu, 2016). Following the above reviews on first language acquisition therefore, a language learner could be said to have attained a critical age in language acquisition at the normal speech stage. A number of studies (Johnson and Newport, 2009; Birdsong and Molis, 2011; Wang, 2015) attest that the Critical Period Hypothesis for second language learning indeed exists, and that it originated from studies in biology (Vanhove, 2013) but were later further established to be motivated by psychological factors, including age and learning environment. However, there is no consensus among existing scholars as regard what age could be particularly regarded as critical period for second language learning. Nevertheless, it is established that second language users who are exposed to L2 at earlier stage show higher competence level than those who come in contact with L2 as adults. It is also commonly reported that learning is more productive in the first 5 to 7 years of exposure to a second language (Birdsong and Molis, 2011; Vanhove, 2013). Deng and Zhu (2016) add that, at that stage, learning language is an easy and natural process. It is worthy of note that this is in line with Hill and Flyn's (2006) view that attaining proficiency in second language takes 5 to 7 years of exposure, which is the advanced fluency stage of second language learning. Thus, it may be surmised that while the normal speech stage is the critical period for L1 acquisition, the advanced fluency stage is the critical period for second language learning. Since the determination of the critical period for second language learning is not within the scope of the current research, future study may undertake such task.

Participants in this study are L2 users of English. Particularly, they have attained intermediate fluency and advanced fluency stages of learning the English language as a second language. Thus, stages V and VI are relevant to the study. ESL in these stages are considered suitable for the study because their speeches (if they were in normal situation) in the second language (English) are expected to be fluent and manifest minimal errors, among other features of the two stages of second language learning. Hence, language patterns of the selected Nigerian aphasics and autistics who have attained these stages can be compared against ESLs who do not suffer from brain impairment. This will further help

to dinstinguish instances of L1 influence from the effects of the participants' neurological imbalance.

2.1.3   The nervous system

The nervous system is a complex collection of nerves[1] and specialised cells known as neurons that transmit signals between different parts of the body. The nervous system controls the body sensations. It also controls the body's conscious and unconscious operations. Zimmermann (2012: 24) describes the nervous system as essentially the body's electrical wiring. It is composed of excitable nerve cells (also called neurons) and synapses. These neurons operate on excitation or inhibition and they conduct impulses from sensory receptors to the brain and spinal cord. The nervous system, essentially, performs three main functions: sensory input, data integration and motor output. The sensory input function refers to information gathering in the body. The neurons, glia and synapses play crucial role in carrying out this function. The information gathered by the body constitutes the data to be processed by way of data integration. This occurs only in the brain. After the brain has processed the information, impulses are then conducted from the brain and spinal cord to muscles and glands, which are called motor output.

Structurally, the nervous system has two components: the central nervous system and the peripheral nervous system; as shown in Figure 2.1.1 below. The central nervous system (CNS) represents the largest part of the nervous system, including the brain and the spinal cord. The peripheral nervous system is the rest of the nervous system outside of the brain and the spinal cord.

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[1]Nerves are cylindrical bundles of fibers that start at the brain and central cord and branch out to every other part of the body.
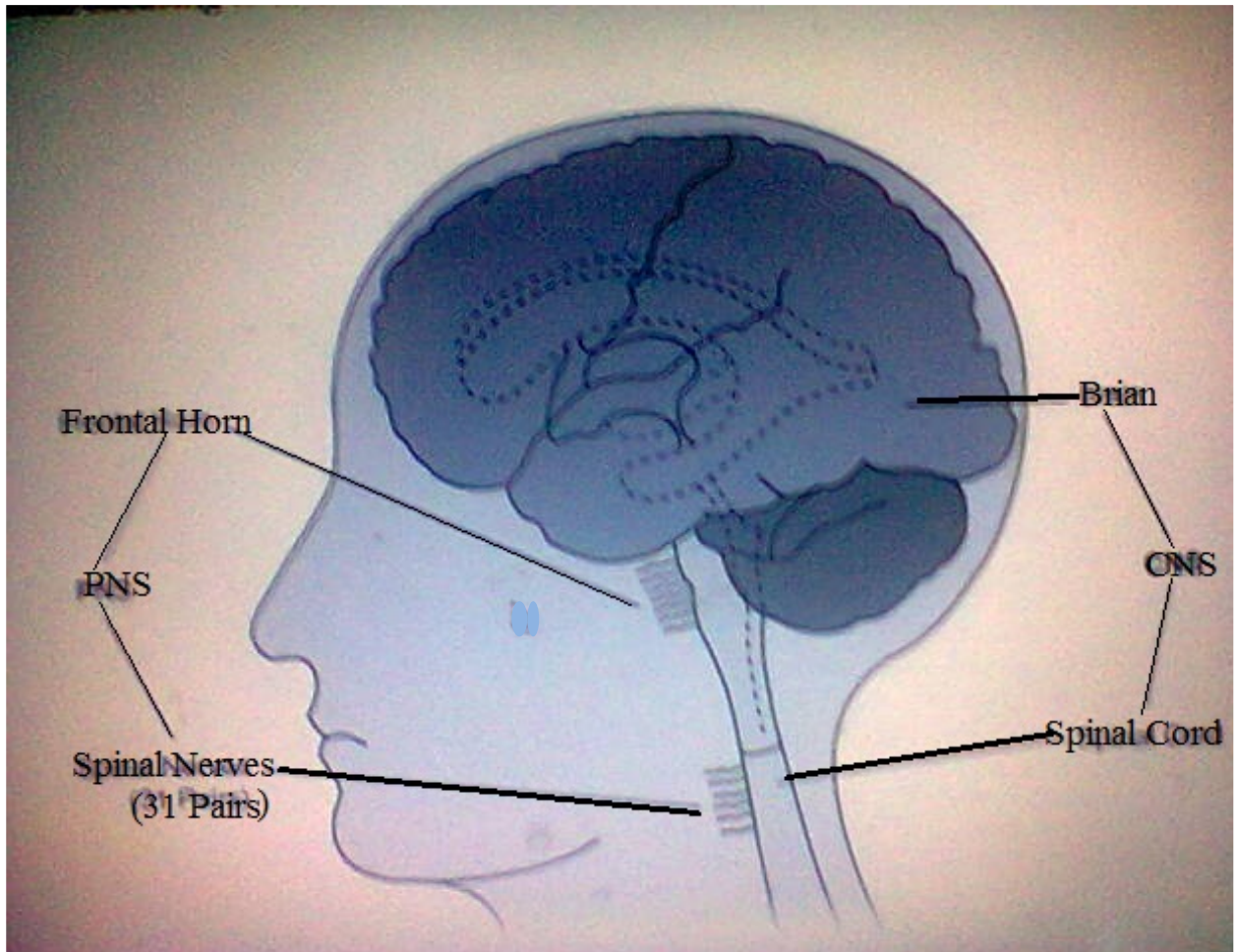
Figure 2.1.1: The human nervous system (Noback, Strominger, Demarest and Ruggiero, 2005: 49)

The thrust of this study is woven around the brain. Thus the discussion in this section focuses on the human brain.

2.1.3.1 The human brain

The brain is the seat of the human mental faculty. It assumes vital functions by influencing heartbeat rate, body temperature, and breathing, among others. It is as well responsible for performing the so-called 'higher' functions, such as language, reasoning and consciousness. A side view reveals three major divisions in the human brain. The first of these is the cerebrum, which is the largest part and constitutes what is usually referred to as the brain (Zimmermann, 2012). It is made of a billion neuron cells (Lewis and Akinbo, 2014). A neuron cell looks like a tree trunk with branches and roots at the ends. These

branches and roots are called dendrites. Dendrites catch and send messages at very high speed. Figure 2.1.2 shows the structure of a neuron cell.
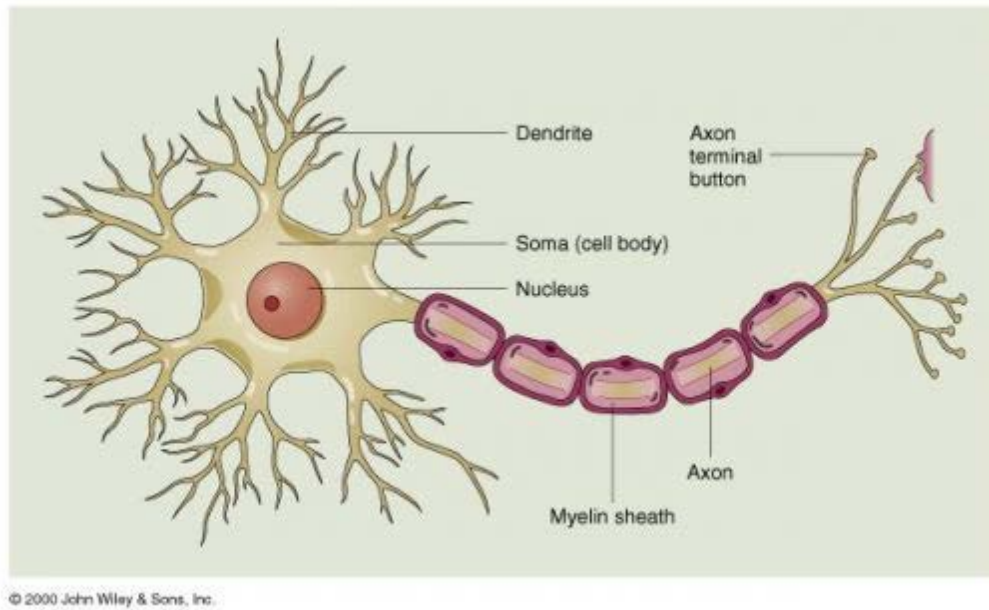
Figure 2.1.2: Structure of a neuron cell (Zimmermann, 2012: 27)

The second division is the cerebellum, which lies behind the cerebrum and is primarily a movement control centre with connections with the cerebrum and the spinal cord. The brain stem is the third division of the brain. It forms the stalk from which the cerebrum and the cerebellum sprout and serves to relay information to and from the spinal cord, and to regulate vital functions such as breathing. Lewis and Akinbo (2014) hypothesise that tone processing may may be localised in the brain stem.

The cerebrum (that is, the brain) is divided into two cerebral hemispheres (left and right; shown in Figure 2.1.3) by the longitudinal fissure, connected by a band of cross fibers (corpus callosum). The surface of the hemispheres is covered with a layer of grey matter, the cerebral cortex, made up of nerve cell bodies (neurons), while the inner layer— the white matter— consists mostly of long axons. While the white matter is responsible for information transmission, carrying nerve electrical signals throughout the brain and the rest of the body, the grey matter, on the other hand is mainly responsible for information processing. Clinical as well as experimental evidence indicates that the cortex is the

primary seat of human reasoning and cognition, including most aspects of language. Considering its prominence in the human brain, the cortex deserves further description.
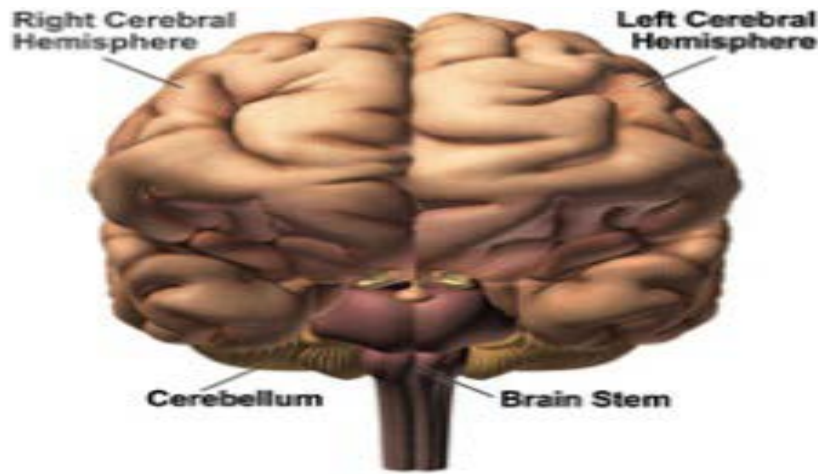
Figure 2.1.3: Hemispheric division of the brain (Noback, Strominger, Demarest and Ruggiero, 2005: 62)

The right hemisphere plays a key role in spatial abilities and face recognition while the left hemisphere hosts crucial networks involved in language, mathematics and logic (Noback *et al.*, 2005; McDowd *et al*. 2007). The two hemispheres communicate through a band of up to 250 million nerve fibres called the *corpus callosum*. Therefore, though there are some activities that appear to be dominant in one hemisphere, both hemispheres contribute to overall brain activity, each hemisphere is highly complex, and there are subsystems linking the two hemispheres (Kinser, 2000; McDowd *et al*. 2007; Bambini, 2012).

The two hemispheres (left and right) further divide into lobes — occipital, parietal, temporal and frontal— (see figure 2.1.4). The right hemisphere controls most activities on the left side of the body, and the left hemisphere controls the activities on the right side of the body. Thus, a stroke suffered in the left hemisphere affects the right side of the body.
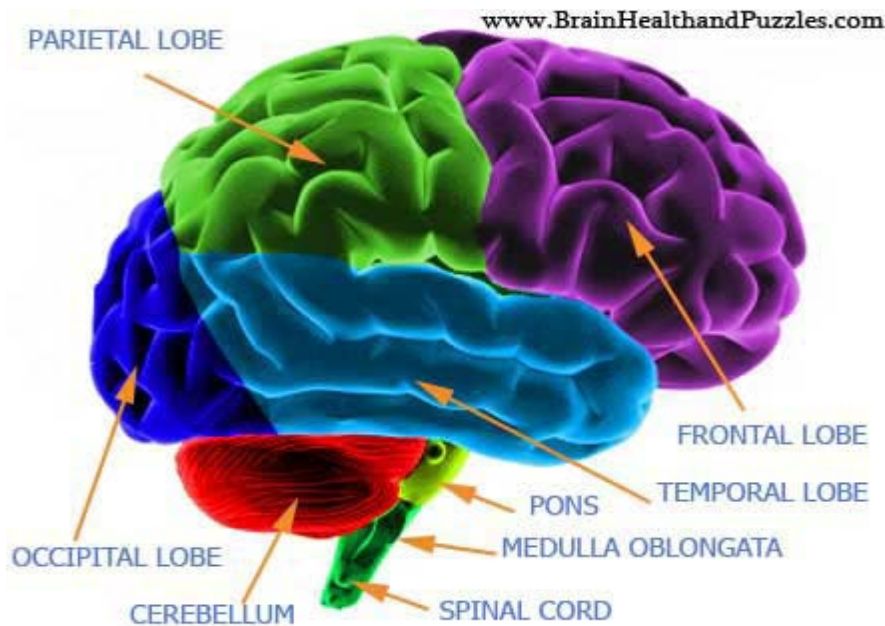
Figure 2.1.4: Hemispheric lobes (Zimmermann, 2012: 29)

The *frontal lobe* is involved in planning and action; the *temporal lobe* plays an important role in language, audition, memory, and object recognition; the *parietal lobe* is involved in sensation and spatial processing; and the *occipital lobe* is essential in vision (Friederici, 2011; Lieberman, 2002; Borensztajn, 2011). Each lobe is further subdivided into interlocking networks of neurons specialised for very specific information processing. Any damage to these networks will disrupt the skill(s) they underlie, and each possible structural anomaly corresponds with a specific deficit. While any complex skills depend on the coordinated action of neural networks across lobes, each lobe can be approximately associated with particular functions.

The human brain is well protected by the skull yet there are a number of possible ways for the brain to be injured. Regardless of the cause of the brain injury, it is unlikely that the entire brain will be equally affected. The location as well as extent of damge determines the degree of difficulty an affected person goes through (Raichle 2008; Friederici, 2011). While some injury might result in visual problems only, some other may affect certain set of muscles. Apart from the biological function of the brain, it is also responsible for language development. Thus, the smooth functioning of neurological system is the basis for proper functioning of language. By implication, any disruption in this system leads to various kinds of linguistic disorders.

2.1.3.2 Language localisation in the brain

The physical seat for the representation and processing of language is hosted in the brain. Insight into its anatomy in relation to language (speech comprehension, speech production, and speech fluency) is important to understanding aphasia and autism. As proposed by Chomsky (1957), translating sound sequences into representations of meaning is largely a function of the brain. This implies that the brain is primed to process certain stimuli (according to universal language rules).

Although all structures of the brain interact, language is traditionally thought to be implemented in the cerebral cortex. It controls movement, speech, memory and intelligence. Several sources (Massaro 2001; Stowe, Haverkort and Zwarts 2005; McDowd *et al*. 2007) have confirmed that the portions of the cortex that are involved in language processing are located in the frontal and temporal lobes of the left hemisphere. These portions refer to the Broca's and Wernicke's areas (shown in Figure 2.1.5 below). Studies on contralateral brain function have established that the right hemisphere supervises the left side of body and left hemisphere supervises right side of body. It is also established, in almost all non-southpaw individuals (Lewis and Akinbo, 2014), and most non-southpaw individuals, language is left-lateralised. However, a number of studies have revealed that language is not completely left-lateralised. Lindell (2006), Clark and Khami (2010) and Friederici (2011) for instance, have highlighted the role of the right hemisphere too: initially linked to pragmatic and emotional aspects of language, right hemisphere areas are indicated as complementing the left in processing standard aspects of language too. Evidence have been provided from brain lesion and hemispherectomy patients. For instance, studies on brain lesions (Chance and Crow, 2007; Karolis, Corbetta and de Schotten, 2019) reveal that language usually does not develop normally in children with early left-hemisphere brain lesions whereas babbling, vocabulary-learning delayed in children with right-hemisphere brain lesions. Further results from removing one hemisphere of the brain in adult hemispherectomy patients (Tzourio-Mazoye, 2016; Kong *et al*, 2018; Karolis, Corbetta and de Schotten, 2019) reveal that with the left cerebral hemisphere removed, patients lose most (but not all) of their linguistic competence, lose the ability to speak and process complex syntactic patterns, retain some language comprehension ability whereas, with the right cerebral hemisphere removed, patients

displayed difficulty in understanding jokes and metaphors, and they cannot use loudness and intonation as cues to whether a speaker is angry, excited, or merely joking. In addition, Lewis and Akinbo (2014), following their experimental examination of speech production in subjects who spoke non-tonal language (English) or tonal language (Yoruba), have demonstrated that "the right hemisphere is the epicentre of tonal activity". It is not arguable that tone is a major prosodic feature of language processing (in terms of both production and perception). It is most likely, therefore, that while language is lateralised to the left hemisphere of the brain, the right hemisphere also has a role in normal language use.
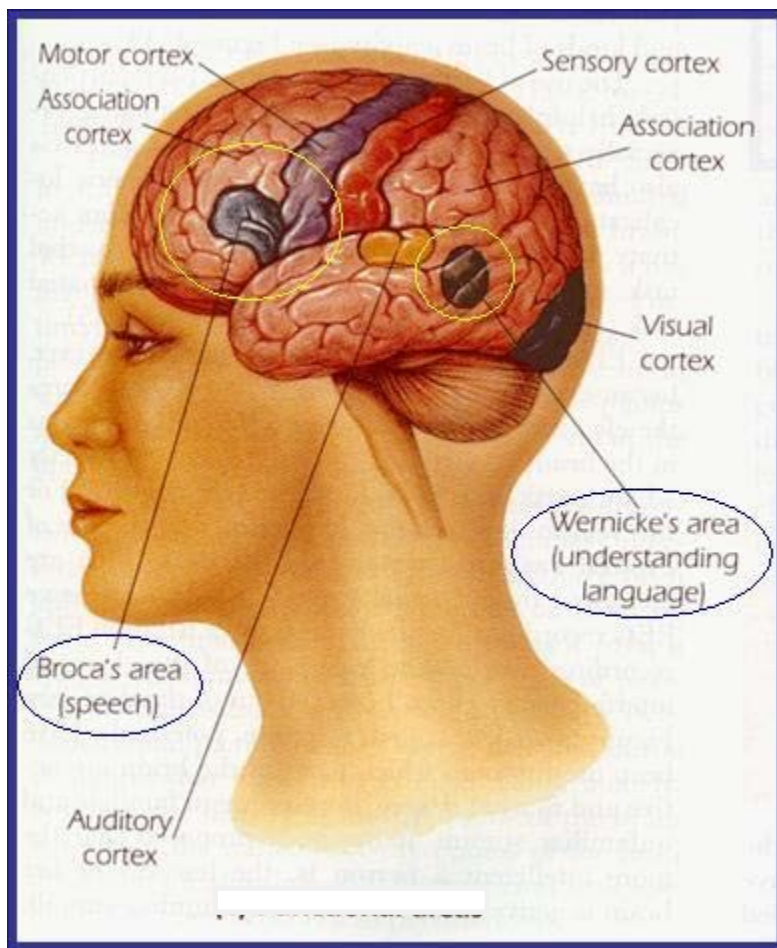
Figure 2.1.5: Language areas in the brain (Noback, Strominger, Demarest and Ruggiero, 2005: 66)

Broca's area is responsible for correct processing and production of syntactic (that is, grammatical) information of sentences. Also, it is activated during phonetic and

phonological tasks, that is, speech production. Broca's area is as well activated during communication using hand gestures and body language. The Wernicke's area (named after neurologist and psychiatrist Carl Wernicke, who discovered it in 1874) is located in the temporal lobe of the brain. It has functions related to language and speech comprehension. Wernicke's area is responsible for correct processing and understanding of sentence meanings. It is activated for understanding written and spoken language. It retrieves words and their meanings from the mental dictionary. Since this study focuses on use of the English morphology and syntax, participants are drawn from among those who suffer impairment in the Broca's area (of the brain).

2.1.4   Brain impairment and reparability

It is already discussed in chapter one (see section 1.4) of the study that damage to the brain may occur as a result of physical injury to the brain (resulting from car accidents, CVA, cerebral fractures and the like) or as a result of congenial factors. These variations in causes birthed the classification of brain disorders into acquired and developmental disorders. Waldmann (2015) and Gelgano *et al.* (2017) assert that brain injury can occur when the brain moves back and forth within the skull and the greatest amount of damage is often in the temporal and frontal lobes where the brain comes into contact with bony structures. World Health Organisation (2011) reports that the leading causes of (acquired) brain damage among Nigerian population include motor vehicle accidents (MVAs), falls, firearm accidents, and sports/recreational injuries. It is not in doubt that a brain damage is overwhelming and frightening both for the person who has suffered the injury and their relatives. However, it is interesting to note that brain damage is not the end of it all for affected persons; some degree of "plasticity," that is, brain's ability to reshape and built new connections (Stein and Hoffman 2003; Mehta, 2019) and recovery may be possible.

Nevertheless, recoverability varies from one person to another, depending on the severity of the damage, the location, the affected person's health status, age among other factors. Aside from the type and severity of a brain damage and the medical care received, Centres for Disease Control (2015) maintains that recovery is influenced by factors including individual patient characteristics, social environmental factors, and access to rehabilitation services. Individual characteristics, such as age and pre-injury functioning, can influence

outcomes after repair. The degree to which they influence outcomes depends upon the severity of injury. Social-environmental factors (such as socioeconomic status, social support, caregiver and family functioning) also can influence outcomes after repair. In addition, access to rehabilitation services can be negatively impacted by a lack of specialty providers, particularly in rural areas, as well as a lack of financial resources available to a person with brain impairment.

A number of studies on reparability of damaged brain (Stein and Hoffman 2003; Ashley 2012; CDC 2015; Hylin, Kerr and Holden 2017) have categorised approaches to promoting functional recovery from brain injury into three. These are the neuroprotective, neuroregenerative and neuroreorganisation approaches. The neuroprotective approach (also called neuroprotection) involves the administration of compounds that protect neural tissue from cytotoxic and excitotoxic effects of the injury cascade. Usually, this is to avoid further complications in the treatment process (Ashley, 2012). The second approach, neuroregeneration denotes neuronal and vascular regeneration (Gelgano *et al.*, 2017). It involves administration of trophic factors or transplantation of cells to reestablish normal neural structure. According to Hylin, Kerr and Holden (2017), neuroregeneration also involves the use of either pharmacologic agents or cell transplantation to enhance neuroregenerative mechanisms after injury. Ashley (2012) states that the brain increases production of trophic (growth) factors in response to injury. Additionally, increased use of a neural region can result in heightened focal trophic factor expression. Gelgano *et al.* (2017) maintain that neuroregenration plays a crucial role in brain recovery after brain injury in that its application can generate a particular group of astrocytes that can go through division and differentiation into new neurons. These newborn neurons have been proposed to play a role in replacing the damaged neurons in the olfactory bulb or in the cortex after brain damage. In this light, trophic factors enhance both the repair of injured structures and the creation of new neurological structures to enable reacquisition of function, especially under ideal environmental conditions.

The neuroreorganisation approach involves the use of behavioural (physical exercises or pharmacotherapies) to enhance rehabilitation. Pharmacotherapy denotes administrating pharmacological agents to enhance the effect of rehabilitation. Thus, it involves

administration of drugs (pharmacological agents) to exert a complementary effect on motor recovery (especially stroke patients). Neuroreorganisation also entails using behavioural training or manipulation to stimulate the brain to relearn various tasks (Ashley 2012; Hylin, Kerr and Holden, 2017). According to Hylin, Kerr and Holden (2017), behavioural training rehabilitation consists of therapies broadly categorised as physical and cognitive. Physical rehabilitation focuses on enhancing different forms of mobility by improving physical factors such as strength and endurance, as well as providing assistive devices that facilitate independence. Cognitive rehabilitation (CR) consists of a group of therapies used to manage deficits in thought processes and behaviour (such as comprehension, perception, and learning). Fleminger and Worthington (2017) affirm that cognitive rehabilitation may also be used to help improve attention, memory, and language abilities.

Thompson (2000) avers that the rehabilitation of patients with (acquired) brain injury involves a comprehensive effort by several members of an interdisciplinary team including but not limited to physicians, nurses, physiotherapists and occupational therapists, speech and language pathologists and linguists. Speech and language therapist and linguists will assess speech and language skills in order to identify the person's individual pattern of communication difficulties. They may, based on their assessment findings devise a therapy programme. This view is supported by Prosser and Morris (2017) and Fleminger and Worthington (2017), asserting that speech and language therapists (working with linguists) help people to improve their communication and language skills, usually by recommending the use of oral-motor exercises. Mehta (2019) notes the key to regaining speech in brain damage condition is to practice speech therapy activities several times a day. This may include understanding and expressing both written and spoken language and improving speech clarity.

Also, linguistic research has contributed towards improving communication and language skills of people suffering from brain damage. For instance, functional neuroimaging with word generation task has been used in neurolinguistic research on normal subjects and on patients with brain damage (Salles *et al.*, 2012). Recently also, there has been evidence from neuroimaging studies on lexical-semantic processing (Yu *et al.*, 2017), providing

evidence that semantic priming effects can be found both in fluent and nonfluent aphasias, and that these effects are related to an extensive network which includes the temporal lobe, the prefrontal cortex, the left frontal gyrus, the left temporal gyrus and the cingulated cortex. Thompson (2000), studying patients who have problems with complex grammar and sentence construction, has also found that language training following a stroke can improve brain activity. She posits that the training helps patients "recruit" brain areas predisposed for language to assist with grammatical tasks and other lost functions.

2.1.5   Autism Spectrum Disorder

Autism is a complex, serious, biologically based disorder of brain development. It was first described in 1943 by Dr. Leonard Kanner, who initially called it infantile autism. According to the American Psychiatric Association (2000) and the National Institute of Neurological Disorders and Stroke (2010), the disease is characteristically marked by three major abnormalities. These are impaired social interaction, impaired communication ability, and repetitive and/or obsessive behaviours. Each of these abnormalities can occur in varying levels of severity.

Though the effect of having autism is always serious, people living with autism often differ greatly from one another in many ways. Kanu (2005) and Zander (2005), among other sources classify the degrees of complexity in autistic condition into severe, average and mild. Similarly the level of abilities can vary from severe learning disability to having above average intelligence. The variations in the degree of severity of the behavioural expressions for autism however are dependent on the individual's age and level of development (Zander, 2005).

Studies such as Baron-Cohen (1995), Weigel (1998) and Zander (2005) have identified four variations within the autism spectrum. These are Autistic Disorder, Asperger's Syndrome, Pervasive Developmental Disorder (PDD) and Childhood Disintegrative Disorder (CDD). Sources (Baron-Cohen, 1995; Weigel, 1998; Zander, 2005) record that Pervasive Developmental Disorder and Childhood Disintegrative Disorder are found mainly in infants and that life expectancy of victims is maximum of 5 years; but persons affected by Autism and Asperger's Syndrome (sometimes) live up to 21 years. Since the

first two largely affect infants (who could not have attained the intermediate fluency and advanced fluency stages of second language learning), people living with such neurological disorders are excluded from this study. Further, Asperger's syndrome (or Asperger's disorder) is autism in persons with average or relative below average intelligence. Thus, people suffering from Asperger's syndrome are also excluded from the study.

2.1.5.1 Common characteristics of autistic people

Sources (such as Weigel, 1998) record that a child is diagnosed as having an autistic disorder if he or she has a pattern of delayed or atypical development in three areas: social interaction, communication, and behaviour. Thus, while autistic children typically go through the normal sequence of developing some skills, and may actually have excellent abilities in some areas, they lag behind and have unusual developmental features in these three key areas (Weigel, 1998; National Institute of Neurological Disorders and Stroke, 2010).

2.1.5.1.1 Social relationships/interaction

Autistic children may show some indifference towards other people or they may be desperate to make friends. Usually, they make no success with the latter because of their inability to understand social cues, others' behaviours, and feelings. Also, they lack the ability to form an understanding about what other people are thinking or feeling, which Kanu (2004) calls mentalising ability. In addition, they lack ability to read facial expressions, make eye contact, understand the tone of voice, and to interpret feelings. Consequently, they often avoid interaction altogether in social situations. It is most likely therefore, that people living with autism (PLWAut) have difficulty in cooperative play with other people or they may not engage in such at all. Impairments in social and environmental exploration restrain autistic children from learning many fundamental skills and hinder their developmental progress (Kanu, 2004; Kelly, Garnett, Attwood and Peterson, 2008).

Furthermore, PLWAut often behave as if other people are objects. For example, an autistic child may use an adult's hand like a tool. Weigel (1998) posits that most children with

autism have an unusual pattern of eye contact. He adds that many autistic people give eye contact intermittently, but they do not use it to assess other people's response. Some children give too much eye contact, using a fixed stare which leads to discomfort in other individuals. In sum, the social interaction challenges of autistic people can be described as socially passive and socially aloof. However, they often function better when they relate with familiar adults and family members.

As a result of these social disadvantages of the autistic people, this study adopts the development of joint attention as an important social skill (particularly pointing and showing) in interacting with the target group. The development of joint attention may be a prerequisite for the development of speech as well as social skills.

2.1.5.1.2   Behaviour and interests
Motor stereotypes (such as hand flapping, spinning, rocking and other unusual movement patterns), delayed and unusual play behaviours are often noticed in the behaviour of PLWAut (Kanu, 2004). In some cases, they may avoid toys or play with them in unusual ways such as lining them up, or sorting them by size and colour. Kanu (2004) adds that they often tend to be repetitive and unimaginative. Hwang (2008) however, notes that some autistics children develop functional play, especially when they find themselves within a known and stable routine. Thus, PLWAut can be said to have difficulty with changes or dynamic contexts. Hwang (2008) adds that in some cases autistic children can cope with change, if it is explained such that they understand what is happening. As part of the inclusion criteria for this study, participants must manifest functional routines.

2.1.5.1.3 Communication
Communication (both verbal and non-verbal) is characteristically difficult for PLWAut. Speech may be completely absent in some cases, or may be present but impaired in other cases (Stockbridge, Happe and White, 2014). Also, speech may be repetitive and focused on the individual's own obsessive ideas rather than having relevance to the conversation, which often indicates their inability to read into the deeper meaning of what is being said or done. Zander (2005) asserts that persons with autism have a delay in, or a lack of language development. Language impairment in autistic condition may also manifest in

the form of inability to initiate and contribute to conversations. Their difficulties with understanding emotions, gestures and other body language/cues have serious consequences in their social communication abilities. Some other communication difficulties of PLWAut available in the literature are inappropriate facial expressions, unusual use of gestures, delay in or lack of expressive language skills (Zander, 2005); odd pitch or intonation, abnormal speech rate, unusual rhythm or stress; monotone or lilting voice quality (Whitehouse, Barry and Bishop, 2008); echolalic speech, immediate or delayed literal repetition both of self and of others, as well as restricted vocabulary (Stockbridge, Happe and White, 2014).

2.1.5.2 Diagnosing autism

Autism is diagnosed by qualified professionals who conduct comprehensive psychological and behavioural evaluations. These evaluations can include clinical observation as well as developmental and health histories reports from parents. Also, some psychological testing, speech and language assessments, and possibly the use of one or more questionnaires developed specifically for people with ASDs may be used for diagnosing autism. Thus, autism is not diagnosed by medical test such as blood test or brain scan. However, a child is said to be autistic only after the child has been observed in several different (structured and unstructured) settings. The symptoms of autism are different in every child. However, it can be detected within the first 18 months from birth. Usually, most cases of autism are reported by the time a child is 3 years old. At infancy, usually before a child clocks one, autistic children do not babble or make meaningful gestures. By 16 months of age, such children do not speak, and they do not progress to the two-word utterance stage. In some, it may be very critical that they do not respond to name. Generally also, they may be attached to one particular toy or object. In some cases, they do not smile, or at times they seem to be hearing impaired (Ruble and Gallagher, 2004).

Among the many diagnostics instruments that have been developed for diagnosing autism, the Modified Checklist for Autism in Toddlers (M-CHAT), the Childhood Autism Spectrum Disorders Test (CAST) and Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) are commonly used globally (Robins *et al*., 2001; Robins and Dumont-Mathieu, 2006). These instruments are free, they tackle different age groups (one

younger children and the other older ones), have gone through cross-cultural adaptation and appropriate translation to many languages, and have been researched in various countries (Robins *et al*., 2001).

Due to the researcher's lack of access to these diagnostic tools (M-CHAT, CAST, DSM-IV-TR), the features of autism available in the literature, in addition to doctors' and special educators'/caregivers' identification are used for the selection of participants for the study. The validity of such identification is ascertained by available details in the file records of the participants.

2.1.5.3 Epidemiology of autism

Autism was once considered a relatively rare condition but recent epidemiological data have radically altered this perception. The epidemiology of autism varies in the composition of the population surveyed, sample size, participation rates, diagnostic criteria, instruments used as well as recruitment mechanisms (Fombonne, 2009). A major challenge to the discussion of the epidemiology of autism is that there is no database of persons with autism, particularly in Nigeria. Based on a review of the studies in this field, the following estimates can be made. Zander's (2005) study among children aged 4-17 years estimates reveals that 1-2 children per thousand in Sweden have autism. Survey in the US by the Center for Disease Control and Prevention (CDC, 2008), estimates the prevalence of ASD in the US as 1 in 88 children. The survey adds that it is almost five times more common among boys (1 in 54) than girls (1 in 252). In another study by the Centre in 2010, report has it that autism affects 1 out of every 110 children (CDC, 2010). Autism Speaks (2010) reports that the prevalence of autism around the world was 1 in 150. A survey in South Korea reports an average prevalence of 2.6% (Kim *et al*., 2011). Another study in England estimated a prevalence of ASD at almost 1% in adults (Brugha *et al*., 2011). In relation to the geographical scope of this study, Lotter (1978) and Longe (1976) found that the prevalence of autism in Africa, including Nigeria was 0.7%. Though Kanu (2004) avows that the prevalence of this disorder in Nigeria alone was at 0.7%, Bakare *et al*. (2011, 2012) assert that the prevalence had increased to 0.8% and in 2011 and in 2012, it has increased to 11.4% in Nigeria. The increase in the prevalent rate calls

for quick intervention as these conditions are known to affect victims' language, communication and social interaction.

2.1.5.4 Treatment of autism

The studies above (Zander, 2005; CDC, 2008; 2010; Autism Speaks, 2010; Kim *et al.*, 2011; Brugha *et al.*, 2011; Bakare *et al.*, 2011; 2012) all maintain that there is no cure for ASDs. Interestingly, Autism Speaks (2010), CDC (2010) and Brugha *et al.* (2011) point that appropriate, lifelong educational approaches, support for families and professionals, and provision of high quality community services can dramatically improve the lives of persons with ASD. To date, programmes involving behaviourally based interventions have been designed to improve parent-child interaction. Also, there are other intervention programs that emphasise on developing social and communication skills. These appear to have the strongest supporting evidence for management of autism. Adequate descritption of the morphosyntactic characteristics of Nigerian autistic speeches promises to enhance communication with pople living with this disorder.

2.1.6   Aphasia

The previous chapter presents a general description on aphasia. The summary of the discussion on the subject is that aphasia mostly occurs as a result of a lesion in the cerebral cortex. Also it is seen in the chapter that symptoms of aphasia could be detected at all linguistic levels, such as at the phonological (sound), morphological and syntactic (grammar), lexical (word), and pragmatic (use) levels. From the definitions explored in the previous chapter, it is clear that aphasia is impairment of central language abilities following brain damage. However, the syndrome manifests diverse symptoms which have engendered the different nomenclature used for distinguishing one from the other. These include *aphasia* (total loss), *dysphasia* (partial loss), *alexia* (loss of reading), *agraphia* (loss of writing), *dysgraphia* (some degree of loss of writing), *dyslexia* (some degree of loss of reading), *agnosia* (loss of knowledge), *apraxia,* (articulatory disorder) *dysarthria* and *dyspraxia* (some degree of articulatory disorder) (Gorno-Tempini *et al.*, 2011; Gupta and Singhal, 2011).

2.1.6.1 Types of aphasia

There is no universal agreement on the classification of aphasia subtypes, despite extensive debate throughout the history of neuropsychology. However, scholars subscribe to two localisationist models that attempt to classify aphasia by major characteristics, and then link these to the areas of the brain in which the damage has been caused (hereafter, lesion location). The first of these models is the Boston (neo-classical) classification which is based on the reintroduction of the Wernicke-Lichtheim model by the Boston neurologist, Norman Geschwind, (hereafter, Boston's model). The second model is the Luria's model, which hinges on the Russian physician and neuropsychologist, Alexander R Luria's, theory of functional systems of the brain. Generally speaking, lesion location[2] is either anterior or posterior; these have consistently been labelled non-fluent/expressive and fluent/receptive aphasia, respectively. Fluent aphasias, also known as receptive aphasias, are impairments related to language reception and auditory comprehension. They are labelled 'fluent' because speech is easy and fluent, showing little difficulties in language output. Non-fluent aphasias, also called expressive aphasias, are characterised by effortful and non-fluent speech. Affected person has relatively good auditory comprehension. The Boston's model classifies conduction aphasia, Wernicke's aphasia, Transcortical sensory aphasia and Anomic aphasia as fluent aphasias while it classifies Broca's, global, and transcortical motor aphasias as non-fluent. Unlike Boston, Luria only recognises anterior and posterior aphasias. Further classification within the model categorises dynamic and efferent motor aphasias as anterior while afferent motor aphasia, acoustic-gnostic (sensory) aphasia, acoustic-mnestic aphasia and semantic (amnestic) aphasia are categorised as posterior aphasic types.

Global aphasia

Global aphasia is the most common type of aphasia (Franzen-Dahlin *et al*., 2008). Statistics shows that it affects as many as 25-32% of aphasic patients (Godefroy *et al.*, 2002; Franzen-Dahlin *et al*., 2008). Individuals with global aphasia have severe communication difficulties and may be extremely limited in their ability to speak or comprehend language. Global aphasics can neither read nor write; neither can they speak

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[2] Lesion location refers to lesion sites that are predominantly in front of or behind the central sulcus.

nor understand spoken words (Pedersen *et al*., 2004; Franzen-Dahlin *et al*., 2008). Global aphasia may often be seen immediately after the patient has suffered a stroke which aggravated to greater brain damage, severe and lasting disability.

Wernicke's aphasia

Wernicke's aphasia is classified as a fluent aphasia. The name derives from the Wernicke's area of the brain, which is the particular region where the brain damage occurs. While the ease of producing connected speech is not much affected in this form of aphasia, the ability to grasp the meaning of spoken words is chiefly impaired. Also, reading and comprehension are often severely impaired (Franzen-Dahlin *et al*., 2008; Gupta and Singhal, 2011). In Wernicke's aphasia, patients may produce lengthy sentences of considerable morphosyntactic complexity. However, their expressive language is not normal; it is often marred by severe word-finding difficulties, which brings about circumlocution and semantic paraphasias. Speech in such condition is also characterised by neologisms, and in the worst cases, long strings of jargon that are totally incomprehensible to the listener (Franzen-Dahlin *et al*., 2008). Thus, Wernicke's aphasics may speak in long sentences that have no meaning, add unnecessary words, and even create new words. Their inability to comprehend may also indicate that Wernicke's aphasics have difficulty understanding speech.

Anomic aphasia

A condition in which a person persistently shows inability to supply required (content) words for the things they want to talk about is called anomic aphasia (Pedersen *et al*., 2004). Speech in such condition may be fluent in grammatical form and output; it is however, full of vague circumlocutions and expressions of frustration. Anomic aphasics understand speech well, and in most cases, they read adequately. Difficulty finding words is evident in writing (Pedersen *et al*., 2004).

Conduction aphasia

Studies show that this is a comparatively rare form of aphasia. Spontaneous speech production is relatively normal, fluent and correct, although minor phonemic paraphasias may be introduced. Patients struggle to repeat verbatim, and they may eventually record success at this when speech does not necessarily require function words.

Transcortical sensory aphasia

Transcortical sensory aphasia is similar to Wernicke's aphasia. Patients make fluent and paraphasic speech and they can repeat statements verbatim. However, they understand little of what they repeat or read.

Transcortical motor aphasia

Speech in transcortical motor aphasia is non-fluent. While repetition is intact, speech may be troubled by phonemic paraphasias. In most cases, speech lacks connective words. In severe cases, speech is virtually lost. Comprehension is intact but writing is impaired.

Broca's aphasia

Broca's aphasia is non-fluent, and the most generally recognised form of aphasia. The syndrome is usually associated with damage to the Broca's area, which is located in anterior portion of the left hemisphere. In most cases, individuals with Broca's aphasia have right-sided weakness or paralysis of the arm and leg. This is expected since the frontal lobe is also responsible for body movement. Broca's aphasia is identified when there is a disturbance in or loss of speech, but with good comprehension of spoken language. In this sense, it implies that Broca's aphasics only have problem with language production, which is the primary means by which we can communicate with them. This fact motivates the choice of this type of aphasia for this study. Kearns (2005) posits that in Broca's aphasia, vocabulary access is limited and the production of sounds is often labourious and clumsy. The person may understand speech relatively well and be able to read, but be limited in speaking/writing. Bates and Wulfeck (2005) also report that Broca's aphasia is characterised by slow and halting speech, disrupted prosody, reduced phrase and less complex syntactic constructions. They add that comprehension appears to be intact. Given this characteristics, Broca's aphasia is classified as a 'non fluent aphasia'.

The focus of the current study is language production. Attempt is made to characterise the speech patterns of persons living with aphasia. Thus, the target group for the study is those who suffer from dysphasia (that is partial loss); which falls in the category of Broca's aphasia.

2.1.6.2 Epidemiology of aphasia

It is often difficult to have a specific data on the incidence of aphasia especially because the records fluctuate from time to time. However, an approximate count can be inferred from the incidence of stroke recorded in several literature. In Italy, the prevalence varies from 1.8/1000 (Di Carlo *et al*., 2003; Basso, 2011) to 4.5/1000 (Wade *et al*., 1986) new cases per year. For the United States, the annual incidence is thought to be around 1.3% (Caradang *et al*., 2006). The prevalence of aphasia in Africa has been put at 0.25%, 0.4% and 0.5% by Nwosu (2001), Schoeman and Van der Merwe (2010), and Word Health Organisation Statistical Report (2011), respectively. For Nigeria in particular, the WHO (2011) percentage prevalence (of 0.05%) is the most recent report available at the time of this research. Thus, the determination of the study's sample size (see chapter three) is based on this (available) report.

2.1.7   The English morphology

Syntactic derivations are largely building of words from the lexicon. In the generative tradition, the lexicon is regarded as the basis for sentence construction; every language user is assumed to process words available in their lexicon, string them by following some morphosyntactic rules, and produce structures larger than the word. Lexicon refers to the pool of elements which exhibit both internal stability and external mobility. The study of internal stability and external mobility of words is the focus of morphology. Hence, morphology is the study of words, their internal structure and the changes they undergo when altered to form new words (word formation) or when they have different roles within a sentence (grammatical inflection). Internal stability suggests the ability of words to express complete meaning without external components added to it. This is characteristic of what is classified as free morphemes. External mobility refers to the possibility of attaching some elements to words such that certain grammatical or semantic features are changed to derive new words. The attached elements are called bound morpheme, or more generally, affixes. Thus, words are composed of morphemes, the smallest linguistic unit which has a meaning or grammatical function. Based on morphological features, English words are classified into simple (for example watch, play), complex (for example watchful, playful), compound (for example wristwatch,

downplay) or compound-complex (wristwatches, downplayed), depending on the formation process(es) involved. Simple words are words with just one free morpheme. A complex word has a free morpheme combined with bound morpheme(s) and a compound word combines two free morphemes.

The study of morphology comprises two subjects: inflection and derivation. Thus, morphology is traditionally divided into inflectional morphology and derivational morphology. Inflectional morphological features have been the main area of focus in psycholinguistic research as well as second language acquisition research. Such studies often make concerted efforts at explaining the mental representation of morphology. Inflectional morphology mainly concerns inflectional morphemes/affixes (such as tense in verbs or number in verbs and nouns, among others). Words containing inflectional affixes have forms and meanings that are fully predictable, given knowledge of the base and affix. For example, sing, sings, sang, has sung, singing differ in their usages in sentence construction. The differences are largely determined by grammatical features such as present tense (singular), present tense (plural), past tense, perfective aspect and progressive aspect, respectively. However, they do not change the semantics or the syntax of the base. Derivational morphology can significantly change the form, meaning and category of words. Thus, derivation is the creation of a new lexeme from an existing one. This is why words are said to be externally mobile (Lieber, 2009; Blevins, 2015). For instance, derivational affixes can change verbs into nouns or adjectives (as system-systematic); nouns into verb (character-characterise); adjectives into adverbs (beautiful-beautifully), and so on. In word formation, multiple derivational affixes may enter to word syntax in succession. For example, the word, 'nationalisation' has the derivational affixes: nation (N)- al (Adj)- ise (V)- ation (N). One of the major derivational processes in English considered in this study is nominalisation.

Nominalisation is the process of forming a noun from some other word class, precisely verbs and adjectives. Thus, the nominals discussed in this study are nominalised verbals and nominalised adjectivals. Nominalised verbals are words derived from verbs, but they exhibit nominal properties. Such nominals, by features, fall into two categories: gerund and deverbal noun (Pater, 2010; Adomako, 2012; Dana, 2013; Taher, 2015). The two are

different kinds of nominalisation which have different degrees of nominal and verbal properties; they are different in their meaning and structure.

The gerund is traditionally seen as the *–ing* form of the verb which has the function of a noun phrase (Gerner, 2012; Dana, 2013). Unlike verbal nouns, gerunds do not require *of-construction* for their grammaticality. In this study, the gerund is conceived of as a fusion of a lexical verb and a distinct nominal inflection; the mixture of nominal and verbal characteristics in *–ing* form. Examples are the italicised items in the sentences below.

1. *Dancing* is a kind of exercise.
2. *Standing* (for a long time) makes me very tired.
3. He enjoys *playing.*
4. Many students claim that their favorite hobby is *reading*.
5. The first language skills which every human acquires are *listening* and *speaking*.

Deverbal nouns are nouns that are derived from verbs or verb phrases, but that behave grammatically, purely as nouns, not as verbs (Gerner, 2012; Dana, 2013; Toosarvandani 2014); they operate as autonomous common nouns. Such verbs are almost rid of their root actions. The following sentences illustrate deverbal nouns in English.

6. I am sure that your *expectation* is to leave here a better person.
7. While getting a medical *attention* recently, my doctor hauled out a piece of *equipment.*
8. Good *readers* turn out to be creative *writers*
9. Many of the *participants* in this study were *government employees.*

The competence or otherwise of Nigerian bilingual aphasics and autistics in nominalisation and other lexical derivations is assessed in this study. Aside from providing clues to language features that may be crucial to the description of their morphosyntactic peculiarities, details about such morphological processes may be helpful with regard to designing speech rehabilitation strategies for them.

2.1.8   Functional categories

All human languages are assumed to have two basic syntactic categories: Lexical and Functional categories. Functional categories are expressed by function words, which perform a structural role in language. Traditionally, functional categories in English have been classified into three, namely complementiser, determiner and inflection (Haegeman, 1994; Black, 1998; Ouhalla, 1999).

2.1.8.1 Determiner phrase

A determiner phrase is a phrase in which at least one determiner functions as the head. In the proposition of the DP hypothesis (Abney, 1987), the main argument is that the determiner heads the phrase in which it occurs (Bernstein, 2011; Bruhn, 2015). The morphological modifications in NPs are related to the nominal category of number and to determiners, by means of which the speaker can present the content expressed by the noun (as +/- plural, +/-definite, +/- specific, +/- generic, +/- quantified and so on). One of the key characteristics of determiners is that it is difficult to move or to remove them without distorting the grammaticality of the sentence (Zribi-Hertz, 2012; Rutkowski, 2013). Given this, DP Hypothesis argues that the DP is not inside the NP at all. Rather, the NP is inside the DP as a complement to D (Abney, 1987).

2.1.8.2 Complementiser phrase

The complementiser phrase (CP) contains the functional element Complementiser (C) as its head. The importance of complementisers in grammaticality has been a major subject of previous research in cognitive linguistics and psycholinguistics. Many of the explorations (Kaltenboeck, 2009; Kolbe 2011; Tagliamonte and Smith 2015; Szmrecsanyi and Kolbe-Hanna, 2016) on the functional elements have investigated the variation between their retention and omission across languages. Most of these studies have reported that complementisers are the least problematic categories in English because they are rarely omitted, even in second language situation. Tagliamonte and Smith (2015) particularly argue that omission of complementiser may not necessarily result in ungrammaticality. This syntactic category is re-examined to ascertain the performance of

L2 users of English in language disorder situation. This functional element is crucial to grammaticality in sentence construction.

2.1.8.3 Inflectional phrase

Inflection is a process of word formation in which affixes are added to the base form of a word to express grammatical functions, meanings or attributes such as tense, mood, person, number, case, and gender (Singh and Sarma, 2011). The inflectional phrase (IP) encompasses the inflection features of the sentence's main verb. Within the tradition of the Principles and Parameters Theory, Inflection Phrase (IP) is regarded as the core of the sentence and it was said that it is headed by I^0, an umbrella term for various functional categories of the verb. Inflection hosts morphemes which encode tense, agreement, modality or aspect information. However, Pollock's (1989) Split Inflection Hypothesis has argued against the representation of inflections as a bundle of verbal features (TeNnSe, AGReement, MODality, ASPect, NEGation). Rather, each of these morphsyntactic features is considered as head on its own. Hence, there exists in some languages (like English) functional categories such as Tense Phrase (TP), Agreement Phrase (AgrP), Aspect Phrase (AspP), Negation Phrase (NegP) and Modal Phrase (ModP) (Ouhalla, 1993). However, there is also nonfinite clause in English, whose structure is accounted for as IP maximal projection rather than TP. This kind of construction differs from the TP in that the Inflection I^0 is null; it has features –TNS, -AGR. Such structure is distinguished by the fact that its verb does not mark for tense or agreement; it cannot be a modal auxiliary.

These grammatical categories serve as the heads of syntactic construction (Abney, 1987) and they allow some essential syntactic operations in the computation of language. Hence, they have scopal authority (Lamidi, 2003: 87) over other structures in sentence construction.

A number of studies have examined tense, agreement and aspect in aphasic and autistic speeches (Friedmann and Grodzinsky, 1997; Roberts *et al*., 2004; Seung, 2007; Park *et al*., 2012a, b; Walenski, Mostofsky and Ullman, 2014; Ambridge *et al*., 2015; Faroqi-Shah and Friedmann, 2015). These studies have reported that aphasics and autistics have

difficulty with the production of TP, AgrP and AspP. Apart from the fact that none of these studies examine aphasics and autistic performance in Nigerian ESL situation, they also fail to consider aphasics' and autistics' performance in the production of such structures with zero inflection. The scope of the current study, therefore, includes nonfinite constructions in the English speeches of Nigerian bilingual aphasics, with a view to filling this gap. Ouhalla (1993) and Albustanji *et al.* (2013) argue that *all* functional elements are impaired in aphasics' speech production. It is remarkable that these sources make this submission based on their findings among Ibero-Romance and Jordanian-Arabic aphasics, respectively. The current study thus examines production of functional elements among Nigerian bilingual aphasics and autistics. The study particularly considers TeNSe, AGReement, ASPect, DETerminer, COMPlementiser and zero INFLection constructions in the speeches of the selected Nigerian bilingual aphasic and autistic people.

2.1.9   Nigerian English

The English language has successfully found its way into the linguistic repertoire of the Nigerian populace. Its interaction with indigenous languages in Nigeria has given rise to the variety of English. That is a form of English usage that has the (lexical, syntactic, semantic, phonological and discourse) colouring of Nigerian indigenous languages (Ojetunde, 2013). However, the heterogeneity of Nigerian indigenous languages, education and international intelligibility, among other factors, have brought about scholarly attempts towards the categorisation of the Nigerian English varieties, and the establishment of its standard variety.

2.1.9.1 Varieties of Nigerian English

Going by Awonusi and Babalola's (2004: 169) description, Nigerian English is a variety that has standard and non-standard usages, which vary in their relative frequency of occurrence in the speeches of Nigerian users of English. They add that the usages vary according to users' level of competence in English. Thus, it is evident that there are varieties of Nigerian English. Various attempts have been made towards categorisation of the varieties, using various yardsticks. Brosnaham (1958), for instance, used education and arrived at levels 1: spoken by those without formal education (Pidgin); 2: spoken by those

who have had primary school education; 3: spoken by those who have secondary school education; and 4: spoken by those with university education. He adds that most speakers belong to level 2; level 3 is (according to him) marked by increased fluency and wider vocabulary; and level 4 is close to Standard English but retains some features of levels 2 and 3.

Working with the degree of deviation from, or approximation to the Standard British English (SBE) as well as degree of international intelligibility and the extent of social acceptability within Nigeria as his descriptive tools, Banjo (1971) also identifies four varieties of English spoken by Nigerians. Variety 1 is marked by wholesale transfer of the phonological, syntactic and lexical features of Nigerian languages to English. This is spoken by those whose knowledge of English is very imperfect. He affirms that that this variety is neither socially acceptable in Nigeria nor internationally intelligible. Variety 2 has its syntax close to that of SBE, but with strongly marked phonological and lexical peculiarities. According to him, this variety is spoken by up to 75 per cent of those who speak English in the country. This variety is socially acceptable, but with rather low international intelligibility. He posits that Variety 3 is close to SBE both in syntax and semantics; similar in phonology but different in phonetic features as well as lexical peculiarities. It is socially acceptable and internationally intelligible. He adds that it is spoken by less than 10 per cent of the Nigerian population. Variety 4 is identical with SBE in syntax and semantics, and it has identical phonological and phonetic features of British regional English. It is said to be maximally internationally intelligible but socially unacceptable; and it is spoken by only a handful of Nigerians born or brought up in environments where English is L1, such England and America.

This study adopts Brosnahan's type 4 and Banjo's types 3 and 4 of Nigerian English. The choice of these types helps the researcher to overcome the challenge of determining when a morphosyntactic variation is genuinely from the language disorder. Working with the submissions of the scholars, it is assumed that the participants, who fall in the category of Nigerian users of English in the selected types, have overcome their native language influences in their use of English. Thus, the features of the selected varieties form the basis for the assessment of grammaticality in the participants' speeches.the participants in

this study have attained the intermediate fluency and advanced fluency (see 2.2.2) stages of acquisition of English as a second language.

2.1.9.2 Syntactic features of Nigerian English

The features that have been proposed as identifying characteristics of NE are mostly similar in nature at the levels of phonetics and phonology, syntax, lexis, semantics; discourse analysis and stylistics. Bamiro (1995), Igboanusi (2006), Lamidi (2007), Gut and Fuchs (2013) and Edem (2016) are few notable studies on the syntax of Nigerian English. These studies differ from other available studies (on the Nigerian English syntax) in that while many others tend to consider Nigerian English as a grammar of errors, the mentioned sources argue for features that could be accommodated in daily interaction and conversation.

Bamiro (1995) identifies reduplication, subjectless sentences, substitution of preposition in idiomatic usage, and use of double subjects as characteristics of Nigerian English syntax. Based on observations through recordings (of formal and informal conversations of educated speakers of Nigerian English) and field investigations over a period of five years, Igboanusi (2006) accounts for innovations (that is, acceptable variants) in the syntax of Nigerian English. The data for the study were also supplemented with sentences drawn from radio and television discussions. In line with Bamiro (1995), Igboanusi (2006) identifies the use of subjectless sentences, reduplication, double subjects, Pidgin-influenced structures, discourse particles, verbless sentences, and substitution as syntactic features of Nigerian English. Igboanusi (2006) concludes that such innovative features are a healthy development for the identity of non-native varieties around the world, especially given the fact that such features are shared by other new Englishes, including Nigerian English.

Lamidi (2007) asserts that the grammar of a second language can be influenced by that of the indigenous language; yet such influence may not necessarily be considered as deviation, but as accommodation. Thus, what qualifies to be regarded as Nigerian English is that form in which the intended audience understands perfectly what the speaker says. Such variety serves as a yardstick for measuring conformity with the standard.

While Lamidi focuses on the noun phrase (NP) in Nigerian English, it mentions some basic features of Nigerian English syntax. First, Lamidi asserts that the basic structural form of a sentence or a clause is not reorganised. This implies that the word order (of a clause) still remains SVOCA and the (noun) phrase follows the English m, h, q structure. Second, for such variety, sentence complexes (that is, non simple sentences) also follow the patterns of Standard English.

The paper (Lamidi, 2007) uses simple descriptive method to identify and illustratively discuss about thirteen distinctive syntactic features of Nigerian English noun phrase. According to the author, Nigerian English permits double determiner modifying a noun. Also, distinction is not made between the definite, the indefinite and the generic references to nouns in NE noun phrase. Similarly, Nigerian English does not distinguish the countable nouns from the uncountable nouns. Nigerian English NP has pronoun + N word order. The Nigerian English NP also accommodates the use of double (subject) NPs as well as the use of emphatic pronouns before a personal pronoun (as against the anaphoric nature of the use of emphatic pronouns in Standard English). The author adds that users of the variety do sometimes ignore the different case features of pronouns and users sometimes do not make distinctions in pronoun referents. Other features of Nigerian English NP identified in the paper include intrusion at constituent (phrasal or clausal) boundaries, substitution of reflexive pronouns, use of title or appellation. Lamidi adds that Nigerian English users deliberately avoid Standard English kinship terms in their NP constructions, and subjects in imperative and negative sentences lack phonetic form. He submits that these features may be accommodated into the syntax of Nigerian English especially because they would continually reflect in Nigerians' speeches (at least at the informal level).

Gut and Fuchs (2013) elicited data from the ICE–Nigeria (NIG), which was compiled at the University of Münster in Germany to examine the Progressive Aspect in Nigerian English. They posit the Nigerian English progressive construction is both similar to, and distinct from that of other varieties in a number of ways. They report that progressive constructions in Nigerian English occur predominately with present tense verb forms. This implies that the progressive aspect has a strong tendency to occur with present tense

predicates in Nigerian English. They also assert that the progressive aspect system in Nigerian English appears fairly similar to that of standard (British) English. Guts and Fuchs (2013) add that the progressive aspect in Nigerian English is used with durative verbs referring to a habitual activity, with stative verbs denoting a mental state, with non-agentive stative verbs, and with punctual verbs. They submit that while the uses of the progressive in Nigerian English might be explained by first language influence, the observed grammatical structures are moderately acceptable, though they are rarely used.

According to Edem (2016), the syntactic features of Nigerian English are bound to tilt to the local provisions for communication. However, he adds that patterns acceptable as Nigerian English are those that conform to the rules that provide for the use of words and structures in Standard English. Thus, while such patterns may deviate from native speaker norms, they are facilitators for sentences that bring about communication in Nigerian English usage. Edem (2016) posits that Nigerian English syntax, like the Standard English, has four structural sentence types (simple, complex, compound and compound complex) and that the simple sentence of educated Nigerian English structure has a clause with elements such as subject, predicator, complement and adjunct (SPCA) while other sentence types contain the main and the subordinate clauses. He also identifies four functional sentence types (declarative, imperative, interrogative and exclamatory).

Arguably therefore, some systems of Nigerian indigenous languages intrude, at the syntactic level, into that of English without necessarily resulting in illogicality and inconsistency in the application of the rules of the English grammar. Thus, the syntax of Nigerian English is not necessarily violation of rules. The focus of the current study is to examine the morphosyntactic features of Nigerian aphasics and autistics, who are bilingual in their native languages and English, and as a result may show some Nigerianism in their usage of English morphology and syntax. The features of Nigerian English syntax identified in the literature will guide grammaticality judgment of the participants' speeches. Also, areas of similarities found in both groups may further suggest the influence of Nigerianism in the participants' use of English.

2.2 Theoretical framework

2.2.1 Principles and Parameters Theory

Principles and Parameters Theory (henceforth PPT) refers to a specific approach to linguistic theory, which followed from Extended Standard Theory in transformational grammar and focuses on principles rather than rules. PPT assumes that a large portion of the grammar of any particular language is common to all languages. Thus, PPT is part of Universal Grammar. The PPT view is that Universal Grammar can be broken down into two main components: levels of representation and a system of constraints (Lin, 2015; Longobardi, 2018). It assumes that sentences have trichotomous levels of structure: D – Structure, S –Structure and Logical form. S- Structure is derived from D –Structure, and Logical Form from S –Structure, by a single transformation– Move Alpha (Move-α), which basically means move any category anywhere (Black, 1998; Ouhalla, 1999: 258; Lamidi, 2016: 51). Figure 2.2.1 below, presents the PPT architecture:

D-structure

|

movement

|

S-structure

Phonetic Form (PF)   Logical Form (LF)
"sounds"   meaning
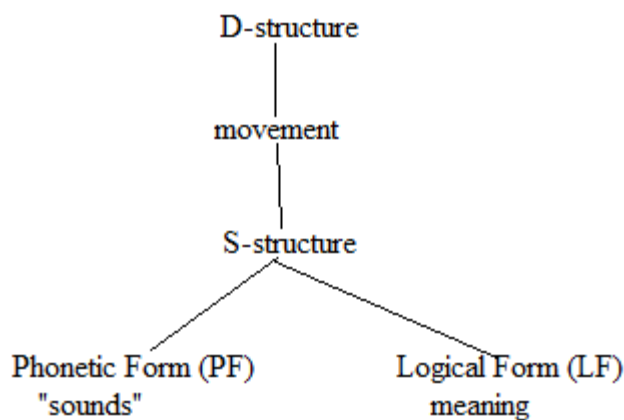
Figure 2.2.1: PPT architecture

The move-α rule combines all movement rules and transformations involved in sentence contructions that were in existence in earliest phases of generative grammar (before the emergence of PPT). As rightly noted by Lamidi (2016: 62), a major characteristics of the Principle and Parameters Theory is its modularity. The linguistic framework consists of seven interacting modules; these are discussed below.

Government theory

Government in Chomsky's PPT refers to the structural relationship that exists between two constitutents in which there is no intervening element between them. Government, roughly speaking, is the relation that holds between a head position and its satellites (specifiers as well as complements) when no structural barrier intervenes between them. An example of this is the relation that holds between a verb (head) and its object (complement).

In formalising the domain of Case assignment, Chomsky (1993: 25) defines the notion of government as:

α is *governed* by β if α is c-commanded by β and no major category or major category boundary appears between α and β.
(Chomsky (1993: 25)

In Chomsky (1993), the definition was intended to subsume linear adjacency as well as structural intervention. Johnson (2004) observes that the government relation is a key notion with the PPT; it has implications in a variety of modules within the PPT framework, especially case. As Huang (2000: 204) puts it, government is a derivative notion which plays a central role in PPT.

Binding theory

Binding theory is principally concerned with the distribution and interpretation of NPs in a sentence (Lamidi, 2011), determining the situation in which they can occur or must be co-indexed with other NPs. It is the module of grammar regulating NP interpretation. As noted by Black (1998), binding involves reflexive, equi and pro constructions. According to Horrocks (1987), the Binding Theory is one of the most important constructs in the system.

Bounding Theory

This module of the grammar poses locality conditions on movement and related items. The central idea underlying bounding theory is that certain nodes are boundaries for movement. These nodes are called bounding nodes. The bounding nodes for English are

IP and NP (Magnus 1995:14). By its nature, the sub-theory can be regarded as a check on the idea of movement in the Revised Extended Standard Theory (REST) where any moved item is allowed to move anywhere. In other words, it deals with the locality conditions on the displacement of constituents by the transformation rule schema 'move-α' (move Alpha). Its major principle is "subjacency", which states that no movement operation can cross more than one bounding node in one fell swoop (Lamidi, 2011: 60).

Case Theory

Case theory is another sub-theory of PPT. It, essentially, deals with the argument of abstract Case and its morphological realisation, restricting the distribution of NPs at S – Structure. The subject and object in a sentence are called the arguments of a verb. A head assigns Case to its arguments. It can assign case to the right or left, and the case assigned by each head (verb, preposition), is in general determined individually by that head. In English, for example, a transitive verb is held to assign accusative case to the right. So in a sentence like:

10.   Benjamin removed the bulb.

"the bulb" gets accusative case assigned by "remove", because remove is the head of the verb phrase. In PPT, a subject is not assigned nominative Case by the verb. In other words, the verb is not regarded as the head of a sentence; instead, a functional category INFL which is responsible for tense, mood, auxiliaries and subject-verb agreement in the sentence heads a sentence NP. INFL is the head of S, and it is the INFL which assigns nominative Case to the subject.

The most important principle of Case Theory is the Case Filter, stated informally in Magnus (1995:9) as "every overt (meaning non-null, containing words, not merely a structural position) noun phrase must have (abstract) Case". This mechanism is the primary means to ensure that NPs don't appear in random positions in the sentence. The sentence:

11.   *Mary Teacher hung a picture on the wall a poster.

is automatically marked ungrammatical, because "Mary" and "the poster" violate the Case Filter. They violate the Case Filter, because they are not governed by any head, and therefore do not get abstract Case assigned to them.

Theta theory

Theta (θ) theory regulates the distribution of arguments in a sentence. It concerns the relationship between thematic roles (theta-roles), such as 'agent' (the doer) and 'patient' (the do-ee), and the syntactic structure of the sentence (including 'subject', 'object', etc.); (the terms 'doer' and 'do-ee' are borrowed from Magnus 1995:9). Theta roles are essentially semantic (involve meaning), while 'subject' and 'object' are syntactic roles (involve formal sentence structure). As part of their lexical entry, verbs, and other content lexical categories, have an argument structure (which can be viewed as a type of syntactically relevant semantic information). The argument structure is simply a list of the theta-roles (or thematic-roles) realised by some argument (a full NP). Generally speaking, an argument is an NP. There is a tight one-to-one correspondence between theta-roles and arguments. This is clearly specified in the Theta-criterion, the most important element of theta-theory, which states that every theta-role is assigned to one and only one argument and every argument is assigned one and only one theta-role (Ouhalla, 1999:163).

Theta-theory has three components: (i) theta assignment, (ii) theta-role assigners, and (iii) theta-role receivers (arguments). Theta assignment takes place under the structural relationship of Government. In this case, adopting Haegeman's (1994) language, X assigns a theta-role to Y iff X governs Y.

A theta-role is assigned both to a syntactic position and to the argument that occupies that position. A theta-position, then, is simply a position to which a theta-role is assigned. Such positions are object position of a transitive verb in active voice, subject position of a VP that is headed by a V with a "verber", object position of a preposition with semantic content. It is very important to note that the subject position of certain predicates is a non theta- position. Therefore, no theta-role is assigned to such position. The sentence below illustrates such argument in the subject position, without a theta role.

> 12.   It is no use [complaining about it now].

In sentence (12) above, the subject NP 'it' lacks semantic content. Such NP is called an expletive, that is, a pleonastic element. It is required in that position to satify the Extended Projection Principle which requires that all clauses must have a subject (Chomsky, 1993; Castillo *et al.*, 2009; Brattico, 2011). As a result, no theta role is assigned to 'It', though it occupies the specifier position of the IP.

Control theory

This is the module of the grammar that governs how the null subject in a non-finite clause (PRO) gets its meaning. In PPT, we talk of the controller which must c-command the controllee. This is identical to the notion of co-referentiality and very similar to the notion of 'bind'. Verbs which allow an infinitive complement with a PRO subject are said to function (in the relevant use) as control verbs, and the clause containing the PRO subject is said to be a control clause. There are two major kinds of control. The first kind is called arbitrary control. The meaning of this PRO is essentially "someone", usually who is not performing the action in the verb of an embedded clause; as illustrated in the example below:

13.   PRO riding on the pedestal is prohibited.

14.   The next thing is PRO to read the text.

PRO in the above sentences is not controlled by anything. It gets its meaning from outside the sentence. Thus, PRO has arbitrary control. Another type of control is obligatory control. In this case, the 'performer' of the action stated in the embedded clause is found in the construction. It also comes in two different varieties. In the sentence below, PRO refers to *Jackson* and *Jill*, respectively; it cannot refer to anyone else:

15.   Ìbùkún$_i$ tried PRO$_i$ to leave.

16.   Ìyanu$_i$ is reluctant [PRO$_i$ to leave].

Ìbùkún and *Ìyanu* in the above sentences are in the subject position of the matrix clause, hence PRO in the two sentences have subject control. Featherston (2001: 45) also calls this 'Equi' and he describes it further as "a sentence in which the PRO in the embedded non-finite clause is controlled by the subject argument of the main clause" (p.

45). There is also object control– a sentence where there is a PRO in the embedded non-finite clause and it is controlled by the object argument of the main clause. For example:

17.   The union president instigated the students$_i$ PRO$_i$ to protest.

The interpretation of PRO in sentence (17) is dependent on the agent of the action 'protest'. Sematically, 'the students', which is the object of the matrix clause, is the agent of the action in the embedded clause, 'protest'. It implies that 'the students' controls the PRO in the sentence. Therefore, PRO (in 17) is object controlled.

Barbara (2007:42) states that there are other circumstances where PRO does not have to be (but can be) controlled; he calls this 'optional control'. An example is shown below:

18.   Túndé$_i$ says it is a good thing [PRO$_{i/j}$ to praise the Lord].

PRO here can mean two different things. It can either refer to Robert or have an arbitrary (PROarb) reading. This can be seen by looking at the binding of the following two extensions of the sentence:

19.   Túndé$_i$ says it is a good thing [PRO$_i$ to praise the Lord] on his$_i$ birthday.
20.   Túndé$_i$ says it is a good thing [PRO$_{i/j}$ to praise the Lord] on one's$_j$ birthday.

The genitive marker *his* in (19) refers to *Túndé* (thus, *his birthday* is interpreted as Túndé's birthday). The co-indexation of these nominal and genitive entities *Túndé* and *his*, repectively with PRO insentence 19 implies that PRO is interpretated as and thus controlled by Túndé$_i$ which is the subject of the matrix clause. Thus, PRO (in 19) is subject controlled. In (20), PRO is interpreted in the context of the indifnite pronominal entity, one. In this case, the controller of the position occupied by PRO is arbitrary.

There are other types of control identified by Wurmbrand (2000); they are Syntactic or Functional Control, and Anaphoric or Semantic Control. Syntactic or Functional Control ensures the similitude of the grammatical features of the controller and the controllee in terms of category, number and gender. An example is given below.

21.   Mr Kola$_i$ is advised to PRO$_i$ rest.

In the example above, the controller of PRO is *Kola*, which has its grammatical features as +masculine, + singular, + 3rd person. Thus, PRO shares these grammatical features with Kola.

Anaphoric or Semantic Control requires the identical reference between the anaphor and its antecedent. The sentence below illustrates this.

22.   The lady$_i$ hurt her finger while PRO$_i$ scratching herself$_i$.

23.   *The lady$_i$ hurt her finger while PRO$_i$ scratching oneself$_i$.

In (22) and (23), PRO is the subject of the verb *scratching* in the embedded clauses. Since the internal arguments 'herself' (22) and 'oneself' (23) are anaphors (reflexives), they should have identical reference in their antecedents. The co-indexation in (22) and (23) shows that the agent of the action expressed by the verb 'scratching' (in both sentences) is 'The lady'. Hence, PRO is controlled by 'The lady', and consequently, the antecedents of the anaphors herself and oneself is 'The lady.' Sentence (22) is grammatical since identical reference exists between the controller of PRO and the anaphor 'herself'. On the contrary, (23) is ungrammatical because the subject of scratch is (obligatorily) interpreted as 'The lady', with which the anaphor 'oneself' does not share identical reference. This illustrates a violation of binder-bindee co-indexation as stipulated by the Principle A of Binding theory, which requires that an anaphor must be bound within its governing category. In relation Binding theory therefore, the reflexives 'oneself' and 'herself' (in 22 and 23, respectively) are bound by the NP 'the lady', which is semantically the agent of 'hurt' and 'scratching' in both sentences. Given this semantic relationship therefore, the ungrammaticality of sentence 23 relates to lack of semantic features between the binder (the lady) and the bindee (oneself).

X-bar theory

X-bar is the module of the grammar regulating the structure of phrases. In the PPT tradition, it forms the basis of syntactic structure. X-bar theory brings out what is common in the structure of phrases. PPT seeks to capture the similarities between different

categories of phrases by assigning the same structure to them, as shown in Figure 2.2.2 below.

XP (maximal projection)

Specifier X^I (intermediate level of projection)

X^I Adjunct

X^0 (head)   Complement
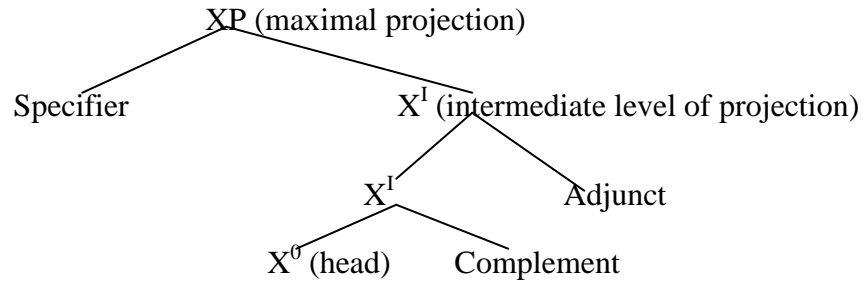
Figure 2.2.2: X-bar schema (Adapted from Lamidi 2016: 155)

In X-bar theory, all phrases are headed by one head. In the terminology of traditional linguistics, all phrases are endocentric. In other words, X^I Theory forms the basis of syntactic structure in the transformational tradition. The head of the projection is a zero projection (X^0). Heads are terminal nodes: they dominate words. X^I theory distinguishes two further levels of projection. Complements (and adjuncts) combine with X to form X^I-projections (The specifier combines with the topmost X^I to form the maximal projection XP. It should be noted that X is a variable, representing any lexical or functional class. Depending on the structure under analysis, X could be the head noun in a noun phrase (NP), the prepositional head in a prepositional phrase (PP), the complementiser in a complementiser phrase (CP), the inflection in an inflectional phrase (IP), the negator in negative construction (NegP) and so on.

According to Pullum and Kornai (2003: 67), the primary defining property of X-bar systems is lexicality, which requires all phrasal categories to be projections of lexical categories. They explain further that bar-level originates as a notation for phrasal category labels that make it clear how they are based on lexical category labels.

Each sub-theory of PPT studies principles of rules and representations that are a subsystem of the Universal Grammar (UG). Analysis in this study is guided by the X^I, control, case, theta and binding sub-thoeries of the PPT. The scope of analysis in the study includes grammaticality of phrasal constructions in selected Nigerian bilingual aphasic and autistic speeches, and every phrase is required to project from a head. Thus, the X^I

sub-theory which emphasises the primacy of the head has relevance to this study. Also, nouns as well as other NP forms are essential components of sentence constructions (Sharndama, 2015; Hammouda and Haddar, 2017). Their designated functions, distribution and interpretation are crucial for sentence grammaticality. Therefore, the Case theory and Binding theory are also relevant to this study. The Case theory accounts for grammaticality on the basis of NP functions while the Binding theory assesses sentence grammaticality in terms of NP distribution and interpretation. The need for discussion of the distribution of PRO in sentences prompts the inclusion of control theory. In addition, structural analysis entails a description of arguments in terms of their properties based on the position they occur in a sentence as well as their semantic roles. Since the Theta theory defines these roles, the Theta theory is applicable to this study. The interplay of these selected sub-theories guides grammaticality judgment in the selected Nigerian bilingual aphasic and autistic speeches.

2.2.2   Distributed Morphology

The last few years of the twentieth century saw the emergence of several alternative approaches to morphology. One such approach is the lexicalist hypothesis. The hypothesis rests on the notion that only stems of lexical categories (lexemes) are morpheme pieces. In this view, morphology is considered as the connections between (bundles of) meaning (features) and (bundles of) sound (features) (Stump, 2001). Thus, the so-called affixes in traditional morphology are viewed, merely, as the by-product of morphophonological rules called word formation rules (WFRs). These rules are sensitive to features associated with the lexical categories. The lexicalist hypothesis, which is an affixless approach to morphology (Stump, 2001; Embick, 2013) was initially suggested by Aronoff (1976), and was later articulated by Anderson (1992). In contrast, Lieber (1992) refined the traditional notion that affixes as well as lexical stems are 'morpheme' pieces whose lexical entries relate phonological form with meaning and function. This second line of thought is labelled as the lexicalist hypothesis. For Lieber and other 'lexicalists', combining lexical items creates the words that operate in syntax. Halle and Marantz (1993) developed the third alternative theory of morphology which they labelled Distributed Morphology, combining features of the affixless and the lexicalist alternatives.

Distributed Morphology is a framework for morphological, syntactic and semantic analysis in which word formation is primarily a syntactic operation. This syntax-based approach to word structure, first proposed in the early 1993 by Halle and Marantz, was later modified/improved by Marantz (2007) and Harley (2008). Basically, the framework is piece-based and is realisational. The theory is piece-based in the sense that the elements of both syntax and of morphology are understood as discrete instead of as (the results of) morphophonological processes. That is, the same mechanism that generates phrasal structure also generates morphological structure. Thus, morphemes are independent entities that occupy terminal nodes of a hierarchical structure built by the syntax with normal syntactic processes. The realisational proposition of the theory implies that syntactic terminal nodes are fully specified for featural (and semantic) content. Each terminal node receives a pronunciation after the syntax is finished. The terminal nodes are thus realised post-syntactically by morphemes (called 'Vocabulary Items').

With Aronoff (1976), Beard (1995) and Anderson (1992), the proponents of Distributed Morphology support the separation of the terminal elements involved in the syntax from the phonological realisation of these elements. With Lieber and the lexicalists, on the other hand, Halle and Marantz (1993) take the phonological realisation of the terminal elements in syntax to be governed by lexical (Vocabulary) entries that relate bundles of morphosyntactic features to bundles of phonological features. The approach was called Distributed Morphology (hereafter DM) to highlight the fact that the machinery of what traditionally has been called morphology is not concentrated in a single component of the grammar, but rather is distributed among several different components, including syntax and semantics (Halle and Marantz, 1993: 111).

The theory shares important traits with traditional morphology (for example, in its insistence that hierarchically organised pieces are present at all levels of representation of a word), but deviates from traditional morphology in other respects (most especially in not insisting on the invariance of these pieces but allowing them to undergo changes in the course of the derivation). The lexeme-based theory treats inflections of all kinds as morphosyntactic features represented on nodes dominating word stems and sees inflectional affixes as the by-product of word formation rules (hereafter WFRs) applying

to these stems. In addition, Anderson's (1992) proposal contradicts not only the traditional approaches to morphology, but also much current practice in generative syntax, where inflections such as the English tense or possessive markers are standardly treated as heads of functional categories and must therefore be terminal nodes. In Lieber's theory, affixes and stems alike are lexical items containing both phonological and morphosyntactic features. Crucially for this theory, these lexical items combine to create the words manipulated by the syntax.

Some similarities may be noted between the DM and lexeme-based morphology. First, at the syntactic levels of Logical Form (LF), D-Structure (DS) and S-Structure (SS), terminal nodes lack phonological features. Second, terminal nodes obtain their phonological features only at the level of Morphological Structure (MS). However, DM differs from lexeme-based morphology with regard to its affixless aspect. DM assumes that the structure of words — the hierarchical location of affixes — is determined by syntax and not by sub-categorisation frames carried by each affix. Below is the architecture of the operation of DM:

Figure 2.2.3: DM architecture

DS (D-Structure)

SS (D-Structure)

Logical Form (LF)   MS (Morphological Structure)

Phonological Form (PF)
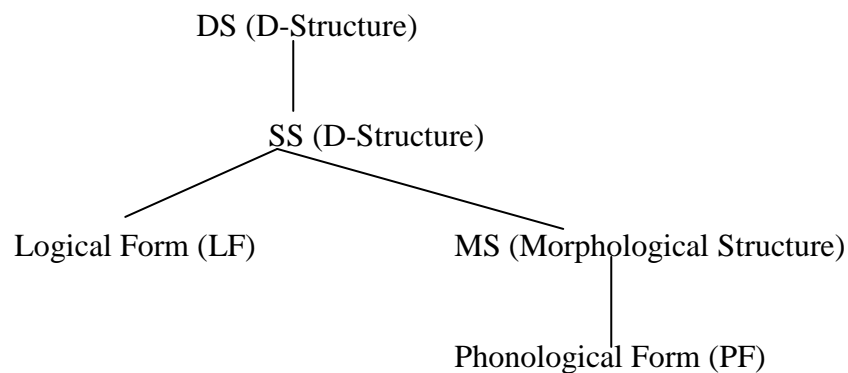
(Halle and Marantz, 1993: 114)

From Figure 2.2.3 above, DM adopts the basic organisation of the PPT grammar. The added level of Morphological Structure (MS) is the interface between syntax and phonology. MS is a syntactic representation that serves as part of the phonology, where "phonology" is broadly conceived as the interpretive component that realises syntactic representations phonologically. Instead of abandoning the notion that affixes are

morphemes, DM recognises that MS is a level of grammatical representation with its own principles and properties and that the apparent mismatches between the organisation of the morphosyntactic pieces and the organisation of the phonological pieces are the result of well-motivated operations manipulating terminal elements at this level and at DS and SS.

In DM therefore, morphological transformation follows syntax but precedes phonological realisation. Thus, syntax is not sensitive to phonological features of morphological items; allomorphy is sensitive to the syntactic context. The syntax solely operates on bundles of morpho-syntactic features (f-morphemes) that may lack phonological content. Postsyntactically, the features of terminal nodes (syntactic X^0 categories) are morphologically realised by the insertion of vocabulary items (exponents and inflections). Vocabulary insertion, that is, the pairing of syntactic terminals with (possibly null) phonological underlying representations; (Bobaljik, 2015: 5) can, however, be sensitive to the content of adjacent nodes and only a single vocabulary item can be inserted into a terminal node.

Further, DM proposes what is termed as Morphological Merger, [X° YP], to account for the morphological structure, and derivation of complex words. Morphological Merger is a syntactic complementation relation realised as an affixation relation), where X affixes to Y, the head of YP. X denotes the l-morpheme (root) and Y denotes the f-morpheme (affix).

$$
\begin{array}{c}
\text{XP} \\
\diagup \quad \diagdown \\
X^0 \qquad \text{[YP]}
\end{array}
$$
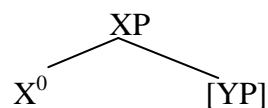
For example in simple declarative sentences in English (such as (23) *The design beautifies the room during Christmas*; (24) *The design beautified the room during the last Christmas*), the main verbs and inflectional features (tense, number and agreement) traditionally form a morphological constituent. DM argues that INFL° and V° do not form a constituent in the syntax, but they do form separate units motivated by the morphology, and their realisation is as a result of morphological merger. The morphological structures of the finite verbs are represented below.

23.

```
              v
           ╱     ╲
         n⁰        v
         │       ╱   ╲
      √beauty  v      [TNS. +PRS.]
               │           │
            [-ify]      [Sg. -ies]
```

23.

                 v
              n⁰   v
         √beauty   v   [TNS. +PRS.]
                  [-ify]
                           [Sg. -ies]

The design *beautifies* the room during Christmas.

24.

                 v
              n⁰   v
         √beauty   v   [TNS. +PST.]
                  [-ify]   -ed
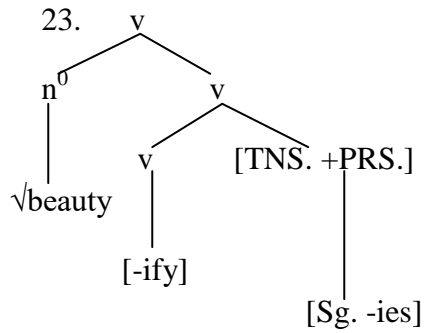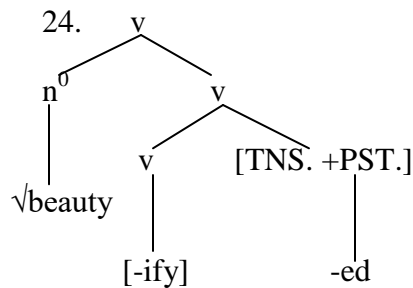
The design *beautified* the room last Christmas.

In the structures above, the finite verb is assumed to have an internally complex hierarchical structure that is determined by the syntax (that is, the entire string). In both structures (23 and 24), the derivational and inflectional affixes enter into the strings at different points; the inflectional affix is only possible on the account that the derivational affix, *-ify* permits such morphological inflections. Also, the tense inflection precedes the number inflection. In (i) for instance, the selection of +PRS permits selection of the number feature, 3sg, (which shows agreement relation in the syntax). Since number differentiation is not available in +PST inflection, no other morphological item can be further merged to the syntax in (24). The above hierarchical structure explains the ungrammaticality of the following structures.

25. *The design *beauties* the room during Christmas.
26. *The design *beautied* the room during the last Christmas.
29. *The design *beautifieds* the room during Christmas.

Another contention of DM is the assumption that the grammatical knowledge of (pieces of) words is not monolithic, but enters the grammatical computation at various points in various ways. Thus, the traditionally conceived Lexicon is replaced by three lists: (i) a list

of the abstract morphemes that are the building blocks of syntax; (ii) a list of vocabulary items that spell out (morpho)-syntactic structures; and (iii) a list of the idiosyncratic meanings of individual pieces in particular contexts. This favours the applicability of DM in explaining the structure of both derivational and inflectional affixes.

Thus, there is no single lexicon understood as, at once, a list of the minimal meaningful units of grammar or building blocks of words. Instead, there is a list of the syntactic atoms, manipulated by (and thus accessed by) the syntax, in the construction of complex terminal nodes. Items on this list would include features that project to a syntactic node (for example, tense, agreement, comparative, superlative and nominaliser, among others), and (possibly language-particular) bundles of features that constitute a single node (for example tense and agreement).

2.2.3   Justification for the theoretical framework

In reality, language investigation has only taken a definite bio-linguistic course in the 1950's with the advent of Noam Chomsky's Generative Grammar (Chomsky, 1957; 1965). The neurophysiological characterisation of the healthy Faculty of Language, that is, the understanding of language-brain relations at work, only began to receive serious attention in the late 1980's. This was with the introduction of non-invasive cognitive assessment techniques that brought new and exciting perspectives into the field. Generally speaking therefore, Chomsky's generative approach to linguistic inquiry, and particularly, the Principles and Parameters Theory is appropriate for this study because it attempts to explain the innate structure of all human languages, that is, the genetically coded programme in the brains of human beings. Also, because of its arrangement (a general theory with specific sub-theories), and interacting principles, this study adopts the PPT as a fitting framework for assessing and describing the competence and/or deficiencies of Nigerian bilingual aphasics and autistics in their use of the English morphosyntax.

A basic idea within the framework is that case is assigned under government; the choice of case is being determined by the governor in any given sentence. Also, there is a locality condition on the realisation of arguments which imposes that theta-roles are assigned within the maximal projection of the lexical heads. Also, arguments (that is, nominal

items) are crucial constituents of grammatically and semantically acceptable sentence. The roles of arguments help to resolve ambiguity. The theta sub-theory guides the distribution of semantic roles of arguments in sentence constructions. Thus, the (theta) sub-theory is considered very crucial to this study. One of the primary tasks of syntactic theory is to explain how sentences are built from words. This explanation is generally conceived of in terms of assigning syntactic structures to sentences. The exact form and content of the structures that should be assigned has been strongly debated, but there is overwhelming agreement that constituency information is a crucial element in any adequate analysis of sentential structure. Such constituency information, alongside the primacy of head is attended to in the X-bar module of PPT. This phrasal geometry characteristic of the X-bar theory sets it right for this study.

Furthermore, a basic assumption of DM is that elements within syntax and within morphology enter into the same types of constituent structures; they can be diagrammed through binary branches. As Embick and Noyer (2005) put it, "a theory of the syntax/morphology interface is first, a theory of how 'words' and their internal structure – the traditional domain of *morphology* – relate to the structures generated by the syntax and second, a theory of how the rules for deriving complex words relate to the rules for deriving syntactic structures". Distributed Morphology proposes architecture of grammar in which a single generative system is responsible both for word structure and phrase structure. In particular, Distributed Morphology attempts to make precise the claim that all derivation of complex structures is syntactic. In this way, DM will adequately account for both derivational and inflectional morphology. Aside from this, the framework finds relevance in this study because its architecture provides for explanation of syntax/morphology interface. In respect to the interface between syntax and morphology, the DM architecture (provided above) has a clear consequence: since the only mode of combination in the grammar is syntactic, it follows that in the default case, morphological structure simply is syntactic structure. Therefore, while the PPT does not adequately take (derivational) morphology into consideration, DM complements it in order to enhance adequate description of lexical derivation in the speeches of Nigerian bilingual aphasics and autistics. DM attends to this in that its organisation is in tandem with that of PPT. According to the DM framework, there is a unique generative component, namely syntax,

which is responsible for both word and phrase structure. The notion of head, which plays an important role in syntax, can also be applied to the internal structure of words. All these further support the choice of DM for this study.

2.3   Conceptual framework

This study combines Chomsky's Principle and Parameters Theory and Halle and Marantz's Distributed morphology to examine the morphological and syntactic features of selected Nigerian bilingual aphasic and autistic speeches. Thus, the participants are categorised into two groups— aphasics (acquired disorder) and autistics (developmental disorder). However, participants in both groups are linguistic adults living with (neurological) language disorders. Also, they are Nigerian bilinguals in their native languages and English. Hence, the use English as a second language. Figure 2.3 below presents a summary of the conceptual framework for the study.
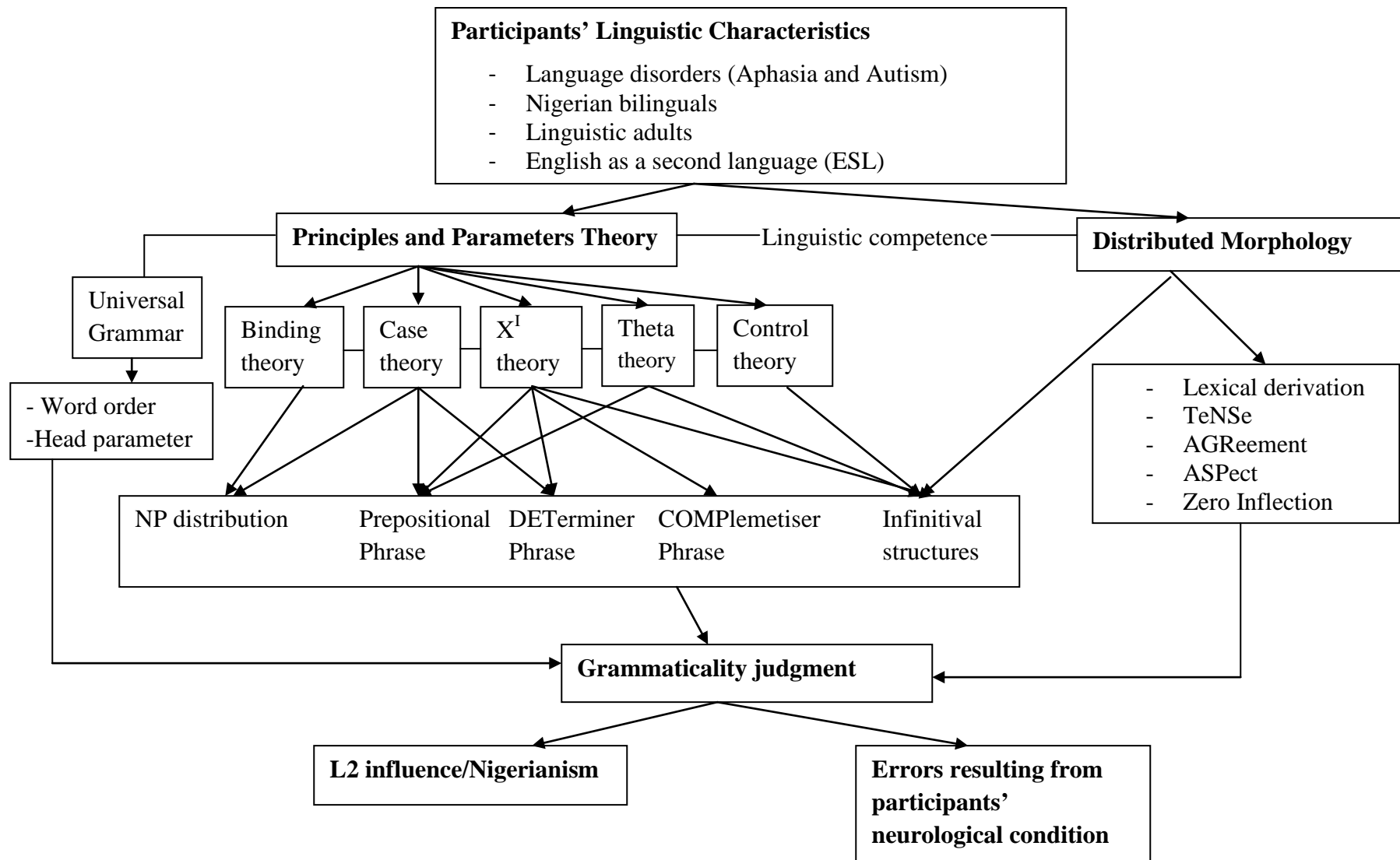
Figure 2.3: Conceptual framework for the study

Distributed Morphology accounts for morphological features such as derivational morphemes in lexical derivation, and inflection morphemes such as tense, agreement, aspect, and zero inflection, which is also one of the features of infinitival constructions. On the other hand, the selected sub-thories of Principles and Parameters Theory (Binding, Case, X^I, Theta and control) account for phrasal and sentence constructions in the selected Nigerian bilingual aphasic and autistic speeches. The conformity, or otherwise, of the selected speeches in each group to the morphological and syntactic features of English leads to grammaticality judgement. Such (non)conformity is regarded as patterns that are peculiar to Nigerian bilingual aphasic and autistic speeches. Such features are further examnined in order to distinguish between features that probably resulted from the participants' L1 influence and those that are as a result of their neurological conditions.

2.4   Summary

In line with the focus of the study, this chapter has presented a review of varied topics. From the review, conceptual clarifications have been made and clear distinctions have been made among various neurological conditions. Also, the chapter presents the premise upon which the study is carried out; that is, coping with neurological and language disorders in second language situation. Again, the chapter reviews the theoretical background against which the study is carried out, and justification was made for the choice of the linguistic theories. The essence of the whole attempt is to make readers familiar with the task before this study. The next chapter is devoted to the methodological and ethical issues as concerned the study.

CHAPTER THREE

METHODOLOGY

3.0   Introduction

The strength of any research rests heavily on the systematic way by which it solves its research problem. This chapter, therefore, presents the principles underlying the organisation and conduct of the enquiry made in the study, the various steps that the researcher adopted to solve the research problem, along with the logic behind the steps. Specifically, the chapter focuses on research design, study area, study population, sample determinant and size, sampling procedure, research instruments, validity and reliability of research instrument, methods of data collection, method of data analysis, and ethical consideration.

3.1   Research design

The study is both descriptive and cross-sectional in nature. A descriptive research is used to obtain information concerning the status of the phenomena, people or subjects, and to describe "what exists" with respect to variables or conditions in a situation. This study elicited speeches from selected Nigerian bilingual aphasics and autistics in order to characterise the morphosyntactic features of their speeches. A cross-sectional design measures differences and/or similarities between or from among a variety of people, subjects or phenomena thereby studying and drawing inferences from existing differences and/or similarities between people, subjects, or phenomena. In this study, participants were selected from two different groups (aphasics and autistics). However, participants in the two groups have common grounds in that they suffer from neurological disorders; they are bilingual Nigerians and they are ESL users.

3.2   Study area

The study is limited to aphasics and autistics who reside in the southwest of Nigeria. The choice of the region was motivated by the availability of highly rated healthcare facilities and support centres that are much sought for by health care seekers in the country. Thus, the participants are, not necessarily speakers of Yoruba (the dominant language in the region). Particularly, participants were drawn from University College Hospital (UCH), Ibadan, Oyo State; Physiotherapy Clinic of Adeoyo Teaching Hospital, Ibadan, Oyo State; Federal Medical Centre, Owo, Ondo State; Treasure Delight International Centre, Ibadan; and Jesus' Kids Autistic Centre, Ibadan. These health care outlets and support centres respond to varieties of neurological issues.

3.3   Study population

The population for this study comprised patients/children who had been clinically diagnosed with aphasia or autism in the medical outlets and (classroom) support centres mentioned above.

3.4   Sample size determination

The sample size for this study was determined using the medical statistics formular developed by Kirkword (1988) for sample size calculation:

$$n = \frac{2\left(Z_{\alpha/2} + Z_{1-\beta}\right)P(1-P)}{(P_1 - P_2)^2}$$

where

n = required sample size

$Z_{\alpha/2}$ = the standard normal value corresponding to 95% level = 1.96

$Z_{1-\beta}$ = the standard normal value corresponding to 80% power = 0.84

P_1 = Prevalence of Aphasia in Nigeria at 0.05% = 0.0005 (W.H.O., 2011)

P_2 = Prevalence of Autism in Nigeria at 11.4% = 0.114 (Bakare, 2012)

Calculation:

$$P = \frac{P_1 + P_2}{2} = \frac{0.0005 + 0.114}{2} = \frac{0.1145}{2} = 0.05725$$

$$n = \frac{2(1.96 + 0.84)^2 \ 0.05725 \ (1 - 0.05725)}{(0.0005 - 0.114)^2}$$

$$n = \frac{2(7.84) \times 0.05725 \times 0.94275}{0.01288225}$$

$$n = \frac{0.84638782}{0.01288225}$$

$$n = 65.7 \approx 66$$

Thus, the total sample size for the study was sixty-six (66).

3.5   Sampling strategy

A purposive sampling technique was used to select the respondents for participation. Doctors' and caregivers' recommendations as well as case notes guided the selection of participants for the study. This was to ensure that the desired groups were accessed.

3.5.1   Inclusion criteria:

Criteria for participation in the study included a current medical diagnosis of aphasia or autism and for autistics, a current placement in the autistic support classroom[3], either full or supplemental.

Aphasic participants suffer from partial speech loss.

Participants must be Nigerians.

Also, participants must have attained the age of nine (9) years and be users of English as L2.

3.5.2   Exclusion criteria:

Aphasics/autistics with total speech loss were excluded from the study.

3.6   Research instruments

As determined by the overall and specific study objectives, the chosen instruments for the study were Passage Reading Test (PRT), In-depth Interviews (IDIs) and Participant Observation (PO). These instruments were used to elicit speeches from the participants.

---

[3]An autistic support classroom is a highly structured classroom that is designed to meet the needs of students with autism spectrum disorders.

The sentences of the passage contained target words which were morphologically marked-— consisting of a base, with (derivational and inflectional) affixes. The language being researched into is English, so the interaction with the participants was in the English language.

3.7   Data collection procedure

The researcher met and interacted with the aphasic participants at the various selected health and support facilities. For most of them, the researcher got appointments with them and he later followed them up for more engaging interactions. The researcher first explained the objectives of the study to the participants. Their consent was sought before the researcher engaged them in the data collection process. The autistic participants were met at their classroom support centres. However, because of the ages the autistic people, they could not personally give their informed cconsent. Consequently, the directors of the centres gave their consent on behalf of the autistic people. The data for this study (for both groups) were basically the participants' speeches. However, the reading of the passage was dependent on the participants' willingness/ability.

Again, to test for grammaticality in the use of English structures among the participants, the researcher asked open-ended questions to allow the participants to freely express themselves. These questions stemmed from the progression of the researcher/participant interactions.

3.8   Method of data analysis

Data gathered through the tape-recording of the speeches of the participants were transcribed (orthographically). They were then subjected to structural analysis in order to account for the linguistic features of the recorded speeches. This analysis was done within the frames of Halle and Marantz's (1993) Distributed Morphology and Chomsky's (1993) Principle and Parameters Theory. Particularly, the X-bar, control, Case and Theta sub-theories guided the analysis.

3.9 Ethical considerations

Ethical approval was sought from the University of Ibadan/University College Hospital (UI/UCH) Ethics Committee and the Directors of the autistic centres (mentioned above). Respondents were briefed about the study and its objectives. They were assured of the confidentiality of their responses; thus, their consent was obtained. The researcher observed all standards as set by the National Health Research Ethics Code (NHREC). Four ethical considerations which are relevant to this study are confidentiality of data, beneficence to the participants, non-malfeasance and voluntariness.

3.9.1 Confidentiality of data

The data gathered for the study were treated with utmost confidentiality. To shield the participants from any form of harm, details that can identify them (such as name, address, case file number) were excluded in the course of gathering the data.

3.9.2 Beneficence to the participants

This researcher acknowledged his obligation to see to the welfare of the participants taking part in the study. In the course of the study, the researcher was available to enhance communication between doctors/special educators and the participants.

3.9.3 Non-malfeasance to participants

The study did not pose any threat to the participants. The only possible discomfort that was involved was that the participants' speech production was effortful.

3.9.4 Voluntariness

Participation in this study was entirely voluntary. Participants were free to withdraw their consent at any time.

3.10 Limitations of the study

This study met with a number of challenges. First among them was the participants' inability to write their given consent. However, participants registered their consent by thumb printing on the informed consent form. Also, the study's participant did not undergo magnetic resonance imaging (MRI), Modified Checklist for Autism in Toddlers (M-CHAT), Childhood Autism Spectrum Disorders Test (CAST) and Diagnostic and

Statistical Manual of mental disorders (DSM-IV-TR) assessment due to the researchers'
lack of access to these technologies. Aphasia and autism screening was therefore based on
the participants' medical records and referral report. Also, the proposed sample size for
the study was 66 participants. The researcher was only able to access 64 participants (41
aphasics and 23 autistics). However, 4 (1 aphasic and 3 autistics) among these had blurred
speech and their sentences were not coherent enough for analysis. Therefore, their
speeches were exempted from the analysis. Thus, the analysis was based on the speeches
of 60 participants. Nevertheless, this does not in anyway adversely affect the objectives
and analysis of this study. The study sheds light on the language organisation especially in
the Broca's complex or region, while also providing evidence for a better understanding of
the dynamics of language processing in the bilingual brain.

CHAPTER FOUR

PARTICPANTS' DEMOGRAPHY

4.0   Introduction

This chapter presents the demographic characteristics of respondents. Demographic details of participants are important components of research involving human subjects. Cline *et al*. (2006: 3-5) assert that such details are primarily utilised in referencing data on population size and the changing trend within a group. The background characteristics presented in this chapter include age, sex, geopolitical region, occupation, languages spoken, religion, qualification, handedness and side affected.

4.1   Demography of aphasic respondents

There were 40 aphasic respondents (labelled APP 1-40) in the study. As mentioned in the previous chapter, three research instruments were used for the study: In-depth interviews (IDIs), Participant observation (PO) of doctor-patient interactions and Passage Reading Test (PRT). The PRT was tested on aphasics (APPs) 1-14, the IDI was used during the researcher's interaction with APPs 15-34 and PO was used in eliciting data from APPs 35-40. Table I below presents the demographic details of the study's aphasic participants.

Table 4.1   Demography of aphasic respondents

Participants	Age	Region	Sex	L1	Other Language(s)	Occupation	Religion	Handedness	Side affected	Highest Academic qualifications
APP1	57	SW	M	Yoruba	English	Teacher	Christianity	Right	Right	BSc
APP2	64	SW	M	Yoruba	English	Civil Servant	Christianity	Left	Left	BSc
APP3	47	SW	M	Yoruba	English; Hausa	Civil Servant	Christianity	Right	Right	BEd
APP4	56	SW	M	Yoruba	English	Civil Servant	—	Right	Right	MEd
APP5	55	SW	F	Yoruba	English	Self employed	Christianity	Right	Right	BTech
APP6	56	SS	M	Urhobo	English; Pidgin; Igbo	Engineer	Islam	Right	Right	BTech
APP7	59	SW	F	Yoruba	English; Pidgin	Civil Servant	Christianity	Left	Right	BSc
APP8	64	SE	M	Igbo	English; Pidgin	Civil Servant	Christianity	Left	Left	BSc
APP9	71	SW	M	Yoruba	English	Self Employed	Islam	Right	Right	LLB; LB
APP10	45	SS	M	Itsekiri	English	Teacher	Islam	Right	Left	BEd
APP11	38	SW	F	Yoruba	English; Igbo	Teacher	Christianity	Right	Right	BSc
APP12	68	NE	M	Fulani	English; Hausa	Civil Servant	Christianity	Right	Right	BA
APP13	58	SS	M	Okpemeri	English; Pidgin	Banker	Christianity	Right	Left	HND
APP14	52	SW	M	Yoruba	English	Civil Servant	Christianity	Right	Right	BSc
APP15	60	SW	M	Yoruba	English	Self Employed	Christianity	Right	Right	HND
APP16	74	SW	M	Yoruba	English	Civil Servant	Christianity	Right	Right	MSc

Participants	Age	Region	Sex	L1	Other Language(s)	Occupation	Religion	Handedness	Side affected	Academic qualification
APP17	36	SW	M	Yoruba	English	Teacher	Christianity	Right	Left	NCE
APP18	66	SW	M	Yoruba	English; Pidgin	Civil Servant	—	Right	Left	BSc
APP19	58	SE	M	Igbo	English	Self employed	Christianity	Right	Right	BSc
APP20	45	NW	M	Hausa	English	Civil Servant	Christianity	Right	Right	MSc
APP21	59	NC	M	Idoma	English; Pidgin	Self employed	Islam	Right	Right	MSc
APP22	53	NE	M	Hausa	English	Civil Servant	Christianity	Right	Right	BTech
APP23	67	NC	M	Ebira	English	Accountant	Islam	Right	Right	BSc
APP24	74	SW	F	Yoruba	English	Civil Servant	Islam	Right	Right	MPP
APP25	44	SW	M	Yoruba	English; Pidgin	Civil Servant	Christianity	Right	Right	MSc
APP26	56	SS	F	Edo	English; Igbo; Pidgin	Civil Servant	—	Right	Left	MPH
APP27	62	NE	M	Hausa	English	Self employed	—	Right	Right	BEd
APP28	58	SW	M	Yoruba	English	Civil Servant	Christianity	Right	Right	MA
APP29	67	SW	F	Yoruba	English	HRO	Christianity	Right	Right	BSc
APP30	42	SS	M	Izon	English; Pidgin	Engineer	Christianity	Right	Right	BSc
APP31	39	SW	F	Yoruba	English	Computer Analyst	Christianity	Right	Right	MSc
APP32	57	SS	M	Izon	English; Pidgin	Civil Servant	Christianity	Right	Right	MBBS
APP33	61	SE	F	Igbo	English	Civil Servant	—	Right	Right	BSc

Participants	Age	Region	Sex	L1	Other Language(s)	Occupation	Religion	Handedness	Side affected	Academic qualification
APP34	63	SW	F	Yoruba	English	Civil servant	-	Right	Right	MEd
APP35	52	SW	M	Yoruba	English	Civil servant	Islam	Right	Right	MBBS
APP36	55	SS	M	Ikwerre	English; Pidgin; Igbo	Civil Servant	-	Right	Right	BSc
APP37	53	SW	F	Yoruba	English; Pidgin	Self employed	Christianity	Right	Right	BEd
APP38	49	SS	M	Izon	English; Pidgin	Teacher	-	Right	Right	MSc
APP39	65	SW	M	Yoruba	English	Self employed	Islam	Right	Left	BSc
APP40	66	SW	F	Yoruba	English	Banker	Christianity	Left	Left	BSc

Key:

APP: Aphasic Participant

NC: North Central: Kogi, Niger, Benue, Kwara, Plateau and Nassarawa states, and the Federal Capital   Territory

NE: North East: Taraba, Borno, Bauchi, Adamawa, Gombe and Yobe States

NW: North West: Kaduna, Kebbi, Zamfara, Sokoto, Kano, Jigawa and Katsina States

SE: South East: Ebonyi, Enugu, Imo, Abia and Anambra States

SS: South South: Akwa-Ibom, Bayelsa, Edo, Cross River, Rivers and Delta States

SW: South West: Oyo, Ogun, Lagos, Ondo and Osun States

M: Male

F: Female

BA: Bachelor of Arts

BEd: Bachelor of Education

BSc: Bachelor of Science

BTech: Bachelor of Technology

HND: Higher National Diploma

HRO: Human Resource Officer

L1: First language

LB: Barrister at Law

LLB: Bachelor of Law

MA: Master of Arts

MBBS: Bachelors in Medicine and Surgery

MEd: Master in Education

MPH: Master in Public Health

MPP: Master in Personnel Psychology

MSc: Master of Science

NCE: Nigerian Certificate in Education

—: Details were not contained in their case files, and they were not given by the respondents.

Table 1 shows that 3 (7.5%) of the participants were above 70 years and 10 (25.0%) were below 50 years; most of the participants (67.5%) were within the age brackets of 50-60 years. This result suggests that aphasia is common among people in this age bracket (of 51-60). Also, 29 (72.5%) of the participants were males and only 11 (27.5%) were females. The table records that 23 (57.7%) of aphasic participants were from the southwest region of Nigeria. This is followed by the southsouth region with a record of 8 (20.0%), and next are southeast and northeast regions with a record of 3 (7.5%) while the northcentral region constitutes 5.0% (2) of the participants and only 1 (2.5%) of the participants is from the north-west. This is almost proportional to the first language

characteristics of the participants. Twenty three (57.5%) of the participants speak Yoruba as their first language, 3 (7.5%) of them speak Igbo, 3 participants (7.5%) speak Hausa and 3 of them (7.5%) speak Izon. Other languages recorded in the data are Fulani, Itsekiri, Okpemeri, Idoma, Ebira, Edo, Urhobo and Ikwerre; the data record just 1 (2.5%) participant for each of these languages. It, therefore, implies that participants who speak minority languages[4] constitute (27.5%). On the other hand, those who speak the majority languages[5] constitute 72.5% of the study. Among this latter group, speakers of Yoruba as L1 largely dominate the study population. This is not unconnected with the participants' closeness to the location of the hospitals where the data were collected. Although 12 (30.0%), 2 (5.0%) and 3 (7.5%) of the participants speak Pidgin, Igbo and Hausa, respectively, alongside their L1, they all use the English language as a second language.

Participants who were engaged in government services (teachers, medical practitioners, education administrators) are all classified as civil servants; they all constitute 20 (50.0%) out of the total sample population. The data records that 8 (20%) of the participants were self employed. Others (30.0%) were employed in private organisations. Among the respondents in this group, 2 (5.0%) were engineers, 2 (2.5%) were bankers and 1 (2.5%) participant each was human resource officer, computer analyst and accountant. There were 5 (12.5%) participants who were engaged in private school teaching; these are represented as teachers in the table. Also, the table shows that 24 (60.0%) of the participants practice Christianity while 8 (20.0%) were Muslims. There were no records about the religious affiliation of 8 (20.0%) of the participants. However, though there were more Christian aphasics in this study than Muslim aphasics, it is not an indication that aphasia affects either of the group more than the other. Furthermore, the table shows that 36 (90.0%) of the participants were right-handed and only 4 (10.0%) were left-handed while 31 (77.5%) of them were affected on the right side and 9 (22.5%) were affected on the left side. Subsequently, the right handed participants may be referred to as being southpaw and the left handed participants as being non-southpaw (Lewis and Akinbo, 2014: 118).

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[4] Blench (2002); Aito (2005); Iliyasu (2012) and Ogunmodimu (2015) classify Okpemeri, Idoma, Ebira, Edo, Fulani, Ikwere, Itsekiri and Urhobo as minority languages.

[5] Blench (2002); National Policy on Education (2004); Aito (2005); Iliyasu (2012) and Ogunmodimu (2015) classify Hausa, Igbo and Yoruba as majority languages.

The table shows that all the participants, having Nigerian indigenous languages as L1 systems, use the English language as a second language. Also, they were all 'literate'; this is shown in their academic qualifications. In addition, they were all above 36 years of age (APP17 being the youngest among them). Hence they were adults. All these characteristics place the participants in stages V and VI of second language learning (discussed in 2.2.2) as well as Banjo's (1971) types 3 and 4 variety of Nigerian English (earlier discussed in section 2.5.3). Thus, the participants included in the table are those who meet up with the inclusion requirements stated in section 3.5.1.

4.2   Demography of autistic participants

For the autistic group, the demographic details obtained include: age, sex, languages spoken, geopolitical region and religion. Table II contains these details. Again, as stated in chapter three, the researcher had access to the autistic participants through the help and guidance of their (special) educators who ascertained their L1 systems. Since they all had their various L1 systems and they used English in a second language environment (Nigeria), it was assumed that English was a second language for them. The researcher also ascertained from the educators that none of them spoke any other language except English and their first languages.

Table 4.2   Demography of autistic participants

Participants	Age	Region	Sex	L1	Other Language(s)	Religion
AUP1	12	SW	M	Yoruba	English	Christianity
AUP2	11	SW	M	Yoruba	English	Christianity
AUP3	12	SW	M	Yoruba	English	Christianity
AUP4	12	SE	M	Igbo	English	Christianity
AUP5	13	SW	F	Yoruba	English	Christianity
AUP6	11	SW	M	Yoruba	English	Christianity
AUP7	11	SW	F	Yoruba	English	Christianity
AUP8	12	SS	M	Kwale	English	Christianity
AUP9	11	SE	M	Igbo	English	Christianity
AUP10	14	SW	M	Yoruba	English	Islam

AUP11	11	SW	F	Yoruba	English	Christianity
AUP12	12	SW	F	Yoruba	English	Christianity
AUP13	10	SS	M	Urhobo	English	Christianity
AUP14	11	SE	M	Igbo	English	Christianity
AUP15	11	SW	M	Yoruba	English	Christianity
AUP16	12	SW	M	Yoruba	English	Christianity
AUP17	15	NW	M	Hausa	English	Islam
AUP18	10	SW	M	Yoruba	English	Islam
AUP19	11	SE	M	Igbo	English	Christianity
AUP20	13	SW	M	Yoruba	English	Christianity

Key:
F: Female
M: Male
NW: North West: Kaduna, Kebbi, Zamfara, Sokoto, Kano, Jigawa and Katsina States
SE: South East: Ebonyi, Enugu, Imo, Abia and Anambra States.
SS: SouthSouth: Akwa-Ibom, Bayelsa, Edo, Cross River, Rivers and Delta States.
SW: South West: Oyo, Ogun, Lagos, Ondo and Osun States.

Table II shows that all the autistic participants were within the age brackets 11-20. Thirteen (65.0%) of them were from the south-west region and they spoke Yoruba as their L1. Four (20.0%) were from the south-east and they spoke Igbo as L1, only 1 (5.0%) was from the north-west having Hausa as his L1 and 2 (10.0%) were from the south-south. One of these two spoke Kwale as his first language and the other spoke Urhobo. It was not unexpected that most of the participants were L1 speakers of Yoruba especially considering the fact that the autistic support classroom is more easily accessible to Yoruba speaking autistics as a result of their closeness of such support facility. All the participants spoke English as a second language. While the researcher was informed by their educators and the parents (of some of the autistic participants) that they used the English language alongside their L1 in their homes, it was on record that the language of instruction and interaction permitted in their support classrooms was English. Table II, in addition shows that 16 (80.0%) of the participants were males and 4 (20.0%) were females. This almost agrees with the Center for Disease Control and Prevention's (CDC, 2010) report, that

autism is five times more common among boys than girls. Also, 17 (85.0%) of them were Christians and 3 were Muslims. The two autistism support centres accessed were owned by Christian faithfuls. Hence more Christians are likely to patronise the centres than Muslims. This is a possible reason for the presence of a higher percentage of Christian autistic respondents than that of the Muslims. Therefore, like the demographic results obtained for aphasia, it does not necessarily suggest that more Christians suffer from autism than Muslim faithful.

Generally, the autistic participants are all in the upper basic classes (Basic 4-6). Hence, details about occupation do not apply to them. Unlike aphasia, autism does not really result in deformity in hand or leg; therefore, there were no details about side affected. The conditions for their inclusion in the study as stated in section 3.5.1 require that aside being diagnosed with autism, they were on current placement in the autistic support classroom. The participants represented in table II met with these conditions. Koegel (2000), Golstein (2002) and Calgary (2009) report that autistic people between ages 11 and 20 have improved beyond the beginning fluency stage in their use of second language and they can respond to more complex language stimuli in communication and social interaction. Given this report therefore, the participants represented in the table are considered to have attained the intermediate fluency stage of second language learning (see section 2.2.2).

Some of these background characteristics are relevant to the analysis in this study while some, as noted by Sunday (2008), are needed basically for rehabilitation design. For example, characteristics such as sex and religion may play crucial roles in designing therapies for the participants. In cases where referral may be necessary, the participants' geographical region may have to be considered. All of these may form part of psycho-social therapies to be designed for the aphasics or autistics. It is not in doubt that the (geographical) location of health/support facilities (for both aphasic and autistic group) may be the reason for more participants being from the southwest. Further demographic studies may be carried out to ascertain the prevalence of these neurological conditions across the geographical regions.

However, characteristics such as age, L1 and geopolitical region are used in this study to draw comparisons of the morphosyntactic characteristics among participants in each

group, as well as between the two groups. Particularly, comparison between the two groups is mainly on the basis of age. This is because age, among others, has long been established as a sociolinguistic factor in language variation studies (Coulmas, 1998; Lopez and Scott, 2000; Carroll, 2004; Wardhaugh, 2006). It has been observed that inclusion of (participants') demographic details is important to identify the dimension and nature of speech disorders among people from culturally and linguistically diverse communities (Crowley, 2003; Tager-Flusberg, 2004; World Health Organisation, 2011). Also, such details may be used to inform a public policy response. In addition, language use among specific groups has been reported to vary along the lines of ethnicity (Coulmas, 1998; Fishman, 1999; Matuso, 2010; Noels, 2014; Oha, 2014). Therefore, participants' region and L1 (which are basic indices of ethnicity) are used for comparison among participants. Having presented the demography of participants in this chapter, the next chapter discusses some morphosyntactic features of aphasic speeches.

CHAPTER FIVE

MORPHOSYNTACTIC FEATURES OF NIGERIAN BILINGUAL APHASIC SPEECHES

5.0   Introduction

This chapter discusses morphological and syntactic features of aphasia. Basically, it focuses on participants' production of word order and head parameters, being core components of the Universal Grammar (UG). It also discusses lexical derivation, functional categories (tense, agreement, aspect, determiners and complementisers) as well as other morphosyntactic features. The analysis in this chapter is done against the background of Distributed Morphology (DM) and Principles and Parameters Theory. Although the aphasic participants' (APP) speeches are markedly distorted, structures that are relatively coherent are used to determine the characteristics of the respondents' use of the English morphology and syntax.

5.1.   Nigerian bilingual aphasics and Universal Grammar

Universal Grammar (UG) is an unconscious knowledge which exists in the human brain and it determines the existence of human language, including possible variations (Hulin and Na, 2014: 3). Its application in second language learning (SLA) has continued to set the limits within which a second language can vary in its use by language users who already know at least one other language. Also, the fact that certain parts of the brain (such as the Broca's area) appear to be specialised for language processing[6] has led some scholars (such as Anderson, 2010; Boeckx and Grohmann, 2013; and Dąbrowska, 2015; Boxell, 2016) to speculate that some neural regions may constitute the neural substrate for Universal Grammar. Hence, impairment to such regions may result in dysfunction which may affect victim's use of the common principles of universal grammar (Dąbrowska,

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[6] See Section 2.3.2

2015; Boxell, 2016). This section examines Nigerian bilingual aphasics' performance in their use of word order and head parameters in English.

5.1.1 Word order parameter

All languages have syntactic structures which they follow at sentence and phrasal levels; they, however, vary widely in their canonical word order. This variation has brought about descriptions of languages as being SVO, SOV, VSO (Wallwork, 2011; Maurits, Perfors and Navarro, 2014; Nurse, Rose and Hewson, 2016). English belongs to the SVO language class (Wallwork, 2011; Maurits, Perfors and Navarro, 2014; Bøegh, Daval-Markussen and Bakker, 2016; Nurse, Rose and Hewson, 2016), and this order is the basis for grammaticality judgment of aphasic speeches in this study.

The word order characteristics of Nigerian bilingual aphasics are examined in the following excerpts. The structures in focus in the excerpts are those in the labelled brackets.

1. Nurse and doctor try me… [$_S$Nurse $_V$gives $_O$me $_O$medicine] and doctor come to see me and write medicine for me. (APP34)

2. …[$_S$Family $_V$has $_O$motor vehicle accident…] Ahhhhh rush to hospital to rescue my life. Hmmmmmm good to know service to consume (points to his head). Hmmmm… know….ehhhhhh hmm lie::: strength to reject ehhhhh accept product. *[$_S$Doctor $_V$see $_O$me $_A$seven time]. Thank God… getting fine hmmm day. (APP19)

3. This really contributes… confidence get well… have relations around me. [$_S$(My) mother $_V$visit $_O$me $_A$sometime] (APP30)

4. [$_S$Two people ... $_V$come… $_A$with me $_A$last week.] (APP37)

5. [$_S$Doctor $_V$mention $_O$many drug] (and)… don't remember sha… ehm [$_S$one $_V$(is) $_A$like plavix (and) warfarin.] (APP37)

6. [$_S$Doctors $_V$come $_A$checking me]… and *[$_{Se}$ $_A$always $_V$give $_O$me $_O$hope to recover] (APP18)

7 *[$_S$ϕ $_V$Eat $_O$food ahh $_V$take $_O$drugs $_A$ahh doctor saying] (APP38)[7]

8*[$_S$Me… $_V$prefer $_O$government hospital]… [$_S$Doctor $_V$protect $_O$patient right $_{CONJ}$and $_S$patient $_V$fulfil hmmm… $_O$obligation.] (APP33)

The data above reveal that the SVO order in English is preserved in Nigerian bilingual aphasic speeches. The subjects (*S*) occur at the initial positions of the clauses, and are immediately followed by the verbs (*V*) after which the objects (*O*) and adjuncts (*A*) occur (in clauses that have them). In (1), *$_S$Nurse $_V$gives $_O$me $_O$medicine* has SVOO structure, where the subject 'Nurse' is at the initial position of the sentence and it is followed by the verb 'gives', then the indirect object 'me' occurs immediately after the verb after which the direct object occurs. The structures in (2) also follow the English word order as the aphasic produced SVO and SVOA for *$_S$Family $_V$has $_O$motor vehicle accident*and *$_S$Doctor $_V$see $_O$me $_A$seven time*, respectively. Also, the clauses: *$_S$(My) mother $_V$visit $_O$me $_A$sometime* (in 3) and *$_S$Two people $_V$come $_A$with me $_A$last week* (in 4) have the structures SVOA and SVAA, respectively. Similarly, the two clauses: *$_S$Doctor $_V$mention $_O$many drug* and *$_S$one $_V$(is) $_A$like plavix and warfarin* in (5) have SVO and SVA structures, respectively. While the first clause in (6), *$_S$Doctors $_V$come checking $_O$me,* follows SVO order, the second clause *$_S$e $_A$always $_V$give $_O$me $_O$hope to recover* reveals AVOOA[8] pattern. It is possible to assume the sequence of the verbs 'come' and 'checking' in the first clause as being a manifestation of serial verb construction (which is characteristic of the participant's L1) or an instance of cartenatives. However, the semantic interpretation of the clause shows that it is none of these syntactic features applies here. Rather, the participant expressed the purpose of the 'come', which is to check. Thus, 'checking' is not cartenative to 'come'. Hence, given the grammatical function of 'checking me', it is evident that the structure is an adjunct. The first constituent element of the second clause is the adjunct 'always' which is followed by the verb 'give'. The indirect object 'me' follows the verb immediately and as is expected, the direct object 'hope' follows immediately, after which another adjunct 'on recovery' appears. While the null phonetic realisation of the subject

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[7] The participant's intended structure, which is a response to the doctors' question, is "I eat my food and take my drugs as the doctor said."

[8]The subject is omitted in the clause. This non-projection of the subject does not affect the grammaticality of the clause.

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(marked *e*) in the second clause appears to be gapping, which is characteristic of coordination in English (Potter, 2013; Tang and Lau, 2014; Toosarvandani, 2015; Frazier, 2015: 20), similar patterns observed in $_V$*Eat* $_O$*food ahh* $_V$*take* $_O$*drugs* $_A$*ahh doctor saying* (7) and $_S$*Me... * $_V$*prefer* $_O$*government hospital* (the first clause in 8), raise questions on the aphasics' use of pronominal NPs in sentence construction. Particularly, the subjects in (7) and (8) are obviously pronominal elements in the nominative case. On the other hand, the other two conjoined clauses $_S$*Doctor* $_V$*protect* $_O$*patient right* $_{CONJ}$*and* $_S$*patient* $_V$*fulfil hmmm...* $_O$*obligation* have the SVO patterns. In the first clause, $_S$*Doctor* $_V$*protect* $_O$*patient right*, the subject 'Doctor' occurs sentence initial followed by the verb 'protect' and then the object 'patient right' comes after the verb. In the second clause, $_S$*patient* $_V$*fulfil* hmmm… $_O$*obligation*, the subject 'patient' occurs first and it is followed by the verb 'fulfil' after which the object 'obligation' occurs.

Extracts (3), (7) and (8) are very important to this discussion. The participants from whose speeches the structures were extracted have Izon as their L1. Izon is an SOV language (Blench, 2011: 4; Okunrinmeta, 2013: 31, 37; Nurse, Rose andHewson, 2016). It is observed from the data that this SOV pattern does not affect the participants' use of the English word order. This is evident in the participants' production of *This really contributes*, *(My) mother visit me sometime* and *Doctor protect patient right* in the extracts, where they produced the SVO structure in constructions involving non-pronominal NPs. Ogundipe and Ugot (2011) identify pronominal subject NP reduplication as a characteristic of informal use of English among Nigerians. In structures involving subject NP duplication, however, the nominative case pronominal is still required; the participant's production in (8) deviates from this. Also, the participants' L1 system (Izon) is not OSV language (which will require an accusative NP as external argument to the V). Given these two conditions (subject NP duplication and non-OSV order) therefore, the participant's production of 'me' in the subject position of the first clause in (8) is not likely to be an influence of his L1. (The ungrammaticality observed with respect to case features here are further examined in section 4.5 of this chapter.)

All the participants in this study produced the English SVO both in self-generated sentences (IDIs and PO) as well as passage reading test. This contrasts with Safran,

Schwartz and Marin (2010), Levy *et al.* (2012), Bastiaanse and Edwards (2014) and Gibson *et al.* (2015). Safran, Schwartz and Marin (2010) adopt Sentence Order Task to investigate word order in Broca's aphasia. They find "word order deficit" as a feature of aphasia among non-native English speakers. The authors further assert thus:

> The results of the two experiments demonstrate the lack of sensitivity on the part of our agrammatic subjects to word orders in S-V-O constructions… The point to be made in summarising our results is that the agrammatic aphasics could not produce NP-V-NP orderings. The evidence for this claim is the frequent occurrence of word order errors.
> (Safran, Schwartz and Marin, 2010: 272)

Their claim is supported by Levy *et al.* (2012), Bastiaanse and Edwards (2014) and Gibson *et al.* (2015). Levy *et al.* (2012: 162) and Bastiaanse and Edwards (2014: 37) posit that producing a simple S–V$_{fin}$–O sentence is not 'extremely difficult' for Dutch/English Broca patients. The phrase 'not extremely difficult' implies that the authors' participants manifested some form of difficulty with producing the S–V$_{fin}$–O order. Gibson *et al.* (2015:14) report that "word order errors are most prominent" in Dutch and English aphasics.

This study posits that the English (L2) canonical word order (SVO) is not impaired in Nigerian bilingual aphasics speeches.

5.1.2 Head parameter

One of the most basic cases of parametric variation in languages is the position of the head element within a constituent. Head parameter is a binary valued parameter which concerns the location of elements with respect to the head of a phrase (Rahmani, 2011; Cook and Newson, 2013; Rahmani, Alizadeh and Hamidi, 2014; Bøegh, Daval-Markussen and Bakker, 2016). Aphasic speeches in this study do not manifest any deviation from the English structure with respect to head parameter. The data presented below illustrate this.

> 9   Going to [$_{NP, Spec}$*three* $_N$*months]* now. Huhhhh ask them question regarding healing… doctor use [$_{NP, Spec}$*big* $_N$*grammar]* and ehnnn answer me well... [$_{NP}$*Different doctors]* taking turn one, one to check

me; *not facing me but talk only Oga* (rolls hand again to show possibly, "among") them. (APP35)

10   See, [NP, *Spec*dear *N*brother], (I)'m core Edo man::: (I've) live ø herb medicine quite long time hnnn (in) life. The only miracle is herb::: yes, herb Hmmm (uses gestures to show disagreement) [*AdjP, Spec*very *Adj*interest(ing)*] *oyinbo*::: abi ehhh modern medicine. (APP28)

11   One nurse shout patient (in) private hospital and (this) attitude discourage me. Hmmmm:::: nurses are [*AdjP, Spec* still *Adj*good]... Doctors come for [NP, *Spec*regular *N*check]. Doctors and nurses examine me. See (brings out some pills) one nurse give me (APP16).

12   *Go shop... business... hmm [NP,spec*rich *N*purse [*AdjP Spec*always*Adj*empty*.] (APP39)

13   *Fidelis told me joke, but (I) enjoy reading [NP *Spec*interesting *N*story] (APP36)

14   *[Uhmm (My) son *VP, aux*is*V*going to be happy] (APP40)

15 Sometime… health worker do (their) work [*AdvP, Spec*quite *Adv*regularly]…doctor and nurse [*VP, aux*must *V*work] (in) collaborating::: (APP17)

16 Hmmm (beats his chest to ask whether a question asked by the researcher was directed to him) Practising *[NP Spec*twenty *N*year now]. Consulting! See ehhhn thing affect health, fund, health educate people, access, cost and government. (APP33)

From the data above, it is seen that in (9), the NPs "three months", "big grammar" and "different doctor" all have the Specifier—head (Spec—head) order as obtained in "dear brother" (10), where 'three', 'big', 'different' and 'dear', respectively, are attributes premodifying their respective NPs. Similar order characterises 'rich purse' (12) and 'interesting story' (13). Again, the AdjPs, "very interest(ing) (10), "still good" (11), "always empty" (12) and the AdvP, "quite regularly" (15) follow the head last parameter of the English adjectival and adverbial phrases; the intensifiers precede the adjectives and adverbs. Also, the VPs "is going" (14) and "must work" (15) follow aux–head (that is,

head final) parameter of the English verb phrase. This is an indication that the head last structure of the English NP, VP, AdjP and AdvP (Wallwork, 2011; Maurits, Perfors and Navarro, 2014) is preserved despite the damage to the brain.

The participant in (9) for instance, a native and resident of Osun State, had Yoruba as his L1. The participant in (10), as indicated in his words, was from Edo, a south south state in Nigeria, and Edo is his L1. The participant in (11) was from the Ikale speaking area of Ondo State, southwest Nigeria; he spoke Yoruba as L1. These L1 systems (Edo and Yoruba) have their NP and AdjP structures as head-initial (Sanusi, 2014; Nurse, Rose and Hewson, 2016). For example, 'three months', 'modern medicine' and 'government hospital" in Yoruba is '*H*oṣù *Spec*méta', '*H*ìsègùn *Spec*(t')ìgbàlódé' and '*H*iléèwòsàn *Spec*(t')ìjoba', respectively. Despite the difference in the head parameters in the participants' L1 and English (their L2), as well as the embedding involved in the generation of these structures in their L1, the head last structures are preserved in their English speeches.

The data, therefore, indicate that even after damage to the language production part of the brain (that is, the Wernicke's and Broca's areas), the structures of the L2 are preserved. Another general observation in the aphasic speeches is that most of the participants rarely use grammatical word classes such as prepositions as in *"not facing me but talk only ø oga[9]" (in 9; preposition *to* is omitted here), "*(I've) live ø herbal medicine quite long time" (in 10; preposition *on* is omitted). It is assumed here that aphasics have problems with the production of the English prepositional phrases, essentially as a result of their inability to produce prepositions, which head PPs. However, this will be discussed later in this chapter (See 5.4.2).

5.2   Nigerian bilingual aphasics and morphological derivations

The use of derivational morphology is a major means (in many languages, including English) of converting or deriving a word of one syntactic category from another, sometimes with a shift in meaning. Various aspects of knowledge of English derivational morphology have been explored in second language environment and studies have

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[9]*Oga* is a Yoruba word for *boss/superior*

established that L2 users of English have minimal problems with the syntactic knowledge of morphology (Lardiere, 2010; Zhang andWidyastuti, 2010). A common justification given for this is that even if an L2 speaker does not know the lexical stem of a word (for example 'ambiguous' and 'ambiguity'; Lardiere, 2010: 73), the syntactic classes of the words (adjective and noun, respectively) can be correctly identified. Beyond being able to state the syntactic class of a word, however, the selectional knowledge of a language user plays crucial roles in the derivation of words. Against this background, therefore, and within the frame of Distributed Morphology, this section examines aphasics' production of derivational morpheme with particular focus on derivations of nouns, adjectives and adverbs, which are content word classes, carrying information in utterances. Derivation of verbs, which are also content words, is excluded in this study because there are no data for verbs derived from other word classes. However, verbal inflections are succinctly discussed in the next section (5.3).

5.2.1   Nominalisation

Nominalisation is the process of forming a noun from some other word class, precisely verbs and adjectives (Garner, 2012: 825; Taher, 2015: 30). Thus, the nominals discussed in this study are nominalised verbals and nominalised adjectivals. Nominalised verbals are derived from verbs, but they exhibit nominal properties. As discussed in section 2.6, such nominals, by features, fall into two categories: gerund and deverbal noun. Both categories are found in the data gathered for this study.

In this study, aphasic speeches are found to be rich in root nouns. Participants were able to use root nouns in all the instances of occurrence in the passage reading test (PRT). The same is observed in the in-depth interviews (IDIs) as well as in the conversation between doctors and the patients (obtained through participant observation, PO). Some of the root noun forms contained in the speeches of aphasics extracted from the PRT, IDIs and PO are presented below.

17a. *Me::: believe *efficacy* of *tradition* (APP28)
18. *Nurse *attitude* hmmm government hospitals discourage health seeking. (APP34)
19a. *Uhhh I like doctor disposition::: here::: show concern (APP15)

20. *Drug cost giving me *pressure* (APP26)

21a. *Government *hospital* have *facility* (APP25)

22. *Doctors come on regular check. (APP16)

In the structures above, the nouns 'efficacy', 'tradition', 'attitude', 'concern', 'pressure', 'facility' and 'hospital' were correctly produced (although the sentences in which they are used are ungrammatical). These words are root nouns without morphological affixes. For example, 'tradition' (17), 'disposition' (19) and 'facility' (21) are represented in the diagrams below where √ denotes l-morpheme (that is, root), [ ] denotes f-morpheme (in this case nominaliser (n^o); (Kasperavicius, 2012; Adam, 2014; Jung, 2014; Sassoon, 2015), Φ denotes the absence of derivational morpheme[10] and Ø denotes participant's non-production of morpheme where required.

17b.

$$n$$

√tradition   [n^o, Φ]

19b.

$$n$$

√disposition   [n^o, Φ]

21b.

$$n$$

√facility   [n^o, Φ]
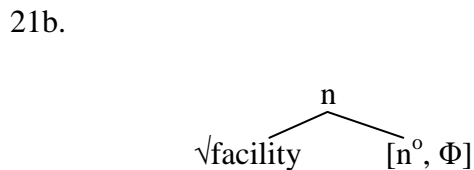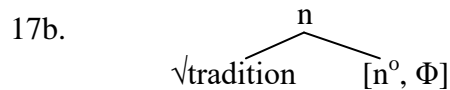
These may be contrasted with the nouns in the following structures, which involve some morphological processes.

23. *I encourage:::: my doctor's *readiness.* (APP14)

24. *Doctors tell *illness* diagnosing me. (APP22)

Structures (17-22) reveal correct usage of the root nouns (that do not have derivational) morphemes. Similarly, the participants in (23 and 24) correctly produced the nouns 'readiness' and 'illness', which are formed from the adjectives 'ready' and 'ill', respectively. However, in the analyses of (25-28 below), participants manifest some difficulty in deriving nouns from adjectives. In the structured passage (SP), the target

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[10] These are notations used in Distributed Morphology (see Kasperavicius, 2012; Jung, 2014; Sassoon, 2015)

words in (25), (26) and (27) are 'complexities', 'wisdom' and 'dishonesty', respectively. The structure in (28) was self-generated by the participant, and the context suggests that the participant intended to produce 'happiness'.

25.

```
              n
        adj        *[n°, -ion]
         |
      √complex
```

*Body *complexion*::: reflect genius and wise creator (APP5)

26.

```
              n
        adj        [n°,ø]
         |
       √wise
```

Body complexion reflects ahh wise creator (APP12)

27.

```
                n
        adj            *[n°,ø]
     neg    √honest
      |
     [ø]
```

*Also, *honest* character::: professing is absolutely::: checking. (APP9)

28.

```
           n
     adj        [n°, ø]
      |
   √happy
```

*Money give joy but *happy* (APP 25)
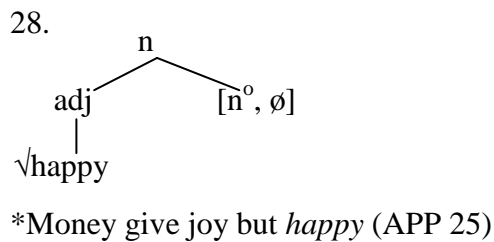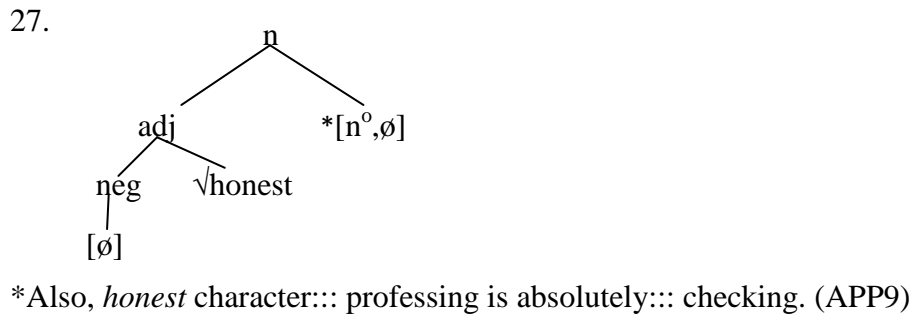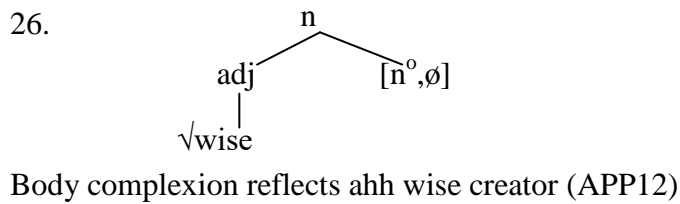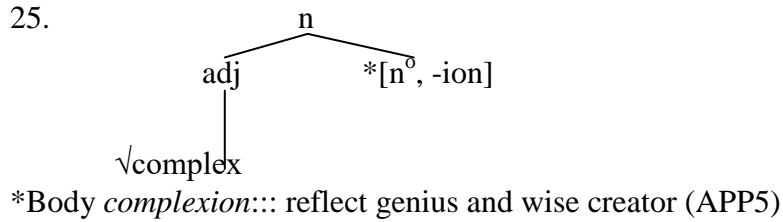
APP5 (26) substituted the expected derivation -*ity* with -*ion* (which appears to be easily processed for the participants). It is required that the f-morpheme is merged in local relation with the l-morpheme for certain *syntactic and/semantic* specifications (Lardiere, 2010; Jung, 2014). The participant's production here does not meet this requirement. Though the output exists in the English (participant's L2) lexicon, the LF (semantic) component of the construction has been altered. One possible claim here is that the problem is not phonological. At least a reference to (21) above provides evidence. The

word 'facility' has the same terminal phonetic structure /əti/ as 'complexity', yet the participant was able to say 'facility'. It is possible that the word 'complexion', which has neither morphological nor semantic similarity with 'complexity', is easily accessible in the speaker's (mental) lexicon. The participants in (26), (27) and (28) only produced the root morphemes (adjectives) leaving the f-morphemes (n^o, that is, the nominaliser position) null though an argument is required in such positions which the words occupy in the sentence. The participant (in 27) had difficulty with both the suffix that maps the root word (adjective) onto noun, and the prefix *dis-* (which performs a semantic function of negation); the participant omitted these f-morphemes (which are derivational bound morphemes). This implies that there is variation in aphasics' performance with respect to nominalising adjectives; while such (N— adj, n^o) morphological transformation is preserved in some, it is impaired in some others.

Similar morphological difficulties characterise the nominalisation of verbals in the participants' speeches. The following structures show how aphasics fare with respect to nominalising verbs.

29.

   *Also, honest character:::*professing* is absolutely checking::: (APP9)

30.
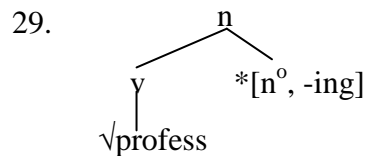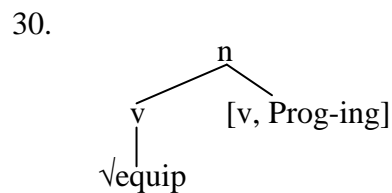
   *Doctor haul piece *equipping:::* (APP4)

31.
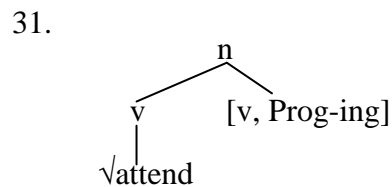
*Getting medical *attending* recent time (APP13)[11]

32.

```
        n
       / \
      v   [v, Prog-ing]
      |
    √admit
```
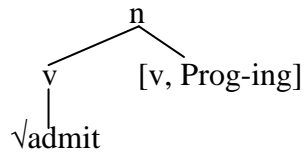
 *(I) spend three days *admitting* (APP19)

33.

```
        n
       / \
      v   *[v, Prog-ing]
      |
   √ventilate
```
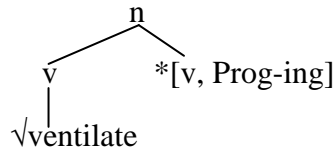
 *Hospital have pharmacy shop and good *ventilating* and bed space. (APP19)

34.

```
        n
       / \
      v   [n^o, -ing]
      |
    √seek
```
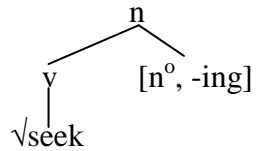
 *Nurse attitude hmmm government hospitals (dis/en)courage health *seeking*[12].
(APP34)

35.

```
        n
       / \
      v   *[n^o,ø]
      |
    √attend
```
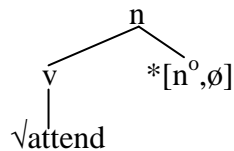
Getting medical *attend:*:::::centing. (APP3)

36.

```
        n
       / \
      v   *[n^o,ø]
      |
    √equip
```
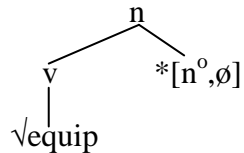
 *Doctor hauled piece equip. (APP2)

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[11] The structure as contained in the structured passage is *While getting a medical attention recently...*
[12] The participant refers to himself and other health seekers in the clinic. It was not clear whether the participant produced *dis/en* as prefix; the participant only hummed.

37.

```
                     n
                  /     \
                 v       *[no, mmmmm!!!]
                 |        (meaningless sound)
                 |
            √appoint
```

  *(I) consulting on regular *apponmon*[13]. (APP33)

Two characteristics are observed in the italicised words in the structures above: omision and substitution. In structures (29), (30), (31), (32), (33) and (34) the aphasics substituted the (derivational) f-morphemes *-ion*, *-ment*, *-tion*, *–sion*,*–ion* and *–er,* respectively, with non-finite verb form: *-ing*. The participants' derived words ('professing', 'equipping', 'attending', 'admitting', 'ventilating' and 'seeking') may be gerunds if they occur in positions that require such nominalisation. However, in their usages in this context, the l-morphemes require a selection of n^o for f-morphemes, not non-finite inflection (as seen in the right branching nodes in the structures). This kind of morphological substitution results in ungrammaticality as the newly derived words do not match the subcategorisation feature needed for the positions in which they occur, especially in argument positions. The l-morpheme and f-morpheme selection in 'seeking' in (34) is grammatical; it produces a gerund, which is structurally permissible. However, it has semantic implications for the structures. For example, while the speaker intended to communicate an NP with the feature specifications [+Human, -Abstract], the actual production conveys [–Human, +Abstract].
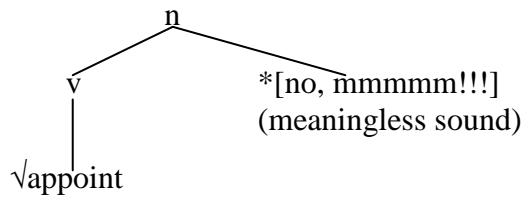
In (35), the participant attempted assimilation such that the target word 'attention' and the word that followed immediately, 'recently', were almost produced as a single word. Comparing the participants' output in the production of 'tradition' (17a) and 'disposition' (19) with what obtains in the production of 'profession' (23) and 'attention' (35), it is observed that though these structures are characterised by similar terminal letter sequence and phonemic structure, the participants could not pronounce the word *attention* correctly. Thus, this further shows that while the production of root nouns and derivation of gerunds are preserved in aphasia, a problem arises with derivation of deverbal nouns. Structures

---

[13] As in 32 above (but in this case, another participant who read the structured passage)

(36) and (37) are characterised by complete deletion of the nominaliser. The participant in (37) only produced meaningless sound (as though he attempted to produce the morpheme).

It is deducible from the participants' production in (29-37) that, like the case with nominalising adjectives, Nigerian bilingual aphasics have great difficulty with producing f-morphemes involved in deriving deverbal nouns. Such nominalisation in their speeches is mostly characterised by indiscriminate use of *–ing*.

However, the following structures show some differences in aphasics' performance in their derivation of gerunds.

38.   *(I'm) looking unto God in divine *healing.* (APP17)

39.   *He told me *walking* is no good. (APP38)

40.   *This is (my) *standing* with hmmm church members (APP31)

41.   *Doctors do regular checking (APP16)

42   *My*healing* improving fast **(**APP27**)**

43.   **Getting* medical attending recent time (APP13)

44.   *Wasting* time is one thing I hate (APP 40; said as if soliloquising)

In each of the structures above, the participants produced 'healing' (38), 'walking' (39), 'standing' (40), 'checking' (41), 'healing' (42), 'getting' (43) and 'wasting' (44) correctly. The f-morpheme required for nominalisation in all the structures is n^o–*ing,* which the participants' production meets. The selection, as in other structures, is determined by the sentence in which the output is used. In the sentences, the gerunds are used in argument positions. For example, the gerunds in (39-41) are used in internal argument positions while those in (42-44) are in external argument positions, functioning as the Spec, IPs in their respective sentences.

Goral (2010: 297-298) avers that the nominal system is regular in Hebrew aphasics, irrespective of their root forms. This is also corroborated by Zanini, Pellegrin and Semenza (2010) that naming is not problematic in aphasia. The current study would, perhaps, agree with Goral and Zanini *et al*. if it considered only root nouns. The conclusions (by Goral, 2010 and Zanini*et al*., 2010) were probably reached without

consideration for the morphological details of complex nouns in their test instrument. Contrary to these authors' submissions, it is deducible from the current study that nominalisation in aphasia varies, depending on the process(es) involved.

As seen above, while morphological structure is preserved in gerund, it is not in other forms of nominalisation in Nigerian bilingual aphasic speeches. The difficulty sets in when it comes to derivation of deverbal nouns and nominalising adjectives. While some of the participants subscribe to the –*ing* form of the verbs (not necessarily gerunds), some only use the root verbs without any morphological processing and some others merely produce meaningless sounds.

5.2.2 Derivation of adjectives and adverbs

Adjectives in English are generally classified as being gradable and non-gradable (McNally, 2010; Kasperavicius, 2012; Sassoon, 2015; Aparicio, Xiang and Kennedy, 2015). Gradable adjectives can be used in comparative and superlative forms. Also, as regards their structure, they can be said to be root adjectives and denominal adjectives. The study's structured passage (SP) contains very few comparative and superlative forms. There is no instance of use of such adjectives in the data obtained through IDI and PO. Also, the few examples of adverbs found in the data are those contained in the structured passage. None of these adverbs is used in the comparative or superlative form. Structures (45-49) mainly show aphasics' production of simple (that is, root) adjectives and adverbs. To avoid repetition of data, (48b) and (49b) are included, though the adverbs (in the diagrams) are not all root forms in themselves.

45.
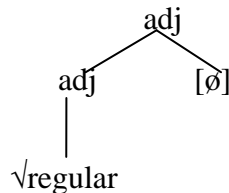
Doctor do *regular* checking (APP16)

46.
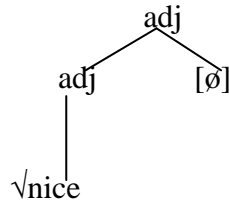
```
           adj
          /  \
        adj   [ø]
         |
       √nice
```

hmm admit ahh hospital hmm *nice* husband (APP29)

47.   a.
```
          adj
         /  \
       adj   [aº, -ly]
        |
     √friendly
```
b.
```
          adv
         /  \
       adj   [ø]
        |
     √kind
```
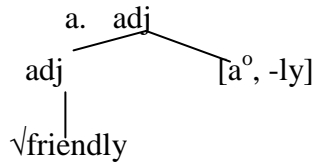
Doctors have *friendly* and *kind* character (APP17)

48.   a.
```
          adj
         /  \
       adj   [ø]
        |
     √general
```
b.
```
          adv
         /  \
       adj   [aº, -y]
        |
     √simple
```

…(your) *general* health::: *simply* look::: (APP13)

49.   a.
```
          adj
         /  \
       adj   [ø]
        |
     √rich
```
b.
```
          adv
         /  \
       adj   [ø]
        |
     √always
```
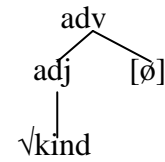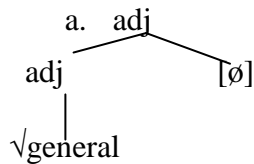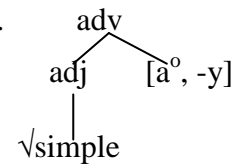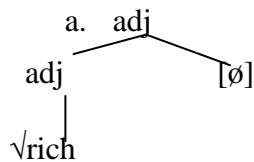
Go shop::: business::: hmm *rich* purse always empty (APP39)
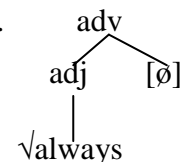
In the structures above, the participants perform well in their use of simple adjectives and adverbs. For example, there was no problem producing the adjectives 'regular' (45), 'nice' (46), 'friendly' (47a), 'kind' (47b), 'general' (48a) and 'rich' (49a) as well as the adverbs, 'simply' (48b) and 'always' (49b). The participant in (48b) was also able to process the f-morpheme required for the derivation of the adverb 'simply' from the adjective 'simple'. Conversely, structures (50-55) below reveal somewhat different patterns of formation of adjective and adverbs in aphasic speeches.

50.

adj
├── adj
│   └── √remark
└── *[aᵒ, ø]
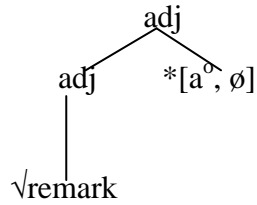
Remarking person over::: all healing can (APP13)

51.

adj
├── adj
│   └── √relative
└── *[aᵒ, -ing]
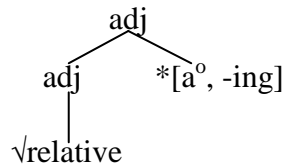
Hospital has *relating* adequate::: equipping tools to treat patients. (APP27)

52.

a.

adj
├── adj
│   ├── [Neg, ø]
│   └── adj
│   └── √secure
└── [ø]

b.

adj
├── adj
│   ├── [Neg, ø]
│   └── adj
│   └── √safe
└── [ø]
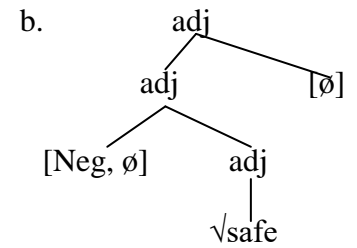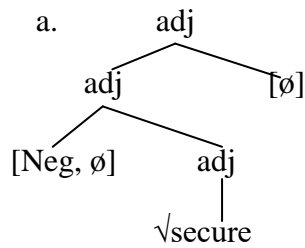
So no reason to feel *secure* or *safe*. (APP12)

53.

adj
├── adj
│   └── √clever
└── [adj, ø]
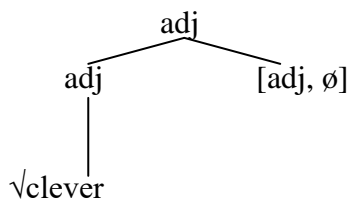
Doctors are cle.ver human set[14]. (APP11)

54.

adj
├── adj
│   └── √good
└── [adj, ø]
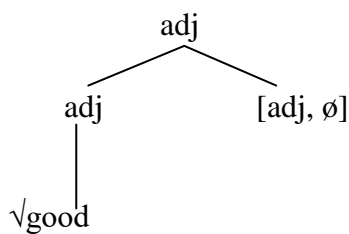
Doing good different yesterday[15] (APP26)

---

[14]Doctors are the clever**est** set of humans

[15]R: You mean you are getting better?

P: Yes

55.

adj
├─ adj ── *[a°, ø]
│
└─ √medicine
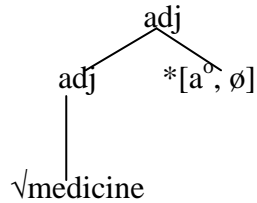
Getting medicine attending::: recent time. (APP9)

In (50), the participant has difficulty deriving the adjective 'remarkable' from the l-morpheme 'remark' (verb). As shown in the tree diagram, the participant substituted the required denominal *f*-morpheme *-able* with *-ing*. This perhaps suggests that aphasics have problems with deriving adjectives from verbs. Similar challenge characterises 'relating' (51) in which the participant omitted the terminal syllable *-ive* and the denominal *f*-morpheme *-ly* and both (*-ive* and *-ly*) are substituted with *–ing*.

Again, in structures (52a and b), the participant could not process the negation morpheme in the two words. Thus, instead of 'insecure' and 'unsafe', the participant only produced the l-morphemes: 'secure' and 'safe'; the negator *f*-morpheme, *un-*, is omitted. It is likely to be the case that aphasics generally have problems with derivational f-morphemes. Similarly, the participants' inability to produce 'cleverest' and 'better' in (53) and (54), respectively, suggests that aphasics have difficulty with processing comparative and superlative forms. Unlike what obtains in structure (47) above (where the participant's derivation of 'friendly' from 'friend' is unimpaired), the participant in (55) had problems deriving 'medical' from the noun 'medicine'. Structurally, these two words (medicine/medical) have semantic relationship which presupposes that 'medicine' is the root morpheme of 'medical'. Thus, the denominal *f*-morpheme *–al* is omitted. This difference between (47) and (51) suggests that aphasics' derivation of denominal adjectives does not follow the same patterns; while it is impaired in some, it is preserved in others. However, a major bane to the establishment of this description is the dearth of data on denominal adjectives in the current study. While this study tentatively predicts that processing of denominal adjectives and comparative as well as superlative forms are problematic for aphasics, it posits that root adjectives and adverbs do not pose any challenge to aphasics.

The discussion above shows that both omission errors (as in 50) and substitution errors (as in 51-55) characterise the participants' speeches. This differs slightly from Abuom and Bastiaanse's (2012: 2) finding that in Swahili-English bilingual aphasics' production "every noun, verb, and adjective has ending; agrammatic speakers make substitution errors rather than omission errors." The current study however agrees with MacWhinney and Osmán-Sági (2011) who report that picture description tasks among Hungarian aphasic speakers is characterised by omission and substitution of inflectional morpheme.

5.3   Verbal inflections in Nigerian bilingual aphasic speeches

Inflection is a process of word formation in which items are added to the base form of a word to express grammatical functions, meanings or attributes such as tense, mood, person, number, case, and gender (Blevins, 2006; Tamba, 2010; Singh and Sarma, 2012). In this section, the focus is on verbal inflection. Specifically, the discussion focuses on tense, (number) agreement and aspect; that is, how aphasics perform with verb conjugation.

5.3.1   Tense

Morphosyntactically, Tense refers to the way verbs change their form in order to indicate at which time a situation occurs or an event takes place. It is a grammatical category that has to do with how events are placed, seen, and referred to along the past―present (―future) time line (Zaliznyak and Shmelev, 2009; Dürich, 2012; Dragoy and Bastiaanse, 2013). In English, tenses are morphologically inflected. That is, they are indicated by morphological marking of root verbs, and they are obligatory in use. Thus, tense plays an important syntactic role as a functional category in languages, as well as denoting the semantic distinctions of time. The following structures exemplify the use of the English tense among Nigerian bilingual aphasics.

56.   *[_{IP, Spec}(I) _{VP,AUX}Ø impress[16]::: _{CP}, _{C}Ø _{IP, Spec}someone::: _{VP}inventing _{NP}camera]] (APP10)

57.   *[_{IP, Spec}doctor::: _{VP}hauling:::_{NP}equip::: hmmm:::] (APP6)

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[16] This verbal element is excluded from the discussion here because the participant omitted the tense marker in the VP, which is in the aspect form (*was impressed*).

58. *[ahhh::: _VP_*complying* _PP_to instruction…] (APP 18)

59. *[_IP, Spec_Doctors _VP_*come* _PP_*to large number] (APP35)

60. *[_IP, Spec_Heal<th> worker _VP_*teach* _NP_patients right and response…] (APP22)

61. *[_IP, Spec_Ø _VP_*ask* hmmmmm::: _CP C_Ø _IP, Spec_the device annhhhhh respond:::]] (APP4)

62a. *[_IP,Spec_Do ctor _VP_*haul::: out:::* _NP_piece equipping] (APP4)

63a. *[_CP_Last year _IP, Spec_Ø _VP_*suffer* _PP_Ø _NP_heart problem] (APP29)

64a. *[_IP, Spec_ (I) _VP_*graduate* _PP_Ø _NP_Unimaid _AdvP_two years ago] (APP29)

The above sentences as contained in the structured passage as well as the context of the participants' self-generated structures express past actions. In some structures (such as 62a, 63a and 64a), there are temporal adverbs which are indicators of past time reference. Thus, the participants were expected to obey the rules of grammar with respect to tense in all the structures presented above.

In (56), (57) and (58), the f-morpheme (+*ing*) selection for 'inventing', 'hauling' and 'complying' does not meet the f-morpheme(+*ed*) required by the syntax. The participants optionally used non-finite constructions alongside finite clauses. This is ungrammatical. In (60), (61), (62a), (63a) and (64a), the participants omitted the +*ed* f-morpheme required for grammaticality. They only produced the root morphemes 'come', 'teach', 'ask', 'haul(out)', 'suffer' and 'graduate' in their respective sentences. The participants did not perform better in producing the past tense morpheme even though the temporal adverbs are overt in the sentences. These are further illustrated in the diagrams below.

62b.

```
                    v
                  /   \
                 v    *[pst., ø]
                 |
        recently √haul
```

63b.

```
                        v
                      /   \
                     v    *[pst, ø]
                     |
    last week     √teach
```

64b.

```
              v
           ╱     ╲
          v       *[pst ø]
          │
      √graduate ⟷ two years ago
```
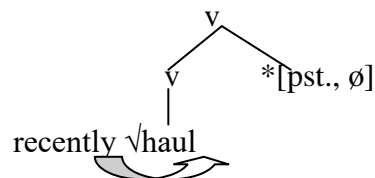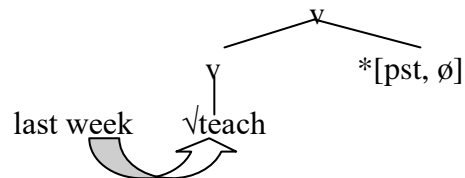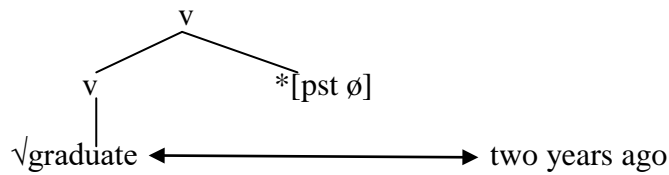
The temporal adverbs 'recently' (62b), 'last week' (63b) and 'two years ago' (64b) should prompt the tense expressed by the verbs in the sentences. The data show that the participants' performance in their self-generated sentences is not different from their performance in the reading test. They produced temporal adverbs, yet the past tense markers were deleted.

The plethora of literature on tense marking in aphasia have shown that tense is severely impaired in aphasia. Notably, the earliest is Friedmann and Grodzinsky (1997) which birthed the Tree Prunning Hypothesis (TPH). Later studies such as Jonkers (2008), Kolk *et al.* (2012), Clashen and Alli (2014), Faroqi-Shah andFriedmann (2015) have found tense inflection to be more impaired than other inflections in aphasia. The finding of this study does not differ from those of the previous ones. However, unlike Kolk *et al.* whose participants only omitted the tense marker, the participants in this study either omitted the +Pst inflectional morpheme or substituted the same with *–ing* (as in 57, 59 and 64). A possible submission here, therefore, is that impairment of past tense morpheme in aphasia manifests in two forms. It is either deletion of the f-morpheme or use of non-finite constructions in the context where a tensed verb is required.

5.3.2   Agreement

The discussion of agreement in this section focuses on present tense verb and their inflection for number (subject-verb agreement) in aphasic speeches. The data presented below reveal that subject–verb agreement is mostly preserved in aphasia.

65.   [$_{IP, Spec}$Nurses $_{VP}$*give*$_{3.Pl}$ $_{NP}$me $_{NP}$medicine.] (APP34)

66.   *[$_{IP, Spec}$Different doctors $_{VP}$*take*$_{3.Pl}$ $_{NP}$turn one one.] (APP35)

67.   *[$_{IP, Spec}$Federal hospitals $_{VP}$*have*$_{3.Pl}$ $_{NP}$qualify staff.] (APP19)

68.   *[IP, SpecØ children[17]VPlike3.Pl NPall qualities hmm tell them UCH.] (APP 40)

69.   *[IP, SpecHonesty VPcharacterises3.Sg. NPothers professing and absolutely checks] (APP10)

70.   *[IP, SpecNeighbour son VPfollows3.Sg NPme AdvPall time.] (APP39)

In these structures, aphasics' selection of f-morphemes for number and person in verbs agrees with those of their nominative case nouns (external arguments in GB terms). This is seen in the agreement relationship that exists between the Spec, IPs and the INFLection in sentences (65-70). In (65), (66), (67) and (68), the verbs 'give', 'take', 'have' and 'like' all agree with their respective external arguments 'nurses', 'different doctors', 'federal hospitals' and 'children'. In (69) and (70), the f-morphemes (*3.Sg*) of the verbs 'characterises' and 'follows' agree with their subjects, 'honesty' and '*neighbour son[18]'. This is further evident in (71) and (72) below where the participants attempted what is described here as *syntactic simplification* and they appear to attain a 'relative success'.

71.

    *IP, Spec*Doctor gathers* detail about general health (APP14)

72.

    *IP, SpecBody *complexion*::: *reflects*::: genius (APP12)
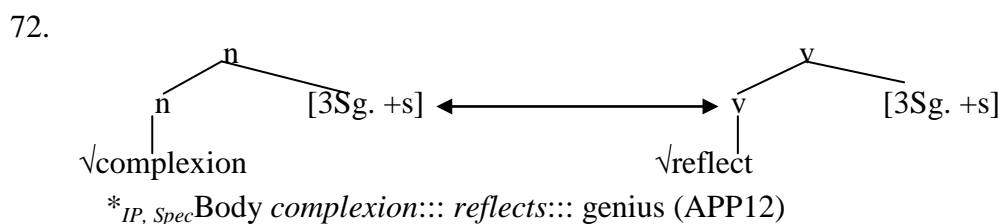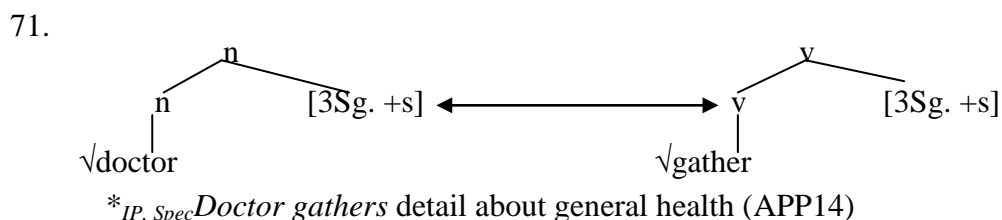
In the structured passage (SP), the test items read *We can gather a lot of details about your general health* (for 71) and...*the complexities of our bodies reflect the genius...* (for 72). Instead of the nominative case plural pronominal[19] 'we', the participant in (71) substituted the subject position with a singular N 'Doctor' (assumed to be its noun referent). Then, he eliminated the *aux* 'can' from the VP.This syntactic reprocessing

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[17] The participant refers to his children; hence the NP requires a determiner, which is not projected in the structure, marked Ø (See appendix I)

[18] ** Neighbour's son

[19]This,so far, appears to be problematic in aphasic speeches.

produced structure (71). Also, the participant in (72) eliminated the PP complement in *the complexities of our bodies* having 'body' as Spec, NP (in body complexion) to the initial head N 'complexity' (produced as complexion). It is also noted that the verb 'reflect' in the test item has f-morpheme *3.Pl*. The participants in both structures were able to select f-morpheme feature of the respective verb that agrees with those of the newly derived subject NPs. Hence, the *3.Sg* morpheme in 'gathers' and 'reflects' agrees with the same feature in 'Doctor' and 'body complexion' in (71) and (72), respectively. Thus, the morphological feature of verbs in aphasic speeches is characterised as *l-morpheme v selects f-morpheme 3.Sg. in the location of Sg. nominal and l-morpheme v selects f-morpheme 3.Pl. in the location of Pl. nominal.* This is the required selectional condition for the grammaticality of the sentences in terms of agreement, where *Sg* (singular) noun selects *Sg* verbs and Pl (plural) noun selects plural verb. Thus, it implies that agreement is (relatively) preserved in aphasia.

However, the data (73-76) below reveal that in some cases, agreement inflection may be impaired in aphasic speech.

73.   *[$_{IP, Spec}$UCH $_{VP}$have $_{NP}$friendly procedure] (APP22)

74.   *[$_{IP, Spec}$daughter$_{VP}$rub (in/the)[20]$_{NP}$*aboniki::: $_{PP,P}Φ$ $_{NP}$(my) hand and leg] (APP38)

75.   *[$_{IP, Spec}$Honesty::: $_{VP}$cha.racterise::: $_{NP}$other   professing:::] (APP6)

76.   *[$_{IP, Spec}$body complexing[21]::: $_{VP}$reflecting $_{NP}$the genius… wisdom::: of ehmmm great creator.] (APP7)

Contrary to the preserved syntax observed in (65-72), structures (73-76) show a deviation from the earlier position that the morphology/syntax of tense is preserved in aphasia. In structures (73-75), the participants used the root verbs 'rub', 'characterise' and 'have' in locations that select *+3.Sg* f-morpheme (for 'daughter', 'honesty' and 'UCH'). The implication of these is that the structures violate Spec—head agreement, which requires that a specifier agrees with its head in all features (Chomsky 1993; Carnie, 2006).There is no agreement between the inflection of the verbs ('rub', 'characterise' and 'have') and their external arguments ('daughter', 'honesty' and 'UCH', respectively) by the inflection.

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[20] The word sounds like 'in' but the context of usage suggests 'the'
[21] The participant's production has phonological closeness to *complexing* instead of complexity.

Many of the participants showed some level of syntactic preservation by attempting to simplify complex structures in the PRT. However, such syntactic 'retransformation' resulted in inaccurate morphological feature. For instance, the morphology of the verb in (76) is characterised by *l-morpheme selects f-morpheme +Prog* (reflecting) *in a location of f-morpheme +3.Sg* (body complexing); this selection is ungrammatical. The f-morpheme *+Prog* feature makes the verb void of tense inflection. Thus the external argument 'body complexing' is not case-marked (the non-finite verb is too weak to assign case to it; Lamidi, 2011: 50). Hence, it violates Case Filter (Chomsky, 1993: 49, 175; Carnie, 2006: 296; Sigurðsson, 2008: 3).

Friedmann and Grodzinsky (1997: 402) assert that "agreement inflection is completely intact in the speeches of Hebrew agrammatic speeches". The current study differs from this finding. In this study, there are deficits in agreement features in the speeches of some of the participants. Burchert, Swoboda-Moll and De Bleser (2015) aver that processing of agreement morphology is more impaired than processing of tense morphology among German agrammatic speakers. Contrary to this submission too, this study finds that agreement deficit is minimal in the speeches of Nigerian bilingual aphasics. Also, Hagiwara (2005), reporting both tense and agreement being intact in Japanese aphasic speeches, argues for preserved inflection. Furthermore, Albustanji *et al.* (2013) report high rate of deficit in agreement marking among their aphasic patients. They argue that agreement errors include substitution of the person agreement inflection, substitution of the gender agreement inflection and substitution of the number agreement inflection. Contrary to these previous findings, the current study only finds omission of the agreement inflection in the speeches of the participants. Following the serious deficits that characterise tense inflection and the minimal impairment of agreement in aphasic speeches above, this study agrees with Pollock (1989) that tense and agreement are represented as separate functional categories. Hence, tense and/or agreement features may be selectively impaired in aphasic speeches, as found among Nigerian Bilingual aphasics in this study.

5.3.3 Aspect

Aspect is a grammatical category that reflects the perspective from which an action/situation is seen. It states whether an action is complete, in progress, having

duration, beginning, ending, or being repeated. Cover (2010) and Dürich (2012) describe aspect as 'event reference'. English has two aspects, *progressive* (also called *continuous*) and *perfective*. Like tense, these are usually expressed through morphological inflection. One fundamental feature of *Asp*(ect) marking in English is that the l-morpheme is preceded by an *aux*(iliary), which may have either *+pres* or *+past* morpheme. This may be put as *aux+V* requirement. Therefore, for any user of English to correctly produce *Asp*, this requirement must be met. Hence, the English Asp structure (*aux+V*) is a phrasal category rather than a lexical category. As a result of the *aux+V* requirement, f-morphemes in the Asp structure (which are functional elements) are not determined by the verb (l-morpheme); rather, the verb form is determined by the functional element, *aux*. The structures below describe the feature of aphasic speeches with respect to the use/processing of aspects in English.

77.   *[$_{IP, Spec}$Doctors $_{VP}$*are trying* $_{PP, P}$∅ $_{NP}$me$_{AdvP}$all time.] (APP37)
78.   *[$_{IP, Spec}$ (I'm) $_{VP}$*consulting*$_{PP, P}$∅ $_{NP}$regular apponmon] (APP33)
79.   *[$_{IP, Spec}$Someone $_{VP}$*is inventing* $_{NP}$camera do recent time] (APP9)

Structures (77) and (78) above meet the *aux+V* requirement although the selection for tense in (78) is not the expected f-morpheme[22]. Regardless of the time reference conveyed by the *aux*, the selection of f-morpheme *+ing* is required in the location of *aux-be* to convey progressive aspect. The participants in both structures correctly made this required selection for the l-morpheme verbs 'try' and 'consult', respectively. Thus, both structures may be adjudged grammatically correct in terms of *Asp* feature of the lexical verb. The participant in (79), like some others, also attempted some syntactic simplification of the test item in the structured passage (SP). The structure as contained in the test item is "Someone *invented* a camera that could do that". Instead of producing the simple past tense 'invented', the participant reprocessed the given structure to convey present progressive aspect, 'is inventing'. Similar to what obtains in (78), the context as suggested by the temporal adverb 'recently' in the passage conveys a past time as against the present tense produced in the speech. However, the participant's production meets the requirements for *Prog Asp* marking in English. Thus, it appears that aphasics have slight

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[22]The context in which the participants made the speech suggests that while 77 is present progressive, 78 should be in the past progressive aspect (as against the present progressive) produced by the participant.

difficulty inflecting a verb for progressive aspect. Structures (80-84) below reveal how the participants fare in the production of perfective aspect.

80.
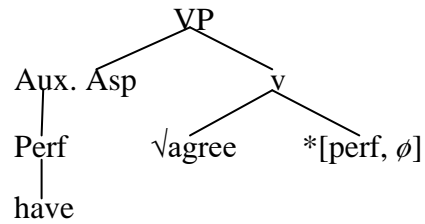
```
                    VP
          _____
      Aux. Asp                  v
         |              _____
       Perf         √agree       *[perf, ø]
         |
       have
```

   Children, wife and me have agree to stay here until healing is restore (APP16)

81.

```
                  VP
        _____
     Aux. Asp               v
        |            _____
      Perf        √give      *[perf, Ø]
        |
   √have  [3Sg.]
```
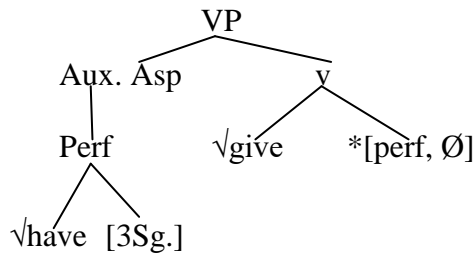
   Hmmm wife has give (that) doctor (APP37)

82.

```
                    VP
          _____
      Aux. Asp                  v
         |              _____
       Perf         √practise      *[prog. –ing]
         |
       have
```
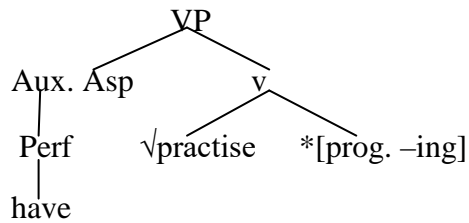
   I have practising as medicine doctor for twenty years. (APP33)

83.

```
                   VP
         _____
     Aux. Asp                 v
        |            _____
      Perf       √patronise  *[prog. –ing]
        |
      have
```
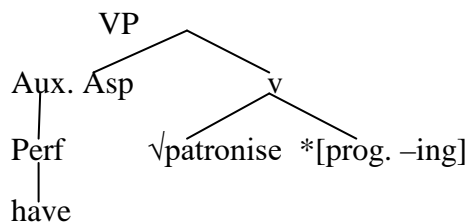
   (I) patronising other hospitals… (APP16)

In (80), the intention of the utterance was to communicate present perfective *Asp* (as the context of the conversation suggests). Like (77) and (78), the participant here also meets the initial requirement (projection of *Asp* marker). However, unlike these two structures,

the l-morpheme verb 'agree' must select the f-morpheme *+en* in the location of *aux-have* (because the l-morpheme must agree with the *Asp* location of the *aux*). Contrary to this expectation, the participant did not make this selection; instead, he projected the l-morpheme 'agree' only, leaving the *Asp* f-morpheme position of verb null. A similar morphological anomaly characterises structure (81) where the *Perf Asp* marker has agreement feature [3.Sg] with the verb's external argument 'wife' but the verb 'give' is void of the f-morpheme *+en* required in the location of the *Perf Asp*. Again, the sentence production in (82) manifests more problems with the perfective aspect. The participant produced the present *aux-have* which morphologically constrains the main verb 'practise' to select f-morpheme *+en*. Instead of the required *+en*, the participant selected *+ing* f-morpheme, thus resulting in the ungrammaticality of the structure. Two main syntactic problems characterise the participant's sentence production in (83). The first is the omission of the required *aux*. Thus, there is no constraint set for the selection of f-morphemes by the verb. However, the context of the conversation[23] resolves this; it was evident that he no longer patronised any other health facility. Hence the context suggests *Perf Asp*. This therefore, defines the f-morpheme selection of the verb as *+en*. The second problem arises from his production of the f-morpheme +ing 'patronising' instead of the *+en* 'patronised'. Such construction creates comprehension problem for his (aphasic's) audience and possibly one might interpret the statement without context as progressive aspect.

Bastiaanse *et al*. (2011) suggest that the grammatical category of aspect is not impaired in individuals with aphasia. Also, Dragoy and Bastiaanse (2013) posit that the production of both perfective and imperfective aspects among Russian aphasics was preserved. In contrast to these studies, Nigerian bilingual aphasic speeches in the current study are severely impaired in the production of perfective verbs. The analyses above reveal that

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[23]During the researcher's interaction with this participant (APP16), it was deduced that he had sought health care in some other hospitals before his admission at the UCH. The researcher asked him to further confirm if he was still patronising those other hospitals as at the time of the interaction. His response showed that he was no longer seeking medical attention in any other hospital except the UCH. This gives a clue that the utterance was intended for the past perfect tense, and thus there was an omitted aux which should select a VP in the past perfective. He was asked if he would for any reason try other medical outfits, and his response as shown in structure (80) was that he was optimistic that his health would be restored through the care he was getting at the UCH.

while both progressive and perfective aspects are impaired in Broca's aphasia, the problem is more associated with the perfective aspect. As seen in (77) and (79), Broca's aphasics were able to correctly use the present progressive aspect when the *aux* was not omitted. Aside from the omission of *aux,* structures (80) and (81) show that the participants have difficulty with producing perfective verbs; instead of the *–en* inflection, they often retained the root form of the verbs. For some others, as seen in (81) and (83), they substituted the *-ing* for *-en,* and rthis results in indiscriminate use of the English *ASP*ect markers. This 'syntactic mismatch' creates comprehension problem as aphasics' utterances become unintelligible. Thus, aphasics' problem with English *Asp* may be characterised here as *omission of obligatory aux and violation of f-morpheme selection constraint*. The location of the l-morpheme in sentence construction constrains the type of f-morpheme selection that can be made.

5.4   Phrasal categories in Nigerian bilingual aphasic speeches

The X-bar module of Principles and Parameters Theory (Chomsky, 1993), which is adopted for analysis in this section, emphasises the primacy of the head, which is either a content word or other functional class words that determine the syntactic type of a phrase. Considering the primacy of heads, therefore, this section discusses headedness and categorial features in aphasic speeches.

5.4.1   Determiner phrase in Nigerian bilingual aphasic speeches

In the following structures, headedness and subcategorisation within the DP is examined in aphasic speeches. For the purpose of clarity, some structures (such as 88 and 89) require that the whole sentence be shown on the tree diagram (beginning from the maximal projection, IP). While this is done, the discussion will focus mainly on DPs, which are marked by brackets (in 88 and 89).

84.
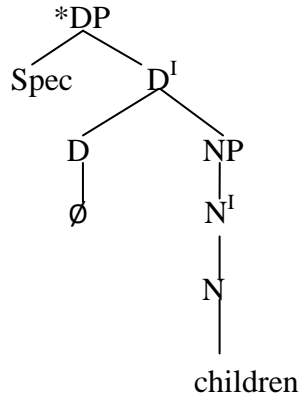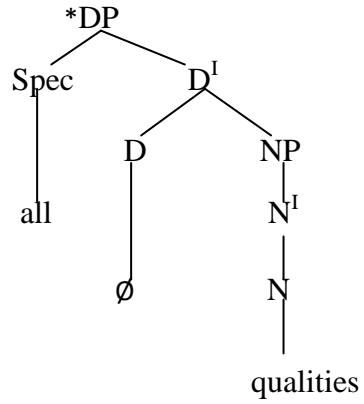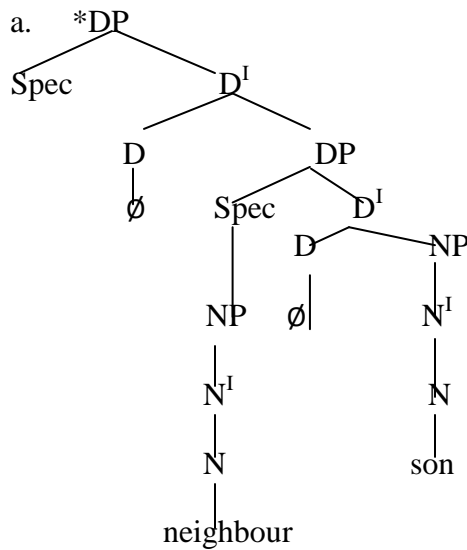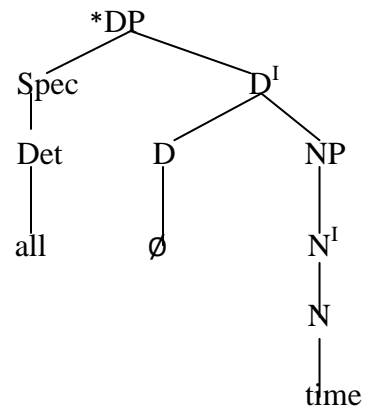
*DP
Spec D'
D NP
∅ N'
N
children

b.

*DP
Spec D'
D NP
all N'
∅ N
qualities

*[∅ *children*ᵢ] like *all qualities* hmm tell them;ᵢ UCH (APP 40)

85.   a.   *DP
Spec D'
D DP
∅ Spec D'
NP D NP
N' ∅ N'
N N
neighbour son

b   *DP
Spec D'
Det D NP
all ∅ N'
N
time

Neighbour son follows me all time. (APP39)

86.   *DP
Spec D'
D1 DP
∅ Spec D'
NP D2 NP
N' ∅ overall health measuring
N
person

[Person over::: all health measuring] is simple (APP12)

87.

```
                    *DP
          Spec              Dᴵ
                      D              DP
                                Spec         Dᴵ
                      ∅      NP         D         NP
                             Nᴵ         ∅         Nᴵ
                             N                    N
                          doctor              comment
```
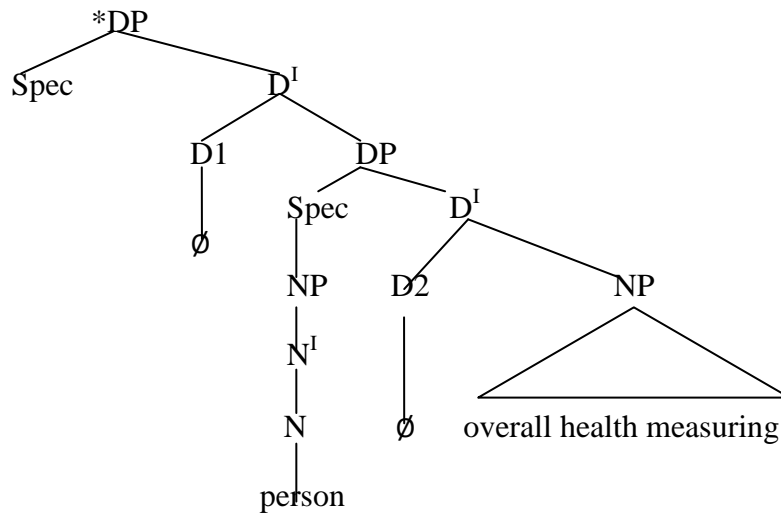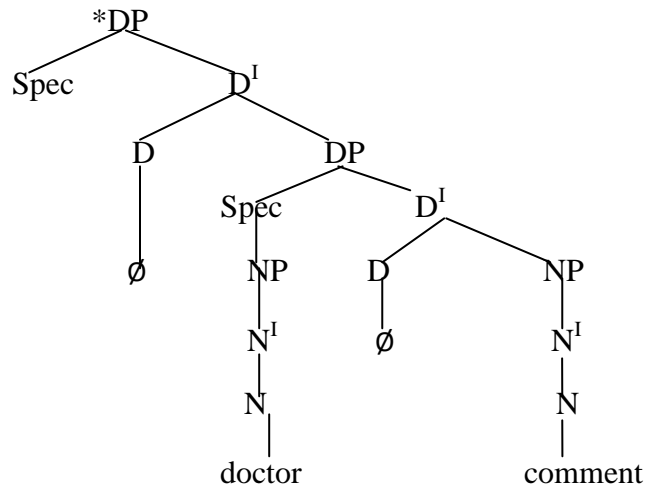
[O doctor comment] amaze me (APP8)

88.

```
                         *IP
              Spec                 Iᴵ
              NP              I           VP
                          ⎡+TNS⎤
              Nᴵ          ⎣+AGR⎦         Vᴵ
                                    V          DP
              N                     ∅          Dᴵ
           Doctors                        D         NP
                                          ∅         Nᴵ
                                               AdjP       Nᴵ
                                               Adj         N
                                              good       friends
```
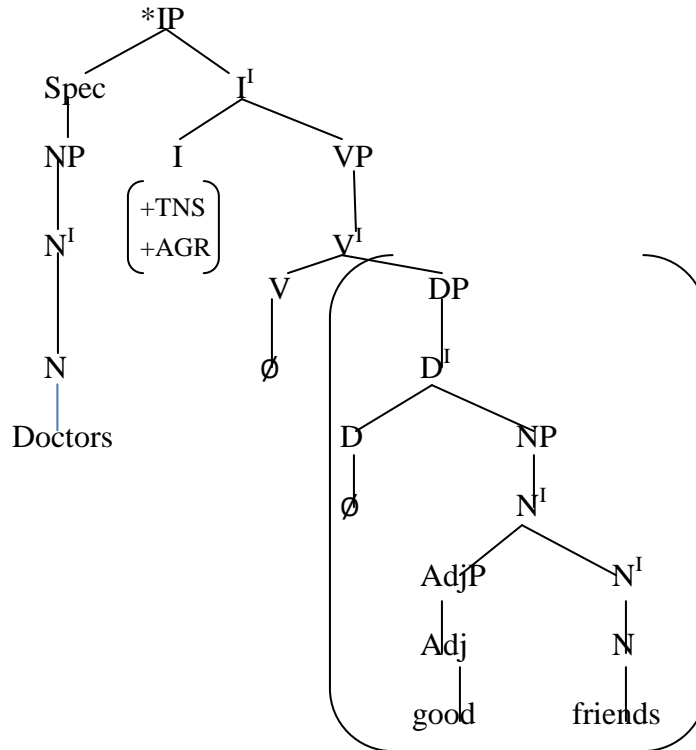
Doctors hmmm good friends. (APP10)

89.

*IP
  Spec
    NP [+TNS / +AGR] I'
      N'   I   VP
        N   V'
      Doctors   V'   AdvP
                            V   *DP   Adv
                          move   D'   before
          move   D   NP
                              Ø   legs and arms
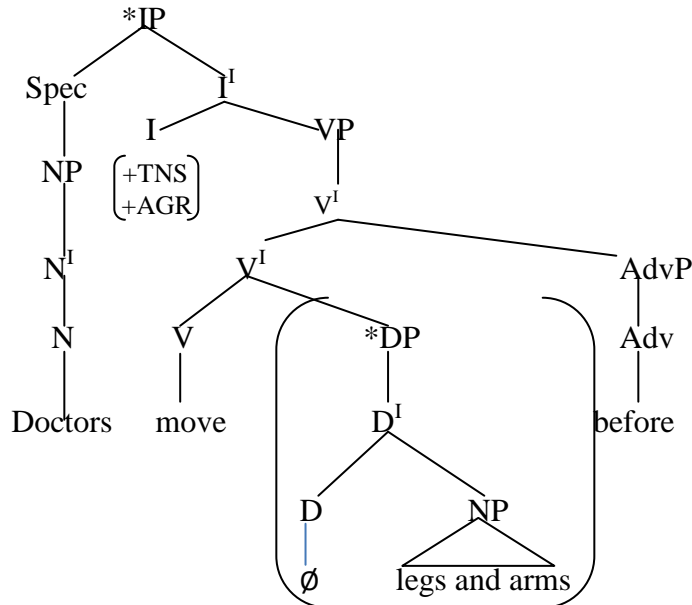
(I)::: move legs and arms before. (APP23)

As shown above, the participant's production in (84a) requires a pronominal possessor (+*poss pron.*) both for grammaticality and semantics. Without the pronominal possessor (perhaps 'my' in the speaker's context), the semantic scope of 'children' is lost and the whole structure is ungrammatical. Also, the ungrammaticality of (84b) relates to the participant's omission of the definite article *the,* which heads the DP. The null position of the determiner has 'all' as its specifier, and its NP complement is headed by 'qualities'. Similar syntactic problems characterise (85a and b). In (85a), 'neigbhour' is a complement in the DP 'Ø neighbour', though the head of the NP complement. The structure, therefore, requires the unspecified determiner (a/my/our, or any other genitive marker) for grammaticality. In addition, the NP 'neighbour' is a specifier in the DP '*neighbour son', where the omitted nominal possessor ('s) should assign genitive case to the NP 'neighbour'. As a result of the omission, the structure violates Case Filter, which requires that overt NPs are assigned a case (Carnie, 2006). As a result of this omission also, the NP 'son' does not project from a head. Thus, the structure also violates the Endocentricity Principle, which requires that every phrase projects from a head (Carnie, 2006: 159; Lamidi, 2011: 18). Again, the ungrammaticality in the structure relates to omission of the D (perhaps *the*) in the DP "all Ø time" makes (85b) ungrammatical.

APP12 attempted some syntactic restructuring of the actual clause in the SP which reads *It is remarkable that a person's overall health can be measured* such that through elimination of some of the constituents, the entirely new clause (86) above was derived. The eventual output still requires determiners, which are omitted by the participant. As seen in the tree diagram, the positions D1 and D2 are null. The head of the entire nominal expression is the omitted D1, which has the DP *person overall health measuring* as its compltement. Within the complement DP, the the head, which is the determiner *'s* (D2) requires both a specifier and a complement under the DP Hypothesis. The determiner *'s* takes the NP, 'person' as its specifier. However, the NP 'person' lacks case as a result of the omission of the determiner *'s*, which should assign (genitive) case to it and the complement NP, *overall health measuring* does not project from a head. Thus, structure (86) also violates Case Filter and Endocentricity Principle. Similarly in (87), it is obvious that the agent in the structure is not 'doctor', but 'comment'. Thus, the NP 'doctor' can only be a specifier in the DP "O doctor comment", where 'comments' is complement and the D is null. The omission of these functional elements makes these sentences (86 and 87) ungrammatical. Structure (88) may be adjudged as grammatical if the participant did not omit the copular ('are', as contained in the structured passage); the structure would perhaps be read as "Doctors are my good friend". However, the participant's production of the DP is not different from others. The D (which is +*posspron*) in the structure is null as well. Though the participant in (89) deleted the modal (can)[24], this deletion does not structurally distort the meaningfulness of the clause. However, audience's understanding of the clause will require reference to the context. For example, without the context, one may want to ask "which legs and arms?" Like other structures discussed above, one of the reasons for the ungrammaticality in (89) is the participant's omission of the (first person possessive) determiner which heads the DP 'Ø legs and arms'. This is in addition to omission of the past tense marker of the verb. (Similar patterns are already discussed in section 5.3.1).

The discussion so far shows that aphasics omit both possessive determiners (whether pronominal or nominal possessor) and articles (a/the). For instance, the pronominal

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[24]The clause was the participant's response to a question from during the researcher's interaction with him. See Appendix I

possessor 'my' is omitted by the participants in (84a), (85a), (87), (88) and (89) while the nominal possessor *'s* is omitted in 'neighbour' (85a), 'person' (86) and 'doctor' (87). The omission of nominal possessor ('s) in the sentences results in ungrammaticality when such sentences do not follow the specified order *[nominal expression] + ['s] + [noun phrase]*, where *'s* is the head of the nominal expression. In this case, *'s* has scopal authority (Lamidi, 2003: 150, 161) over both the nominal expression (which is the specifier) and the noun phrase (noun phrase). Scopal authority is further explained as "a *c*-command relationship holding between a head and other structures down the clause that are dependent on it for the grammaticality of a structure" (Lamidi, 2004: 87). Thus, structures involving omission of such a head as in 'neighbour' (85), 'person' (86) and 'doctor' (87) violate the Endocentricity Principle and Case Filter.

5.4.2 Prepositional phrase

In the discussion on syntactic features of Nigerian English (in 2.8.2), it was mentioned that the use of English in the Nigerian context is characterised by substitution of one form of preposition for another (for example: I am *in the bus; The papers are not ready as *at now), and inclusion of prepositions where they are not necessary (for instance: The library comprises *of many sections; They discussed *about many problems). What is observed in the discussion of syntactic features of Nigerian bilingual aphasics, as shown in the following structures differ widely from the peculiarities of Nigerian English, yet they do not conform with the Standard English forms.

90a.
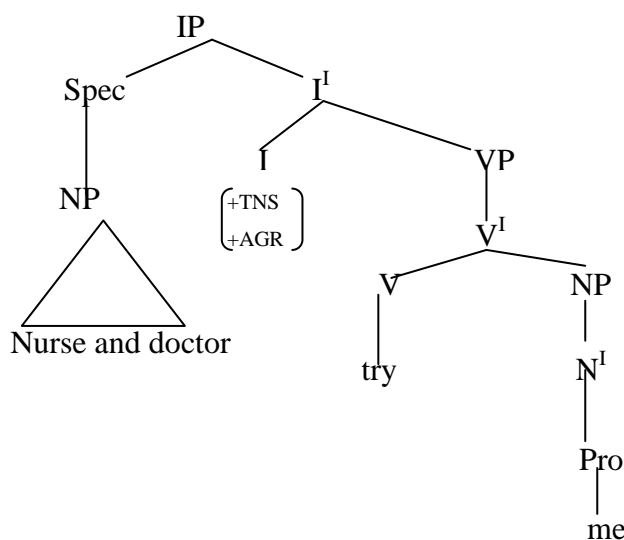
Nurse and doctor try me (APP34)

90b. [IP, Spec The nurse and doctor VPtry PP, Pfor NPme]

90c. [IP, Spec The nurse and doctor VPtry PP,P Ø NPme]

Structures (90a) and (90b) above reveal the participant's actual production and his intention,[25] respectively. In (90a), the construction is void of preposition, thus the V, VP subcategorises for NP and not a PP. His audience, therefore, is likely to interpret his sentence as saying the nurse and the doctor taunted him whereas he intended to appreciate the efforts of the nurse and the doctor. Thus while the sentence appears to be grammatical, (90c) reveals that the participant was unable to process and produce the preposition which should project the intended PP. Thus, the P node which heads the PP is null. By

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[25] This is inferred from the context of the interaction.

implication, the pronoun 'me' is not assigned accusative case and theme theta role as suggested by the structure. Instead, its syntactic properties are oblique case and benefactive theta role (Ouhalla, 1999). Structure 91 below has similar syntactic characteristics.

91.
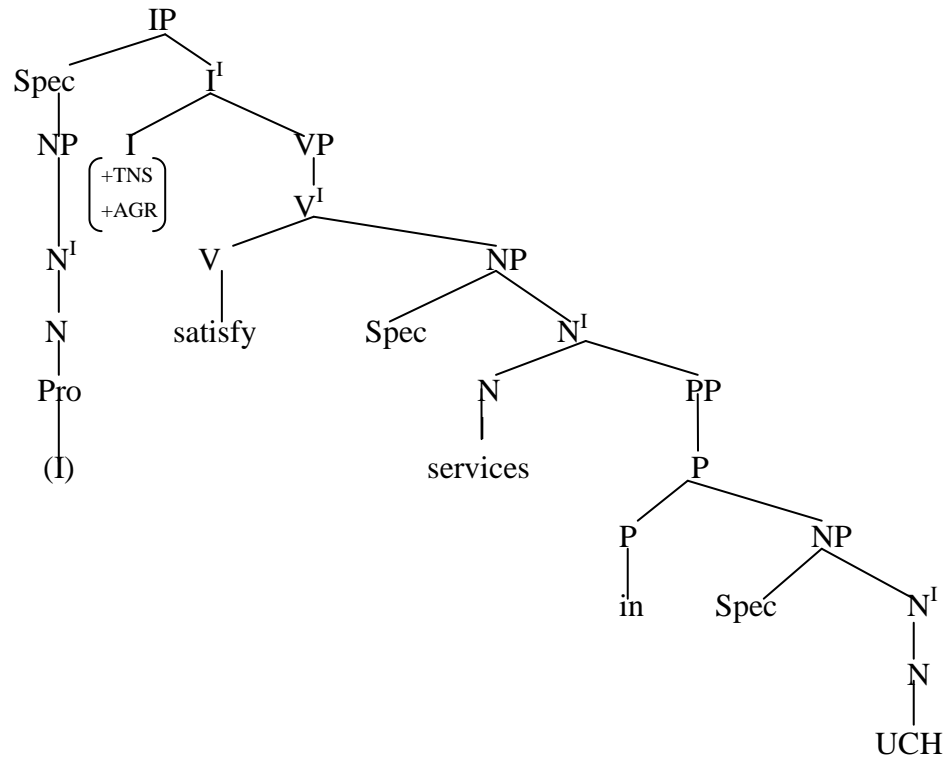
(I) satisfy services in UCH. (APP24)

More obviously than (90), the semantics of (91) differs from what the speaker intended. While the thrust of the discussion here is not on semantic roles of arguments, it is needful to discuss them because they are vital to the whole structure. The roles of the arguments in the structure suggest that the Spec, IP (I) is the agent and that the action is directed to the NP 'services,' thus giving it a theme theta role. On the contrary, the context suggests that the participant (speaker) is a beneficiary. Thus, the sentence is intended for *I am satisfied with the services in UCH*. This switch of argument roles may be as a result of the participant's inability to process and produce the preposition 'with' which should head the PP '*with the services*'. However, the production of the PP 'in UCH' is grammatically unimpaired. The participant's production of the prepositional head (in) further shows the ability of aphasics to simplify 'complex' structures (in this context, complex VP). This

syntactic simplification offers support for an earlier position in this study that syntactic transformation is relatively preserved in aphasia. Structures 92-94 below futher reveal syntactic transformation through simplification in Nigerian bilingual aphasic speeches.

92.   [*IP, Spec*Ø *VP*taking *NP*picture *PP*inside *NP*back *PP*of head.] (APP3)

93.
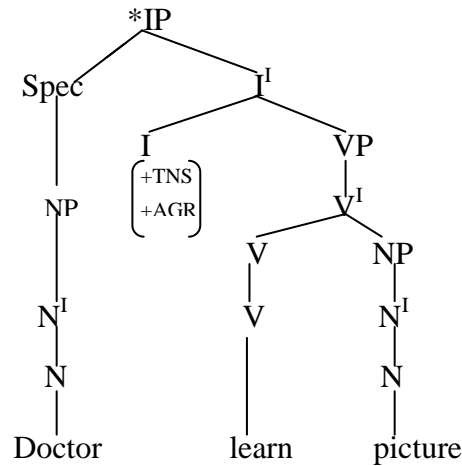
Doctor learn picture (APP4)

94.
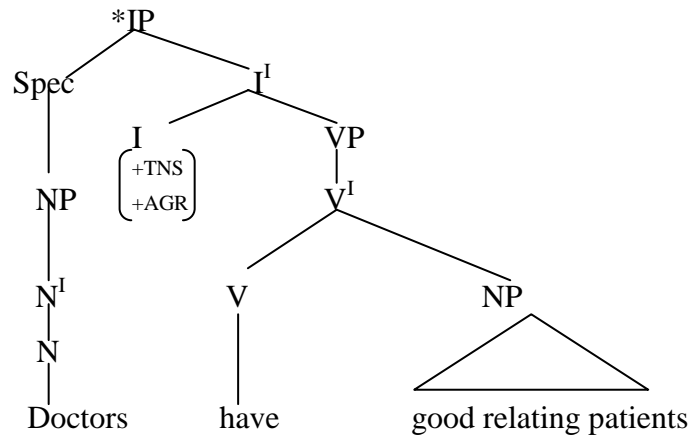
Doctors have good relating patients (APP22)

The test item, which APP 3 produced as (92) above, reads [*IP, Spec*I *VP*am using *NP*it [*IP,* PRO *VP*to take *NP*a picture *PP, P*of *NP*the inside *PP*of *NP*the back *PP, P*of *NP*your head]]. There is need to mention that the participant, like many others, almost produced the structure as individual words and not as a string. The structure lacks both grammaticality and (semantic) acceptability. From the participant's production, it is not clear whether the lexical item *inside* is processed and produced as a nominal (as contained in the test item) or not. The complement PP, *of head*, suggests that the participant correctly processed *back* as a nominal. Thus, *back of head* is rightly produced as an NP. However, it is clear that

back of head is not a complement to *inside*. Thus, no case can be assigned to the NP (*back of head*) as produced by the participant. In the test item, 'picture' is assigned accusative case by 'take' (the verb to which it is an internal argument), and others *(the inside, the back* and *your head)* are assigned oblique case by their respective head prepositions. Since this preposition is not projected, the argument does not have this required syntactic property. Hence, the structure violates Case Filter because the NPs 'insde' and 'back' lack case.

The participant in (93) did not just reduce the given structure; he also substituted the preposition in the test item (from) with 'for'. This creates some semantic problems in the structure. Such substitution affects the syntactic properties of the NP complement of the PP 'for picture'. While the NP is still assigned oblique case, there is a switch in its theta role from locative to theme. Structure (94) is similar to (90) and (91).The participant's intention and actual production contradict at the level of semantics. The thematic role of 'good relating patients' is patient (instead of beneficiary), and the NP is assigned accusative case (instead of oblique). Like other structures (90, 91, 93 and 94), this switch in syntactic details, particularly semantic role, occasioned by the syntactic reprocessing which resulted in change of preposition, distorts the interpretation of the NPs and by extension, the entire sentence.

Friederici (2011), Trofimova (2009) and Lehečková (2010) report the omission of prepositions as a prominent characteristic of American aphasics, Russian aphasics and Czech aphasics, respectively, and this is the basis on which they describe aphasic speeches as being "telegraphic". The current study differs from these earlier ones in that, Nigerian bilingual aphasic speeches are characterised by *selective impairment* of preposition; while preposition is impaired in verb-complement positions, it is preserved in noun-complement positions. In structures (90a, 91 and 93), the omitted prepositions 'for', 'with' and 'of', respectively, are heads of PP complements of the verbs 'try' (90a), 'satisfied (in the intended passive structure in 91) and 'learn' (93). In (92), however, where the PPs are complements of the NPs 'the back' and 'head', the participant's production is unimpaired. This finding thus offers support for Fang (2010) and Froud (2011), who argue for the lexical/functional distinction of prepositions. Also, the problem with the use of

prepositions among aphasics is simply as a result of outright omission of (verb complement) prepositions, and not substitution/insertion of preposition, which generally characterises Nigerian English.

Furthermore, the findings above reveal that the function of preposition in grammar transcends determination of syntactic accuracies. Apart from the ungrammaticality of some of these sentences, the LF is altered (if not lost) in the structures as a result of the switch in the roles of NPs. Therefore, this study posits that prepositions are crucial to semantics/speech comprehension. Though Wernicke's aphasia has always been described as semantically unintelligible in the literature, the case seems to be rather worse in Broca's aphasia as a result of loss of appropriate grammatical processes. Scholars have argued that Wernicke's aphasic speeches are fluent but the victims do not process the information sent to the brain accurately and thus responses are usually not in line with the expected response (Moineau, Dronkers and Bates, 2010; Yasuda, 2010; Lányi*et al*., 2014). On the contrary, aphasics' speeches found in this study, are not fluent and they are not free from semantic incongruity.

5.4.3   Complementiser phrase

The data available for discussion here are only those contained in the SP; there was no instance of complementiser phrase in the data collected through IDIs and PO. Hence, the data in this section are all from the speeches of participants who partipated in the PRT (that is, APP1-14).

The IP structure in (95a) below is a representation of most of the participants' production of (95b). The participants' syntactic reprocessing (of 95b) involved structure reduction. This includes elimination of the actual IP (*It is remarkable…*) from which the CP (*that a person's…*) later projects. The embedded CP, headed by the COMP *that* was also eliminated, thereby producing the IP in (95a). Similar sentence reduction characterises (96) below.

95a.

IP
Spec — I'
I [+TNS / +AGR] — VP
NP: Remarking person overall health measuring
V' — V: is — AdjP — Adj: simple
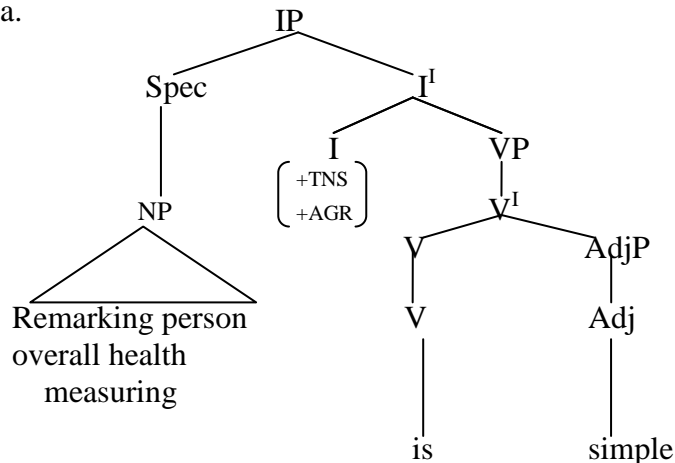
Remarking person overall health measuring is simple. (APP12)

95b.   [IP, Spec, NPIt VPis AdjPremarkable CP, Cthat IP, Spec, NPa person's overall health VPcan be measured.]]]

96a.   [IP, Spec, NPØ VPthank NPyou.] (APP8)

96b.   [IP, Spec, NPDoctor VPis doing NPjob AdvPconsciously.] (APP8)

96c.   [IP, Spec, NPI VPthank NPyou doctor [CPfor doing your job conscientiously.]]

Instead of the single finite structure (in 96b) which houses a clause introduced by the COMP *for*, many of the participants produced two separate finite clauses. These structures are realised as a result of elimination of the embedded CP *for doing...* The participants demonstrated some level of syntactic preservation in their ability to interpret the roles of the arguments in the sentence. For instance, they correctly interpreted (as indicated in their production) the semantic role of the null subject position (PRO) in the embedded non-finite clause in (96c) as same with that of the overt NP 'doctor' in the preceding finite clause. Thus, rather than being an NP complement to the accusative pronominal 'you' (in 96c), 'doctor' is realised as the Spec, IP (in 96b), thereby having a nominative case and the theta role of agent. Structures (97) and (98) below have similar characteristics with (96).

97a.   [IP, Spec, NPI VPwas Adjpimpressed CP, Cthat IP, Spec, NPsomeone VPinvented NPacamera$_i$ CP, Cthat$_i$ IP, Spec t$_i$ VPcould do NPthat.]]]

97b. [IP, Spec, NPSomeone VPinvents NPcamera IP, Spec, NPPRO VPto do NPit.]] (APP5)

98a. [IP, Specpiece equipping VPhas see AdvPbefore] (APP1)

98b. [NPa piece of equipmenti [CP, Cthat IP, Spec, NPI VPhadn't seen ti AdvPbefore]]

In (97a), there are two CP constructions in the given structure. The first is "… impressed *that someone invented camera…*" (which does not involve movement CP) and the second is "… a camera *that could do that*" (a *that*-relative). As represented in (97b), most of the participants produced the sentence by deleting the COMP *that*. Consequently, the presented CP structure was produced as IP construction (within which the given past tense was substituted with a present tense, and correctly marks for agreement with the Spec, IP 'someone'). Similar re-processing was done to the second CP structure. The participants produced it as an infinitival clause, *to do it*. Going by an earlier discussion of tense (see 4.3.1), it could be taken that the generation of infinitival clause is the participants' strategy for making up for their inability to inflect for the English past tense.

The participant's production in (98b) shows syntactic reduction of (98). The realisation of (98b) involves movement (of *a piece of equipment*) from an argument position, where it is assigned accusative case, to COMP (as a result of relativisation). The participant (like many others involved in the study) eliminated the COMP *that* together with the pronominal subject in the embedded relative clause (in 98b) which resulted in reducing the complex structure to simple IP (98a). In the newly generated structure (98a), the head of the initial maximal NP projection now functions as Spec, IP. It shows that the movement involved in (98b) was not processed by the participants. Consequently, instead of the accusative case (in 98b), the newly realised (somewhat) gerundive phrase 'piece equipping' gets nominative case and the verb 'see' being transitive has no argument (or a trace) to which its accusative case should be assigned, which is required in the structure. Hence, (98a) is ungrammatical. The derivation of structure (99a) from structures (99b) and (99c) below further shows some syntactic preservation in Nigerian bilingual aphasic condition.

99a.

IP
  Spec   I'
    NP   I   VP
      N' [+TNS]   V'
      N   [+AGR]   V
          is
  Device   responding (APP5)

99b.

CP
  Spec   C'
    Wh   C   IP
    Ø   Spec   I'
              NP   I   VP
                N'   +TNS   V'
                N   +AGR   V   NP
              device   is   t_i
                                    Ø

99c.

IP
  Spec   I'
    NP   I   VP
      N' [+TNS]   V'
      Pro [+AGR]   V
      He   responded

He responded.

133
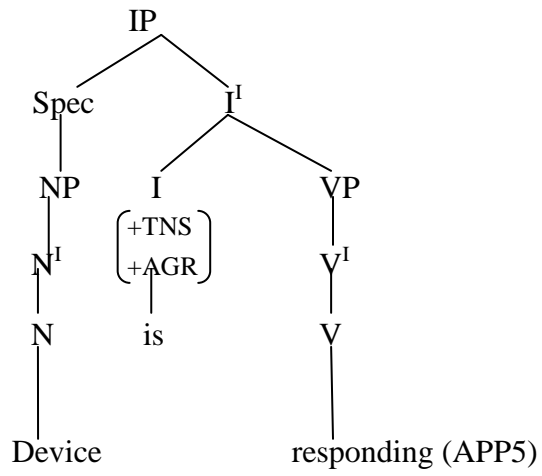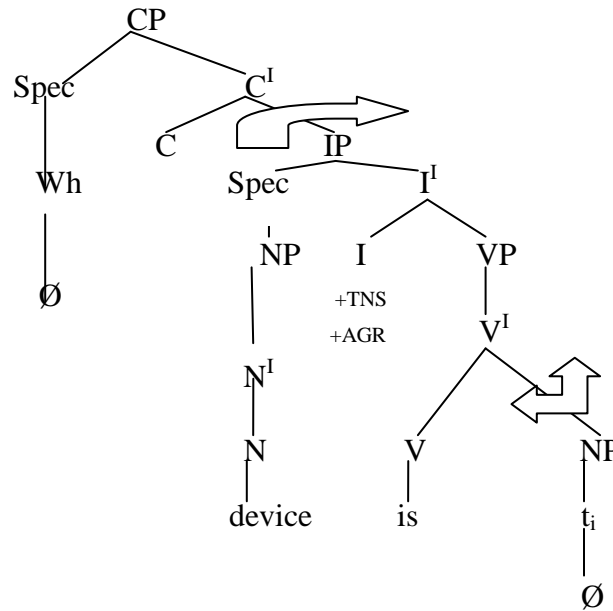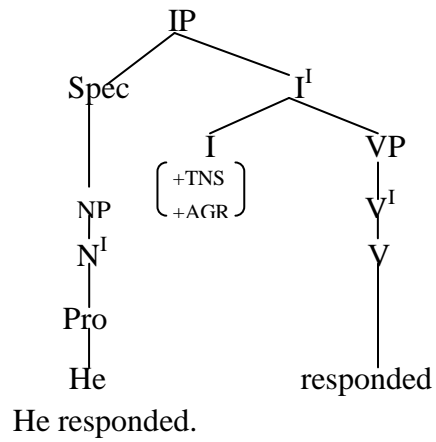
While structure (99a) is grammatical, its realisation by many of the participants is relevant to this discussion. The actual structure in the SP reads "I asked him what the device was", and it is immediately followed by "and he responded" (99c). The participants completely eliminated the CP which houses the *wh*-phrase (in 99b); deleted the conjunction, *and*; as well as the pronominal subject 'He' in (99c). Also, the +*ed* morpheme in 'responded' (99c) was substituted with the +*ing*. Then, the rest constituents of both structures (the NP 'device'with the verb 'is' in 99b, and 'respond' in 99c) are adjoined to generate the (subtly impaired)[26]clause (99a). Thus, instead of the complex sentence *I asked him what the device was and he responded*, the participants produced a simple sentence *Device is responding* (99a).

The common characteristic of participants' performance in the production of CPs is that such category is not projected. Rather than producing CP projections, participants reprocessed the CP to produce IP. This is regardless of the CP type, whether or not it is motivated by movement. Thus, it is argued here that the English complementiser phrases are highly problematic among Nigerian bilingual aphasics. This further supports the findings of previous studies such as Friedmann and Grodzinsky (1997), Lukatela, Shankweiler and Craint (2005), Grodzinsky (2009) and Friedmann (2013) which aver that the CP projection is the most problematic for aphasics. A seemingly valid justification for this is Friedmann and Grodzinsky's (1997) Tree Pruning Hypothesis which claims that an impairment of a lower node (here, TeNSe) results in impairment in a higher node (COMPlementiser). However, this claim is only hypothetical for now; its validity will be examined later in this study within the frames of the general syntactic features of aphasia. For example, while Friedmann and Grodzinsky (1997) suggest that aphasics' production of CP is always characterised by ungrammaticality, the aphasics' outputs in structures such as (96a), (96b), (97a) and (99a) above do not reflect ungrammaticality. Tense is modified and some other constituents are eliminated thereby resulting in new structure different from the given ones. Here, syntactic difficulty in Nigerian bilingual aphasia may be characterised as *inaccessibility to CP* but not necessarily ungrammaticality.

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[26] Within the context of discussion here, the sentence is grammatical. However, the subtle impairment is as a result of the participants' omission of article 'the' and the alteration in the meaning of the entire structure.

Nevertheless, this syntactic re-processing also results in LF modification which may bring about some interpretative problems in communication.

5.4.4   Infinitival structures

In the data gathered for this study, there is preponderance of non-finite constructions. Most of these have been discussed alongside aphasics' use of tense and aspect. Also, earlier discussions on nominalisation reveal that gerundive nominals are less problematic for Broca's aphasics (see section 4.2.1) although the use of such gerunds in positions where deverbal nouns are required results in ungrammaticality and in some cases, loss of meaning. In this section, attention is given basically to infinitival structures. Here are examples.

100.

Complaining is difficult.   (APP17)

101.

```
                        IP
                   ____/  \____
                Spec          Iᴵ
                  |         ___/ \___
                 NP        I         VP
                  |      ⎡+TNS⎤       |
                 Nᴵ      ⎣+AGR⎦       Vᴵ
                  |              ___/  \___
                  N             V          IP
                  |             |      ___/  \___
               Nurses          like  Spec        Iᴵ
                                       |       __/  \__
                                      NP      I        VP
                                           ⎡-TNS⎤      |
                                           ⎣-AGR⎦      Vᴵ
                                             |      __/  \__
                                            to     V        NP
                                                   |         |
                                                 shout      Nᴵ
                                                            |
                                                            N
                                                            |
                                                          patient
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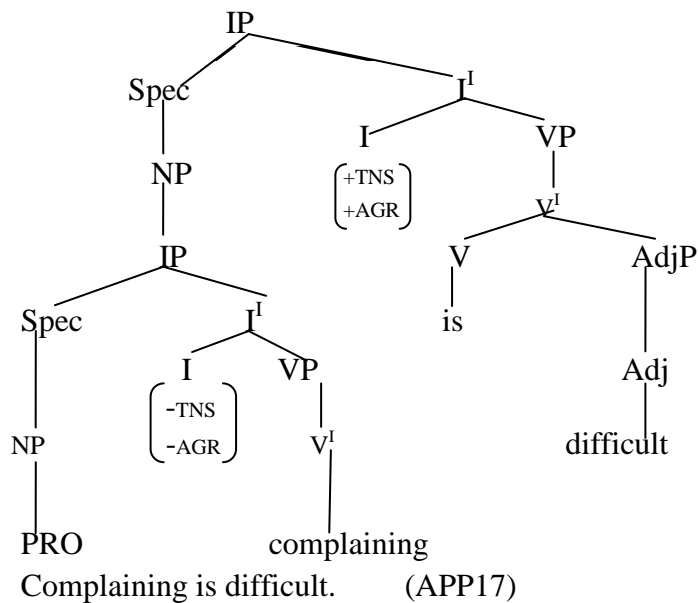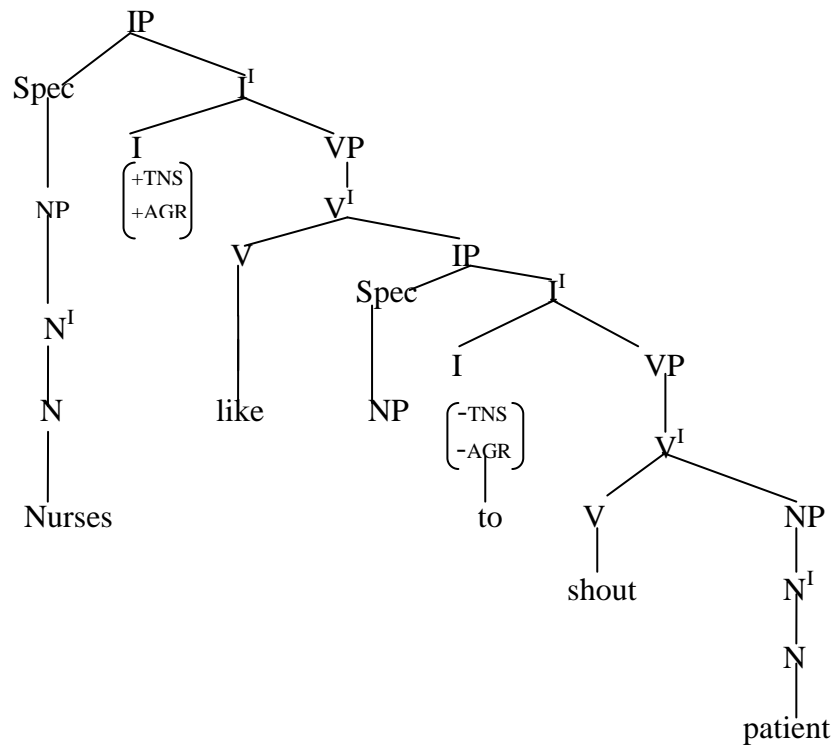
Nurses like to shout patient. (APP16)

The non-finite structure (in 100) above has the feature PRO-*ing*. It was deduced from the researcher's interaction with the participant that the latter intended an infinitival construction, "It is difficult to complain", where the non-finite structure is in a non-argument position. Despite the syntactic reprocessing, the grammaticality of the construction is not impaired. While the PRO-*ing* is the subject of the sentence, it is in itself an embedded clause and its temporal interpretation is dependent on the matrix verb 'is'. Therefore, the embedded clause takes a null subject (PRO) to which no case is assigned, and the PRO is arbitrary control. Like the PRO-*ing* in (100), the *inf-* PRO in (101) is also an embedded clause in an argument position. The matrix verb 'like' is transitive and thus requires an accusative NP. Rather than an NP complement, the verb subcategorises for an *inf*-complement. However, the interpretation of PRO in the structure is in the context of the subject NP of the matrix clause, 'nurses'. While case is not assigned to PRO, the position it occupies has the semantic role of agent (of the verb 'shout'; as 'nurses' is to 'like' in the matrix clause). Thus, PRO in the structure is subject control. Structures (102-105) below show that aphasics can also produce infinitival constructions in Aᴵ position as well.

102. [IP, Spec, NPDoctors_i VPcome [IP, SpecPRO_i VPto see NPme]] (APP34)

103. *[IP, Spec, NP{Children, wife and me}_I VPagree [IP, SpecPRO_i VPto stay AdvPhere AdvPuntil [IP, Spec, *Poss-ing*healing VPis restore]]] (APP16)

104. [IP, Spec, NPPatients_i VPhave NPrights [IP, SpecPRO_i to complain::: poor services]] (APP17)

105. [IP, Spec, NPI_i VPam using NPit [IP, SpecPRO_i VPto take NPpicture inside back hnnnnnn your head]].   (APP8)

In (102) and (103), the verbs 'come' and 'agree', respectively are intransitive. Hence the positions of infinitival complement in each of the structures are non-argument positions. In (102), 'doctor', which is the agent of the verb 'come' (in the matrix clause) is as well the agent of the verb 'see' in the embedded clause. Similarly in (103), PRO which is the null subject of the embedded clause is interpreted as *children, wife* and *me,* which constitute the subjectof the matrix clause. Thus, while PRO is not assigned a case (as required by PRO theorem; Featherston, 2001: 19), the position is interpreted as 'patient'. Thus, since PRO is the bearer of the theta role assigned by the matrix verbs in both sentences to their external arguments, PRO in the structures is subject control. Structure (104) is slightly different from the earlier two in that the matrix verb 'have' is transitive and thus its complement NP is projected. Though the infinitival clause projects as NP complement, the interpretation of PRO is outside the NP complement. Semantically, the agent of the verb 'complain' in the embedded clause is the same as that of the matrix verb 'have'. Thus, PRO is controlled by 'Patients', which is the external argument in the matrix clause. This is similar to the features of PRO in (105) where, semantically, the infinitival structure states the purpose for which the object NP (it) in the matrix clause is being used. The agent of 'take' is the pronoun 'I' in the matrix clause, not the accusative NP 'it'. As the co-indexing shows, PRO (in 105) does not have the theta role of instrument (as in 'it'); but that of agent. Structures (106) and (107) below further reveal aphasics' use of infinitival clauses in A^I position; while 106 shows arbitrary controlled PRO, (107) reveals object control PRO in such position.

106

```
                          IP
                    Spec        I¹
                              I      VP
              NP          -TNS
                          -AGR    V¹
              PRO           to  V         AdjP
                                       Adj      PP
                                      honest      P¹
                                be           P      NP
                                           (in)     NI
                                                     Pro
                                                     you
```
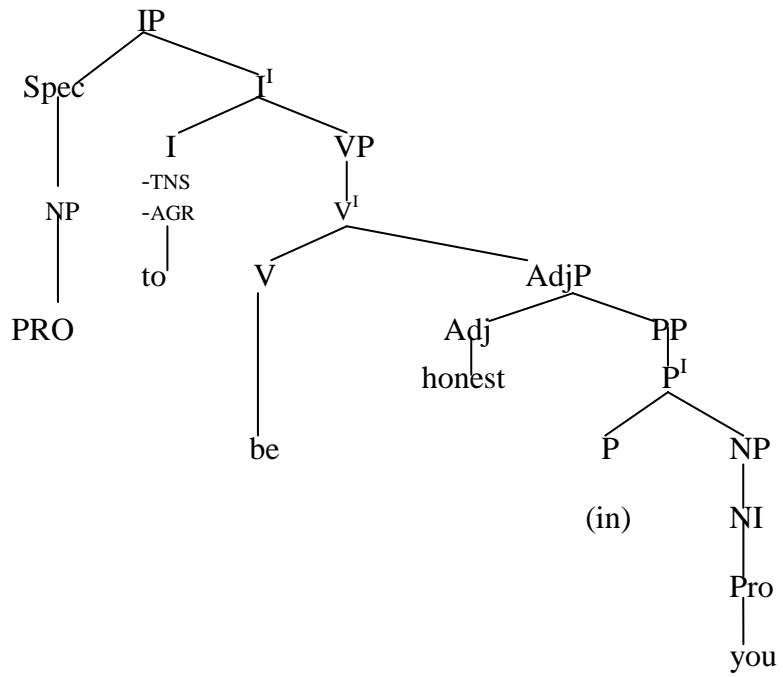
To be honest (in) you. (APP5)

107a

Thank doctor to do the job (APP3)
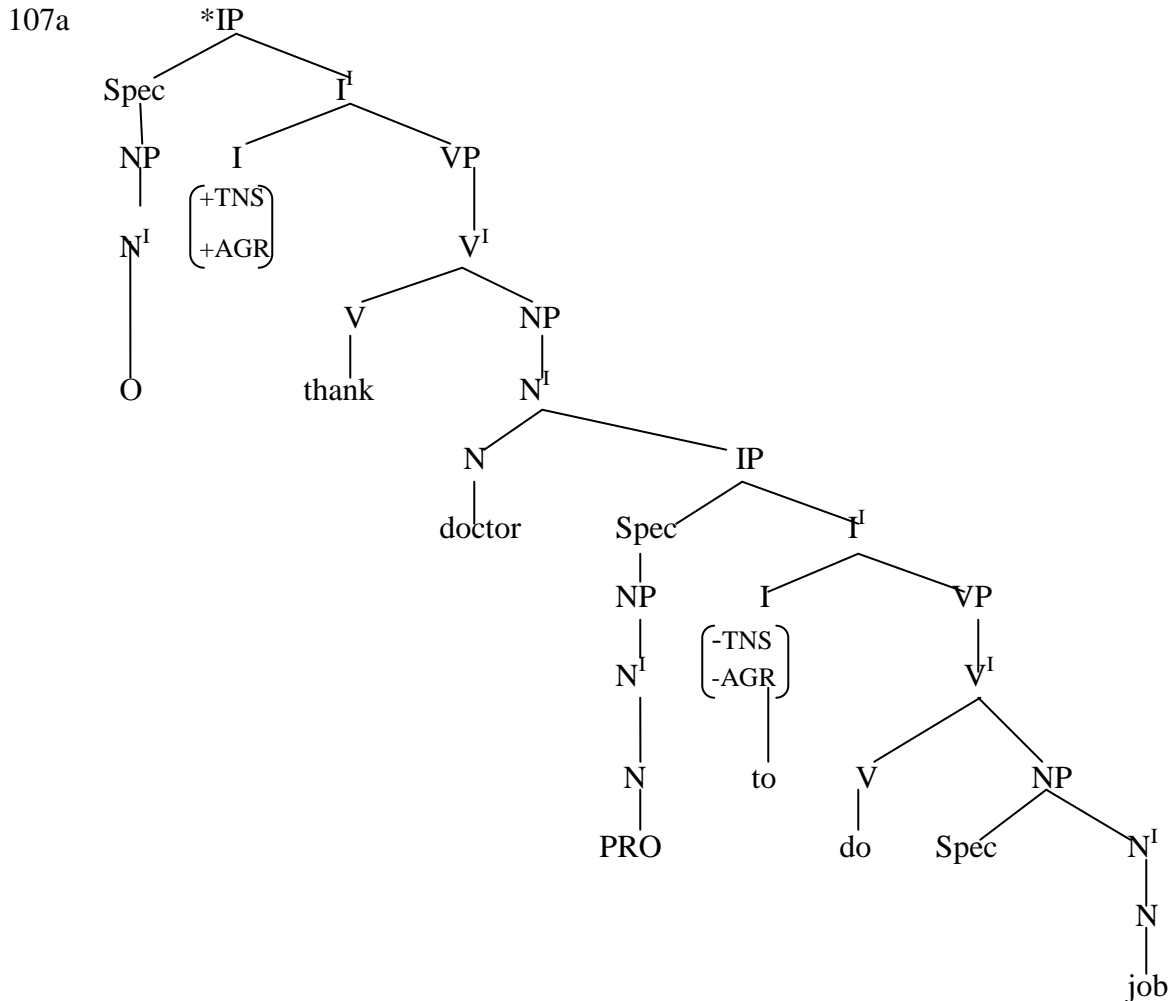
107b. I thank you doctor for doing your job conscientiously.

Structure (106) above is an adjunct structure in the test item. The entire sentence has three overt NPs: 'you' (in the infinitival clause), 'doctors' and 'cleverest set of humans'. The participant produced the three NPs, though modifying the last one as 'clever human being'. Like what obtains in (100), the interpretation of PRO in (106) is not in the sense of any of the three NPs. Hence, the control of PRO in the embedded clause is arbitrary. Structure (107a) as contained in the SP reads "I thank you doctor for doing your job…" The participant (in 107a) was able to reprocess the *PRO-ing* to generate a *to-inf* yet without duplicating or conflating these structures in the same utterance. However, the structure is ungrammatical. Its ungrammaticality arises from violation of theta criterion, which requires that "an argument bear a theta role and a theta role is assigned to an

argument" (Lamidi, 2011: 57). 'Doctor' in the given structure is assigned the role of patient in the matrix while the position occupied by PRO in the embedded clause is assigned semantic role of agent. In (107b), 'doctor' is interpreted as the patient in the matrix clause and within the same structure, it is assigned agent theta role in the embedded clause. Also, a semantic problem occurs at the LF as (107b) expresses consequential meaning as against the intended causative meaning. The sequence of action communicated in (107a) shows that the action in the embedded clause actually precedes that expressed by the verb in the matrix clause. On the contrary, the participant's eventual production expresses the action in the matrix clause as one that precedes that of the embedded clause. Thus while the given structure implies that the appreciation is consequent upon the job which the doctor has done, the actual production presents the appreciation as a condition for the doctor to do the job.

From the discussion so far, it is revealed that the syntax of English infinitival clauses is preserved in aphasia. The discussion also reveals that non-finite constructions are not just produced as substitutes for finite clauses (as Kolk*et al.*, 2012: 23 categorically states). The participants generated such structures in instances where they are required. Moreover, the participants were found to substitute the *PRO-inf* with *PRO-ing* without affecting the grammaticality of the sentence. It also reveals that the control of PRO in their constructions does not depend on whether the non-finite construction is in argument position or not, as claimed by Butterworth (2004: 59). This is evident in their ability to produce such structures in *A*-position as well as A^I-position. This study suggests that the reason for the *preservation of the syntax of infinitives* in aphasia cannot be far from the fact the aphasic participants have problems mainly with past tense verbs such that even in tensed clauses, the participants used non-finite construction.

5.5   Case distribution and plural morphology in Nigerian bilingual aphasic speeches

In earlier sections of this chapter, it was mentioned that certain NP features (like structural case and number) constitute ungrammaticality in some sentences. These NP features are discussed in this section. A central tenet of GB is that NPs can occur only in positions where case is assigned (due to the Case Filter, which filters out all constructions that

contain caseless NPs at SS). Also, there are characteristic cases that are tied to particular structural positions. The relevant distinctions are overtly manifested in English pronouns. In this section, a few structures are sampled for the purpose of examining the distribution of NPs in aphasic speeches. Particularly, focus is on the case properties and distribution of NPs as well as plurality. In the discussion in sections 4.4.1 and 4.4.2, it is already revealed that NPs in aphasic speeches frequently violate case criterion as a result of non-production of the genitive marker *'s* and prepositions from which oblique NPs are projected. The discussion in the section will, therefore, leave out such structures even though they reflect in the data presented in this section.

108. *Government hospital have facility (APP25)
109. *Neighbour son follows me all time. (APP39)
110. Family has motor vehicle accident::: way::: Lagos. (APP19)
111. Children$_i$ like all qualities hmm tell them$_i$ UCH (APP40)
112. Doctors are trying me all time. (APP37)
113. Two people::: ah come::: ah::: (with) me last week. (APP37)

The principles of binding theory provide for the conditions for the interpretation of NPs, which (in the theory) are classified into three: anaphors (reflexives and reciprocals), pronominals (pronouns) and R-expressions (nouns such as names). Only pronominals and R-expressions are found in the data for this study.

The projected Spec, IPs in (108-112) are assigned nominative case by the INFL of the verb in each of the sentences. Also, the internal arguments of the VPs are all accusative except for (113) whose verb, 'come' does not have a complement NP. It is observed as well that all the Spec, IPs are R-expressions and they are not bound in their respective sentences. The participant's performance in the following structures differs strikingly from what is seen in the above structures.

114.

*IP

Spec   I'

   I   VP

NP   [TNS AGR]   V'

Ø   V   NP

complying   N'

N
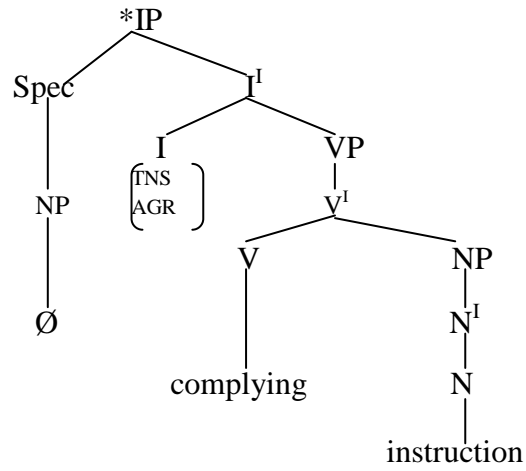
instruction

Complying instruction… (APP 18)

115.

IP

Spec   I'

   I   VP

NP   [+TNS +AGR]   V'

Ø   V   NP

give   N'

N   IP

drugs   Spec   I'

NP   I   VP

PRO   [-TNS -AGR]   V'

to   V   N'

inject   Pro

me
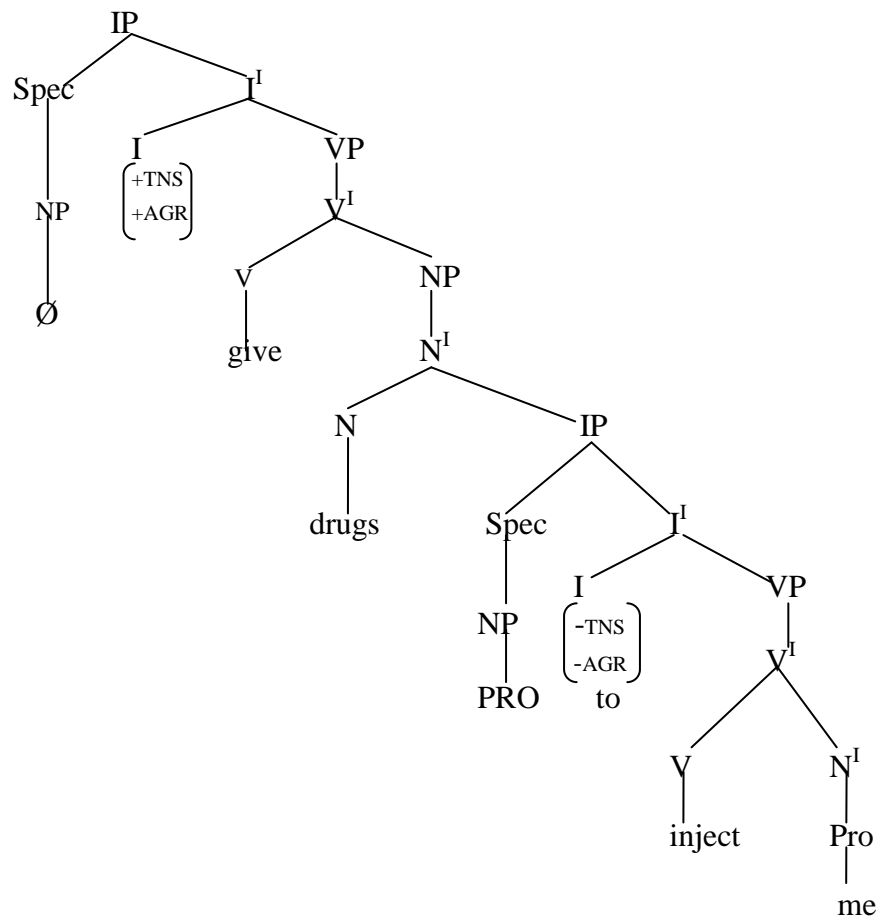
uhhh give drugs to inject me. (APP30)

142

116.

*IP
 Spec
  NP
   Ø
 I¹
  I
  [+TNS
   +AGR]
  VP
   V¹
    V
     V
      admit
     NP
      N¹
       N
        hospital
    PP
     P¹
      P
       by
      NP
       (nice husband)

hmm admit ahh hospital (by) hmm nice husband (APP37)

117.

*IP
 Spec
  NP
   Ø
 I¹
  I
  [+TNS
   +AGR]
  VP
   V¹
    V
     take
    NP
     N¹
      N
       drugs
      IP
       Spec
        NP
         N
          N
           doctor
       I¹
        I
        [+TNS
         +AGR]
        VP
         V¹
          V
           saying

ahh take drugs ahh doctor saying. (APP38)

118.

*IP
Spec
I [+TNS +AGR]
VP
I'
NP
V'
V
NP
N'
Pro (+*Acc*)
Me
prefer
government hospital
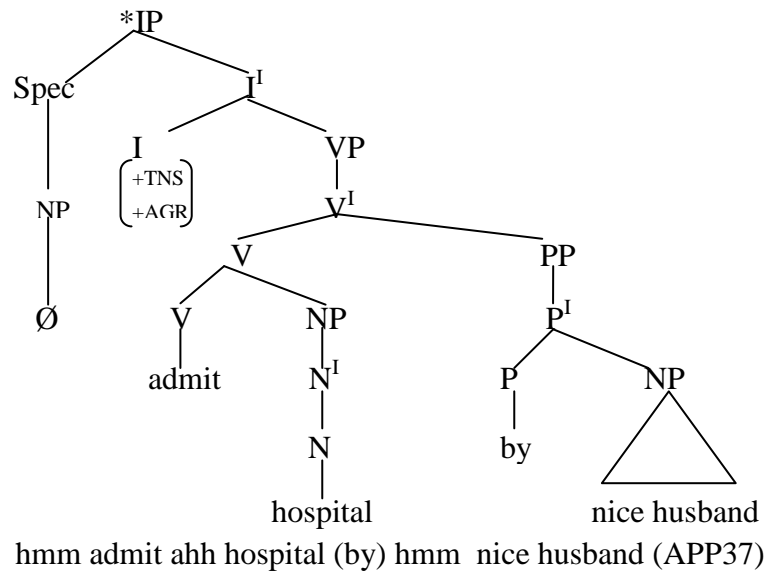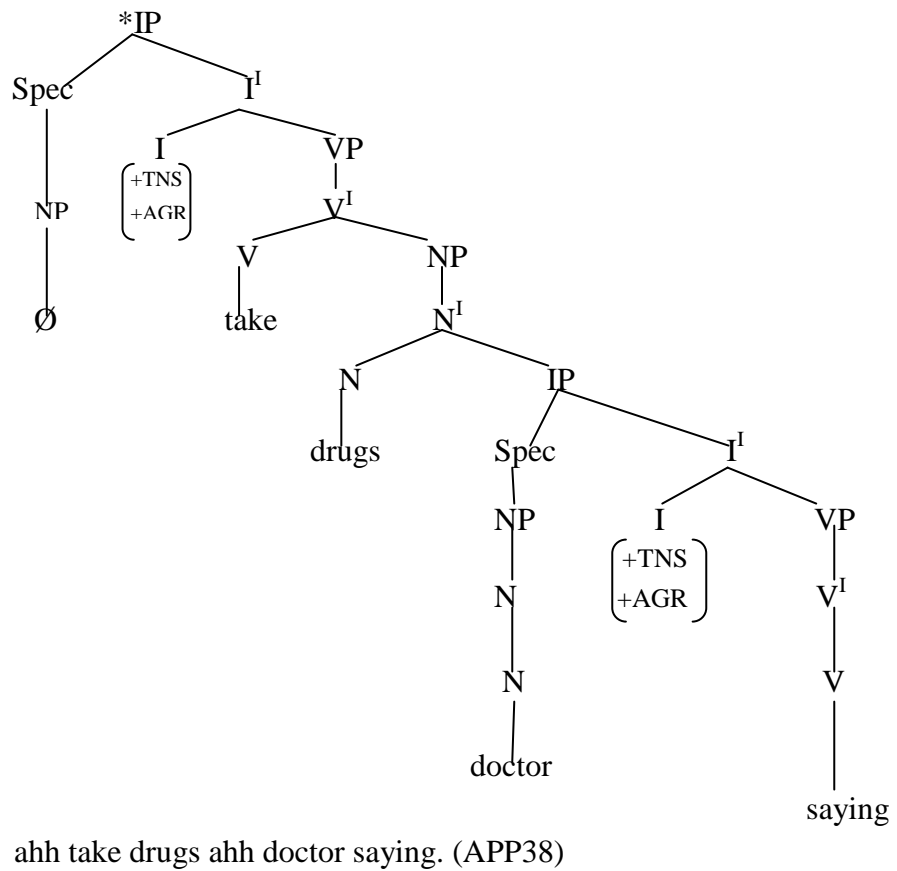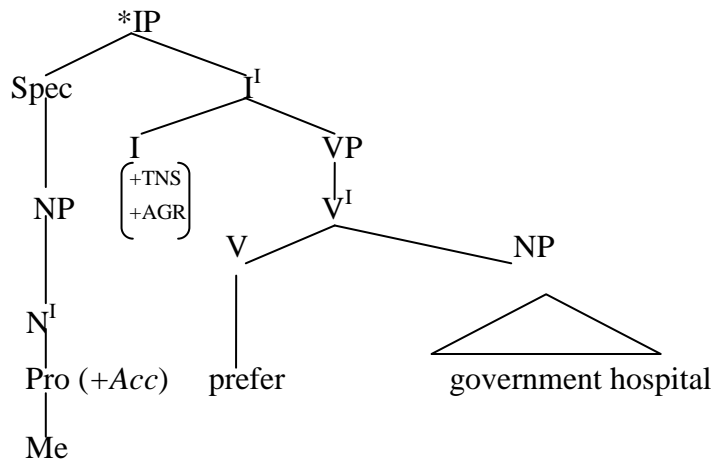
*Me:::ahhh prefer government hospital (APP33)

119.

*IP
Spec
I [+TNS +AGR]
VP
I'
NP
V'
N'
have
V
IP
N N Pro (+*Acc*)
agree
Children, wife and me
to stay here until healing is restore

Children, wife and me have agree to stay here until healing is restore (APP16)
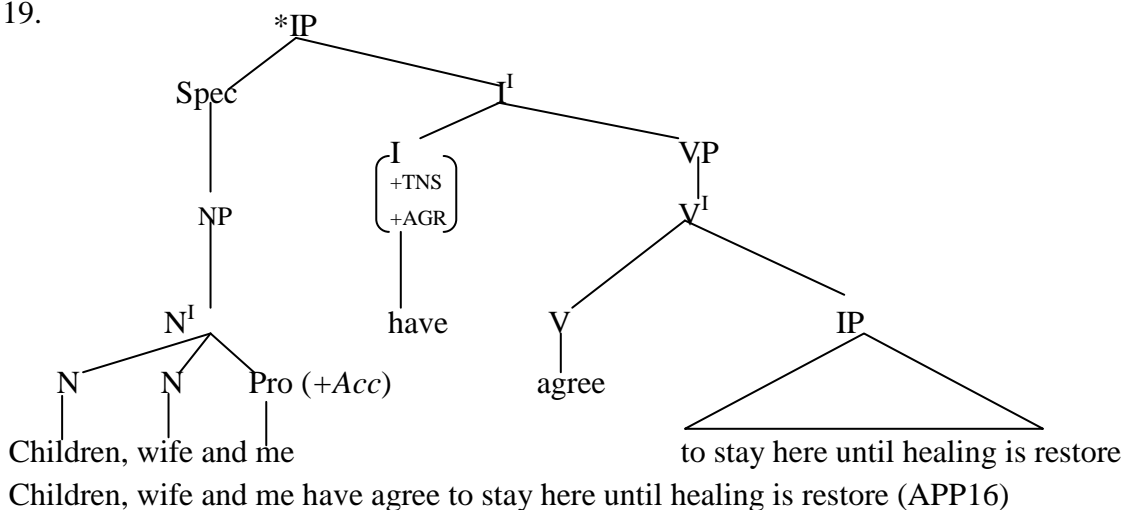
It is also observed that all the Spec, IPs in structures (108-113) are R-expressions, and they are not bound in their respective sentences. Thus, they do not violate Principle C of the binding theory which requires that they are free everywhere (Carnie, 2006: 142; Lamidi, 2011: 67). In (114), the Spec, IP position is empty. The context of interaction shows that the participant intended to say *I complied with all the instructions.* Thus, the Spec, IP should be the nominative pronominal 'I'. Structure (115) is also characterised by non-projection of the Spec, IP, which as suggested by the context of the utterance, should be a pronominal with features +NOM and +3Sg. However in the same structures, the accusative pronouns 'me' (114) and 'me' (115) which are internal arguments to 'give' and

'inject', respectively are projected. Structures (116) and (117) also have similar features; the Spec,IPs (which are nominative pronominals) are ellipted. These structures, therefore, violate the Extended Projection Principle, which requires that subjects are projected in all clauses. Hence, they are ungrammatical. In structure (118), there are two NPs and they are both in argument positions to the verb 'prefer': external argument, 'me' and internal argument, 'government hospital'. In GB, Case is assigned under Government (Carnie, 2006: 27; Lamidi, 2011: 53). In IP structures for instance, the I(*nfl*) governs the external argument of the verb and thus assigns only nominative Case to it. 'Me' in (118) above cannot be assigned Case in its position in the sentence (since it has accusative). Hence, it is filtered out. A similar construction is seen in (119). In this structure, the position in which 'me' occurs as subject alongside 'children' and 'wife' is such that should be assigned nominative case.

It is deducible from this discussion that while aphasics do not have difficulty with R-expressions generally as well as accusative pronominals, there appears to be some problems with the use of nominative case pronominals. This is seen in their inability to project such pronouns in Spec, IP positions (114-117) and substitution of such elements with the accusative form in such positions (118 and 119). Thus, nominative pronouns are greatly impaired inaphasic speeches.

Further, it is observed from the above structures that most of the participants correctly inflect (pro)nominals for plurality in their sentence production. Examples are 'children', 'qualities' and 'them' (in 111) and 'doctors' (112). Also, the participant in (111) was able to process agreement relations between the plural specifier 'all' and head noun 'qualities'. Similar agreement relation also characterises 'two people' (in 113). The participants were able to process the plural features of these modifiers and made selection for the same (feature) in the head nouns. All these show preserved number agreement in NP syntax, especially with respect to plurality.

5.6   Summary

So far in this study, the discussion has focused on two components of Universal Grammar (word order and head parameters), derivations (nominals, adjectives and adverbs) and

verbal inflection (tense, agreement and aspect). In addition to prepositional phrase, functional categories (determiner phrase, complementiser phrase and infinitival phrase), NP distribution and plurality are also discussed in this chapter.

It is found in the discussion that the two aspects of UG are preserved in the participants' L2. Out of the 40 Nigerian bilingual aphasic particiapants, 3 have them L1 system in which there worder order pattern differs from English while the remaining L1 word order patterns of the remaining 37 aphasic participant is similar to that of English. Despite these variations in L1 pattern, there is no difference in the particpant's performance in their use of the English word order. Also, the L1 systems of all the (40) participants differ from English. From available stdies of the participants' L1 (which are indigenous Nigerian languages), it is established that they are head-initial languages. Yet, all the participants produced the English head-final head pattern. Further, the participants generally have problems with both derivational and inflectional morphology (especially those involving verb processing, except for agreement). Among all the functional categories observed in this study (COMPlementisers, GENitive, DETerminer, Tense, ASPect and AGRreement), the participants, irrespective of their L1 features, have problems with the first four functional categories. Their problems manifest in the form of inaccessibility to the CP, omission of GEN, DET and TNS, which is also sometimes substituted with *–ing*. While the present progressive ASP is preserved, other ASP forms (past progressive, present perfective and past perfective) are impaired. However, the nature of ASP impairment varies among the participants. Some participants failed to produce the required AUX while some did but either used the bare verb form or they substituted the *+en* form with the *+ing*. In addition, while AGR appears to be minimally impaired in few sentence constructions, it is mostly preserved in the participants' speeches. There are variations observed on the basis of education. All the aphasic participants are educated at least up to the bachelor's degree and some of them have higher qualification. However, there is no remarkable difference in their use of the discussed functional categories. Thus, their Thus, not all functional categories are impaired and impairment is not equal in aphasia. Furthermore, the discussion of phrasal categories reveals that Prepositional Phrases mostly constitute ungrammaticality and semantic shift (of NPs) as a result of omission of prepositional heads. It is also shown in the discussion that Nigerian bilingual aphasics

correctly produced infinitival structures. In some cases, however, such structures are used indiscriminately. Generally too, Nigerian bilingual aphasics resort to syntactic reprocessing (usually in the form of simplification through constituent elimination, and substitution) as make-up for their syntactic deficiencies. Their ability to simplify seemingly complex constructions (especially those involving CP structure) shows some preservation for syntax in brain damage.

Therefore, the findings are contrary to the claim that syntactic ability is (completely) lost in aphasia and that aphasics merely rely on nonlinguistic strategies to concatenate words into a sentence (Friederici, 2011; Lehečková, 2010; MacWhinney and Osmán-Sági, 2011; Albustanji *et al.*, 2013). This study also faults the submission that all functional elements are impaired in aphasics' speech production (Ouhalla, 1993; Grodzinsky, 2009; Albustanji*et al*., 2013). The participants in this study manifest some syntactic preservation in L2 system (in this case, English). It is, thus, hypothesised here that Nigerian bilingual aphasic speeches are characterised by *selective impairment* and *syntactic simplification/structure reduction*. The next chapter will discuss Nigerian bilingual autistics' performance in the use of the aspects of English morphology and syntax already considered among aphasics in this chapter.

CHAPTER SIX

MOPHOSYNTACTIC FEATURES OF NIGERIAN BILIGUAL AUTISTIC SPEECHES

6.0   Introduction

Chapter five discusses the morphosyntactic characteristics of bilingual Nigerian aphasics. The present chapter focuses on the grammar of the autistic group in this study. Previous studies (such as Luyster, Kadlec, Carter and Tager-Flusberg, 2008; Weismer, Lord and Esler, 2010) have shown that young children with Autism Spectrum Disorder show marked expressive language deficits. It has also been argued that these language deficits continue into adulthood (Mawhood *et al*., 2000; Hendricks, 2010; Park *et al.*, 2012a). Also, some other studies have shown that autistic people experience impairments in domains such as vocabulary learning, phonology, semantics and pragmatics (Norbury, Griffiths, and Nation, 2010; Kasher and Meilijson, 2013; Swineford *et al*., 2014). The information about whether PLWAut also show grammatical impairments is less well understood, especially with different studies often yielding contradictory findings. A study on grammaticality judgment (such as this) may, therefore, constitute a uniquely sensitive tool for ascertaining the nature of impairments in autism. As it was done in chapter five, this chapter examines the autistic participants' usage of the English word order, head parameter, lexical derivation (particularly nouns, adjectives and adverbs), verbal inflection (tense, agreement and aspect) phrasal and functional categories (prepositional phrase, determiner phrase, complementiser phrase and non-finite construction).

6.1   Universal Grammar in autistic condition

Theories of language disorder grounded in Universal Grammar (UG) have advanced the description of language impairment considerably. Extant literature (Ambridge, Pine and Lieven, 2014; Horne, Hall and Curran, 2014) has criticised UG on the grounds that its emphasis on innate underpinnings of language is not useful for explaining the learning

process and that it provides limited utility as far as treatment is concerned. However, the current study finds the UG rule-governed approach objective enough to attempt a description of grammar in autism, especially among a culturally and linguistically diverse group. Particularly, the adoption of a UG-based description of grammar impairment in autism has the potential to provide clinical insights that support the learning process as long as it adequately describes the population.

6.1.1 Word order parameter

Structures (1-8) below show autistics' production of the English word order.

1. *[$_S$Mama $_V$beat$_O$me.] (AUP11)

2. *[$_S$We no/$_V$(know) gather $_O$many detail.] (AUP12)

3. *[$_S$I (counts fingers) $_V$Ø $_C$thirsteen.](AUP20)

4. *[$_S$Doctor $_V$ Ø $_C$my very good friends.] (AUP5)

5. *[$_S$I $_V$doing $_O$my assignment $_O$myself.] (AUP13)

6. *[$_S$I $_V$want to use $_O$it $_A$to scratch me.] (AUP19)

7. *[$_S$This boy $_V$feeling $_C$cold $_A$yesterday.] (AUP16)

8. *[$_S$It $_V$imply// [$_C$that $_S$our body $_V$reflect $_O$ohh wisdom aaa of our Great Creator.]] (AUP1)

The autistic participants did relatively well in producing the English SVO order in their sentence production test. In each of the structures above, the canonical SVO (in 1 and 2), SVC (in 3 and 4), SVOO (in 5), SVOO (in 6) and SVCA (in 7) are preserved. In these structures, the subjects *Mama* (1), *we* (2), *it* (3), *I* (4), *Doctor* (5), *I* (6), *I* (7), and *this boy* (8) are in the initial position of their respective sentences and are immediately followed by the verbs (except structure 5 in which the verb is not phonetically realised) after which the objects and adjuncts occur (in sentences that have them). As seen above, structure (8) has its pronominal subject *it* followed by the verb *imply*, which is followed by a complement CP. Within the complement CP, the clause (*our body reflect… wisdom aaaofour Great*

Creator) has its subject *the complexities of our bodies* preceding the verb *reflect*, and the conjoined objects (*the genius* and *wisdom of our Great Creator*) follow the verb. However, certain instances of ungrammaticality are observed in some of the structures (1-8) presented above. These features are discussed in section (6.3) of this chapter.

Bartolucci, Pierce and Streiner, (2008) and Dalgleish (2005) have reported that syntactic deficits in autism are related to deficits in the ability to sequence words, or to learn rules for ordering words. Similarly, the Barnsley Metropolitan Borough Council (2013: 4) describes features of autistic speeches as "limited sentence length, omission of words and frequent word order errors, ...only intelligible most of the time in context". Contrary to these claims, the current study finds that Nigerian bilingual autistics have no difficulties with the use of the English word order. This is based on the sentences produced by autistic participants, which are in the standard word orders. Thus, it is posited that the word order of an L2 system is preserved in autism.

6.1.2   Head parameter

There are very few verb phrases, adverbial phrases and adjectival phrases in all the data gathered for this study.

9.   [She getting it out *PP, P of NP school*] (AUP10)

10.   [I *VP* eee using it to take picture inside::: back *PP, P* in *NP your head*.] (AUP5)

11.   [No no. he's *NP, Spec lazy N boy*. He's no read *NP, Spec his N books*.] (AUP10)

12.   [I like cartoon *NP, Spec ultimate N spiderman*. I like Arjun warrior prince. And nothing.] (AUP 17)

13.   *[*IP, Spec, NP* We *VP, MOD can V gather* ahhh detail] (AUP6)

14.   [*IP, Spec, NP* Michael *VP, MOD will V follow* me] (AUP15)

15.   [*IP, Spec, NP* Spiderman *VP, MOD can V run AdvP, Spec very AdvP fast*] (AUP17)

16.   *[*IP, Spec, NP* Everybody and me *VP sing AdvP, Spec very Adv well*] (AUP16)

17.   [*IP, Spec, NP* Uncle is *AdJP, Spec so AdJ funny*.]

From the structures above, it is seen that in (9), the PP "of … school", has the head-complement order. Also, the NPs *your head* (10), *lazy boy* (11), *his books* (11) and *ultimate spiderman* (12) follow the head last parameter. Structures (13-15) are some of the very few constructions in which participants used auxiliary verbs. However, it is seen that the VPs *can gather* (13), *will follow* (14) and *can run* (15) have their auxiliary before the head V. It, thus, implies that the head last order of the English VP is preserved in autism. The AdvP *very fast* in (15) and *very well* (16) further reveals that the head last order of the English AdvP is preserved as well. Similarly, the adjective *funny* (17) is pre-modified by the intensifier 'so'. The inference drawn from the characteristics of the data discussed above is that the head parameters of the English phrases are preserved in autism despite the brain impairment and the parametric variations between the participants' L1 and L2 systems.

6.2 Morphological derivation in Nigerian bilingual autistic speeches

One aspect of language that is important for the study of developmental language disorders is morphology. Typically, most studies on language deficits in second language situations have focused on inflectional morphology with limited attention, as much as the current researcher knows, given to derivational morphology (that is, a system of affixes used for word formation). This section thus examines Nigerian bilingual autistics' performance in their use of derivational morphology.

18.

$$n$$
$$\sqrt{\text{tradition}} \quad [n^o, \emptyset]$$
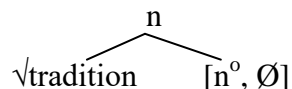
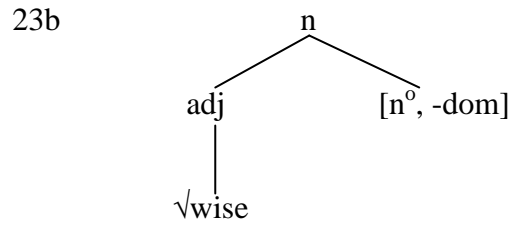Aunty told me to dress. To show my *tradition*. (APP2)

19.   *[Air have *pressure*.](APP20)

20.   [*hospital*](AUP17)

21.   *[I encourage::: my doctor *readiness*.] (AUP3)

22.   *[Doctor *responsibility* is to treat *illness*.] (AUP17)
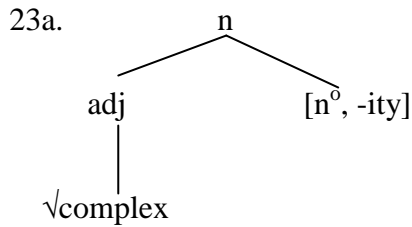
23a.

```
                n
          ╱          ╲
      adj            [nᵒ, -ity]
       │
    √complex
```

23b

```
                n
          ╱          ╲
      adj            [nᵒ, -dom]
       │
    √wise
```

*The *complexity* in our body reflect the genius and *wisdom*in our great creator. (AUP 13)

24

```
             n
         ╱       ╲
        √         [nᵒ, ment]
        │
    √equip
```
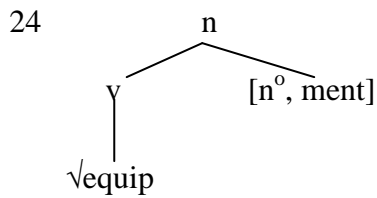
*Doctor haul piece *equipment*. (AUP3)

25

```
             n
         ╱       ╲
        √         [nᵒ, ion]
        │
    √profess
```
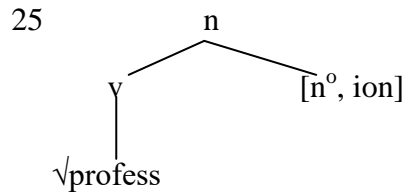
*Also, dishonesty characterise other *profession* in absolutely checking. (AUP4)

26.   [Health *education*] (AUP17)

27.

```
             n
         ╱       ╲
        √         [nᵒ, -ing]
        │
    √skipping
```
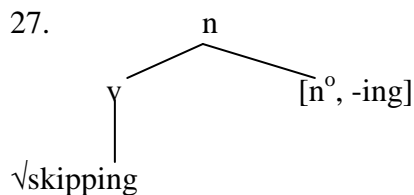
I like *skipping* (AUP10)

The target words in the above structures are those in *italics*. As seen in (18), (19) and (20), the participants had no difficulty producing the focus words: *tradition*, *pressure* and *hospital*, respectively, which are root nouns. Also, the participant in (21) correctly produced the f-morpheme *-ness* which nominalises the adjective 'ready' in (21). Similar f-morpheme selection is involved in nominalising the adjectives *responsible* and *ill* in (22). The derivation of the noun *complexity* as well as the derivation of *wisdom* from the adjective wise is not impaired in the participant's production in (23). The nominals *equipment* (24), *profession* (25) and *education* (26) are deverbal nouns; their derivation

(from their l-morphemes 'equip', 'profess' and 'educate', respectively, which are verbs) involves n^o f-morpheme selection. The participants had no difficulty with the production of the f-morphemes. Further, *skipping* (27) and *drawing* (28) are gerunds. Thus, like the structures in (24-26), they have verbal l-morphemes. The participants correctly produced the *–ing* f-morpheme to derive the gerund required for logicality in the conversation (see appendix). The foregoing, therefore, reveals that the autistic participants were able to produce (use) nouns correctly irrespective of their nature; that is, whether they are root nouns or derived nouns. For the derived nouns, it is also evident from the participants' production above that nominalised adjectives, deverbal nouns and gerunds are unimpaired in autism. As shown in (18), (23), (24), (25) and (27), the n^o f-morpheme nodes are correctly selected and projected. Thus, it is posited here that nominalisation is preserved in autism.

Similar morphology preservation is observed in participants' use of English adjectives and adverbs as seen in the structures below.

28.　　　　adj

　　　v　　　$[a^o, -able]$
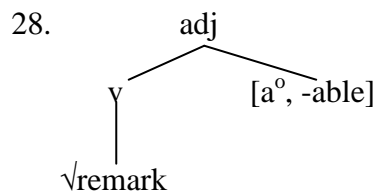
　　√remark
*It in *remarkable*. Person overall health can measure (AUP13)

29.　　　　adj

　　　n　　　$[a^o, -cal]$
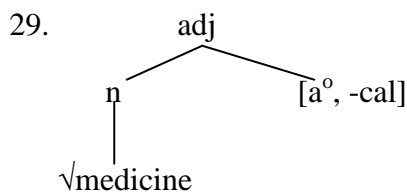
　　√medicine
Getting *medical* attention recent time. (AUP2)

30a.

adj
├── adj
│   ├── [Neg, in]
│   └── adj
│   └── √secure
└── [Ø]

30b.

adj
├── adj
│   ├── [Neg, un]
│   └── adj
│   └── √safe
└── [Ø]

so no reason to feel *insecure* or *unsafe*. (AUP12)

31.

adv
├── adj
│   └── √simple
└── [adv°, -ly]

Simply (AUP7)

32.

adv
├── adj
│   └── √conscientious
└── [adv°, -ly]

Conscientiously (AUP1)

33.

adv
├── adj
│   └── √recent
└── [adv°, -ly]

Recently (AUP3)

34.

adj
├── adj
│   └── √good
└── [comp, -er]

Better (AUP16)

154

35.
```
              adj
          ╱        ╲
        adj        [SUP, -est]
         │
      √clever
```
Doctor are cleverest human (AUP4)
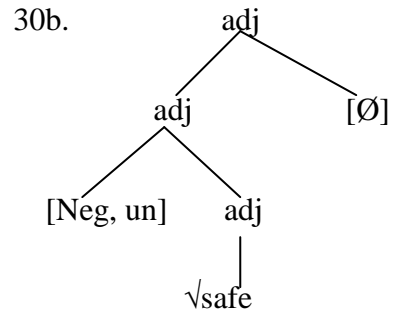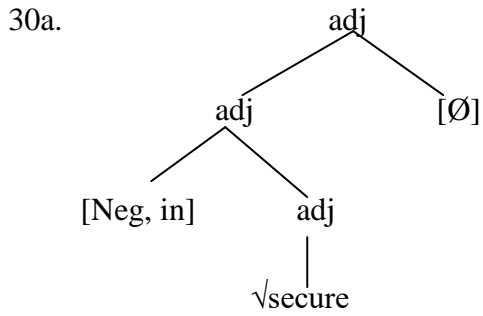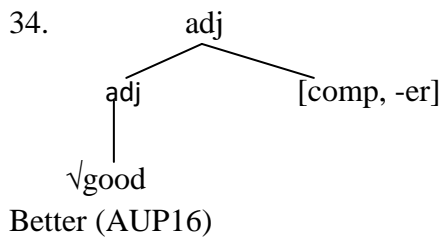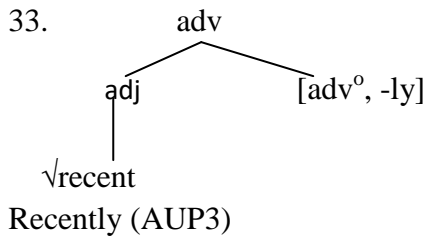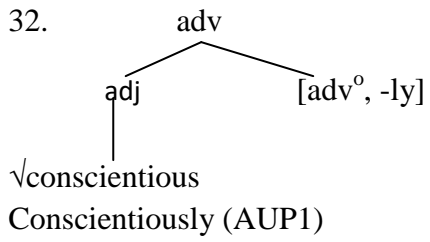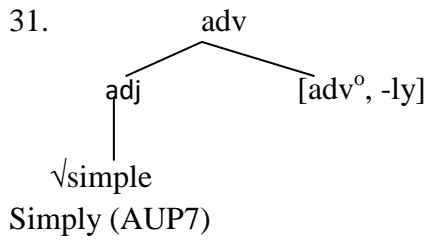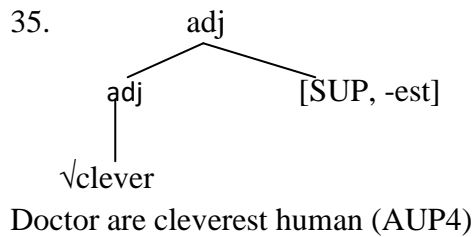
The participants performed well in their use of adjectives and adverbs regardless of the root. For example, while *remarkable* (28) has the verb 'remark' as its l-morpheme, *medical* (29) has a nominal l-morpheme (medicine). The adjectives *insecure* and *unsafe* (30a and b, respectively) have adjectives as their l-morphemes; the morphological process involved is that of negation. The participants correctly processed and consequently produced the f-morphemes without difficulty. The derivation of the adverbs *simply* (31), *conscientiously* (32) and *recently* (33) from their root adjectives 'simple', 'conscientious' and 'recent', respectively, further shows the participants' competence in processing the English derivational morphology. Though there is a dearth of data to discuss the morphological process involved in *better* (34) and cleverest (35), it appears that the inflectional morphemes *er/est* (comparison of gradable adjectives/and adverbs) are preserved as well in autistic speeches. While the two instances seen in this study suggest this, it may be a hypothesis to be considered in future studies where more data on such inflections will be examined. Following the participants' speech production discussed above, this study posits that autism does not affect the subjects' use of English derivational morphology.

6.3   Verbal inflections in autism

In English-speaking countries, autistics have been consistently shown to underperform on a number of grammatical morphemes compared to age-matched controls (Rice, Wexler and Cleave, 2005; Leonard *et al*., 1997; Oetting and Horohov, 1997). Some other studies have examined the same in German (Clahsen, 1989), Swedish (Hansson and Nettelbladt, 1995), Italian (Leonard and Bortolini, 1998), French (Hamann, *et al*., 2003; Jakubowicz and Nash, 2001), Spanish (Bedore and Leonard, 2001), Hebrew (Dromi, Leonard, Adam, and Zadunaisky-Ehrlich, 1999), Japanese (Fukuda and Fukuda, 1994; Ito, Fukuda and Fukuda, 2009), Greek (Dalalakis, 1999), Inuktitut (Crago and Allen, 2001) and Russian

(Kornilov, Rakhlin and Grigorenko, 2012). The current study differs from these existing studies in that while they have each reported the findings among native speakers, the current study examines the performance of autistics among Nigerian ESL biliguals.

6.3.1   Tense

36.

last Sunday √go

Last Sunday…, I go to church (AUP18)

v

v   [*pst., Ø]
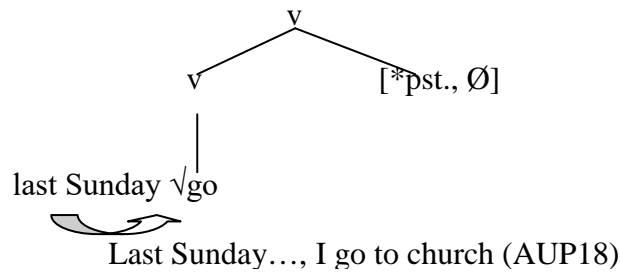
37.   No. *[He *wear* blue dress and black trouser.] (AUP16)

38.   *[Aunty *collect* assignment.] (AUP19)

39.   *[I *don('t)* finish it (AUP19)]

40   *[I *go* to dance class; I *have* good time.] (AUP16)

41

v

v   [*pst., Ø]

√be   before

I am stage 3 before; now stage 5 (AUP15)

42.

v

v   [*pst., Ø]

recently √haul

Doctor *haul out* equipment (AUP4)
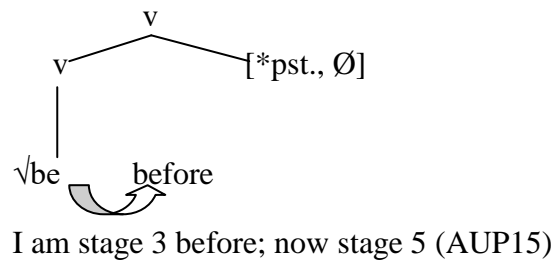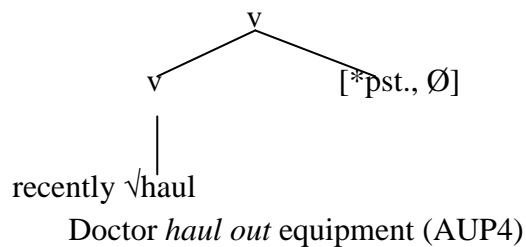
43.   *[I am impress. Someone *invent* camera.] (AUP1)

44.   *I ask him and respond.] (AUP5)
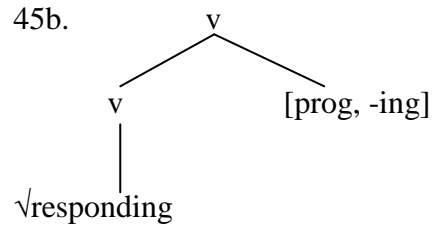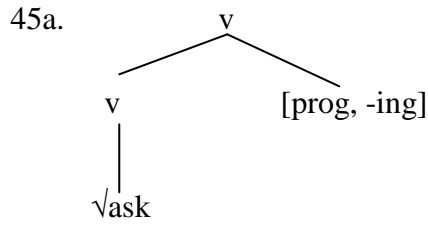
45a.　　　　v
　　　　／　＼
　　v　　　[prog, -ing]
　　│
　√ask

45b.　　　　v
　　　　／　＼
　　v　　　[prog, -ing]
　　│
　√responding

I am *asking* him ehmm the device is ehmm he is responding (AUP5)

46.　　　　　　* v
　　　　　　／　＼
　　　v　　　[prog, ing]
　　　│
recently √haul
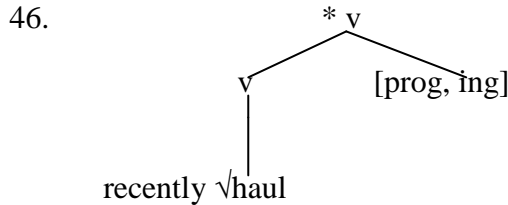
Recently, Doctor is hauling outpiece of equipment

The conversations from which the above structures were extracted contain some time reference markers which indicate that the actions expressed by the italicised verbs are in the past. For instance, (36) is the participant's response to a question ("What did you do last Sunday?"). The expression 'last Sunday' indicates a past time. Contrary to the past tense expected in his response, he produced the present tense verb *go*. The participant in (37) was describing the cloth which one of his colleagues had earlier put on (prior to the conversation). Thus, the verb *wear* in the structure should select the f-morpheme *+ed*. AUP19 was melancholic, and when he was asked why he was not cheerful, he produced the structure in (38). Further, he produced the structure in (39). It was clear from the linguistic context that the actions expressed by the verbs *collect* (38) and *don't* (39) require f-morpheme *+ed* selection. A similar omission is found in the participant's production in (40) and (41) where the participant produced *I go to dance and have good time* and *I am stage three before*, respectively, for information on past time action/status. The participants' performances are not totally different from the above in their production of the sentences in the Passage Reading Test (PRT). The participants deleted the *+ed* f-morpheme of *haul* (42), *invent* (43), as well as *ask* and *respond* (44), which are contained in the passage.

As shown in (36), (41) and (42), the f-morpheme nodes (of the target verbs in structures 36-45) are null because the participants did not make the selection of the required

morpheme as contained in 'hauled out' and 'invented', respectively. Their morphological transformation of the given structure further points at their inability to use the English past tense morpheme. This finding agrees with Roberts *et al.* (2004) who discuss tense production in autistics and concluded that their study participants showed high rates of past tense marking omission.

Structures (45) and (46) reveal a seemingly different production found in the speeches of few of the autistic participants. Instead of the past tense, they used the progressive form of the verbs. The grammaticality of these structures reveals some morphological strength of the autistic participants. The reason for their inclusion in the discussion is that the actual structures in the SP are in the past form: "my doctor *hauled* out a piece of equipment that I hadn't seen before. I *asked* him what the device *was*, and he *responded*".

However, few of the autistic participants showed some preservation in their use of the English past tense. Structures (45) and (46) exemplify this. The participants among few others performed well in the production of past tense inflection (both regular and irregular), such inflection was preserved all through their sentence constructions. Examples of such production are seen in structures (47-53) below.

47.   [My doctor hauled out a piece of equipment.] (AUP2)

48.   *[I asked him. What Φ device. and he responded.] (AUP8)

49.   *[We *danced* there on morning.] (AUP18)

50.   [I danced] (AUP11)

51.

    *My doctor comment amaze me. (AUP3)

52.

    I *ate* cornflakes, and ice cream. (AUP11)

53a.

```
            v
       ┌────┴────┐
       v      [pst., -ed]
       │
      √do
```

53b.

```
            n
       ┌────┴────┐
       v      [pst., -ed]
       │
     √stay
```
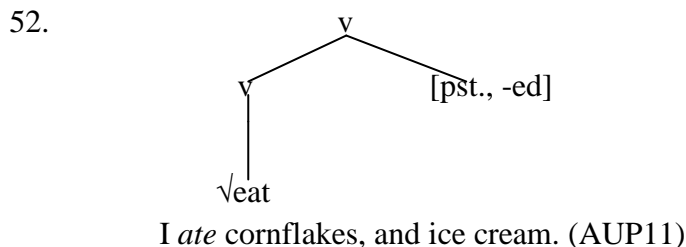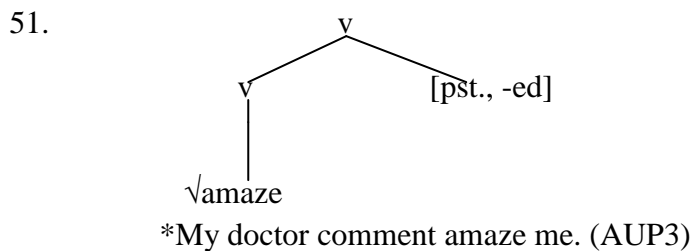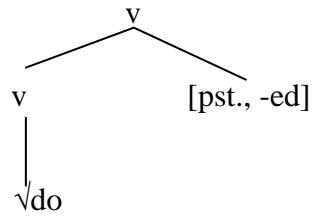
I didn't go home. I stayed in school. (AUP2)
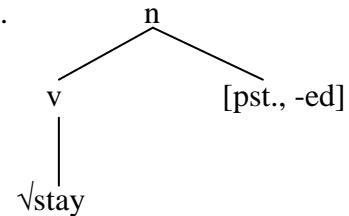
In structures (36-44), the participants deleted the +*ed* f-morpheme. In (45 and 46), the participants engaged in syntactic transformation that deleted the +*ed* f-morpheme and produced *Asp. prog* structures. The participants' constructions in (47-53) are in contrast with the ones considered above. This study posits that there are variations in tense production among autistics. In some, the past tense inflection is impaired (see 36-46) whereas it is preserved in some others (47-53). It is noteworthy that there is no significant age difference among the participants; they are all within the age bracket of 10-12 years. Thus, the age factor may not account for the disparity in the autistic participants' use of the English tense feature. Also, while they are from different L1 backgrounds, the preservation or impairment of the tense feature does not occur among participants from specific L1 background. For instance, AUPs 1, 5, 7, 16 and 18, whose sentence constructions show impairment of tense, have Yoruba as their L1 whereas AUPs 2, 3, and 11, whose spechees reveal preservation of tense, also have Yoruba as their L1. However, a common factor is that lexical verbs in their L1 systems do not inflect for tense. It may be suggested at this point that the disparity in the use of tense among Nigerian bilingual autistics stems from individual's competence level in the acquisition of English as L2. This suggestion may be further investigated in future studies. Impairment among concerned autistics results in outright omission of the past tense marker. Some others resort to total re-transformation to generate new grammatically correct structures but which deviate from the intended structures thereby resulting in elimination of the +*ed* f-morpheme.

6.3.2   Agreement

The discussion in this section focuses on Agr feature between verb inflection and NPs in the Spec, IP position.

54.   *[*NP, +1SGL*Our body *INFL*Ø *V*reflect. Ohh wisdom aaa of our Great Creator.] (AUP1)

55.   *[*NP, +1SGL*He always *INFL*Ø *V*give me due attention.] (AUP7)

56.   *[*NP, +1SGL*She *INFL.*Ø *V*live my house.] (AUP16)

57.   *[*NP, +1SGL*My mum *INFL*Ø *O*check my note every day.] (AUP20)

58.
```
         n                                          *v
       /   \                                       /   \
      n    [3Sg. +s]  ◄──────────────────────►  v    [3Sg. Ø]
      |                                          |
   √She                    √teach
```
        *She teach me too. (AUP20)

59.
```
         n                                          *v
       /   \                                       /   \
      n    [3Sg. +s]  ◄──────────────────────►  v    [3Sg. Ø]
      |                                          |
   √Phil                   √take
```
Phil take cup on shelf. (AUP16)
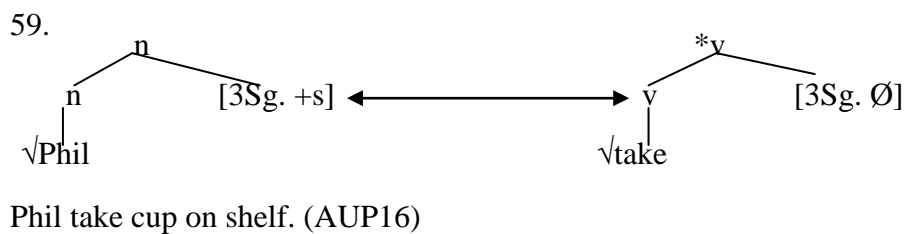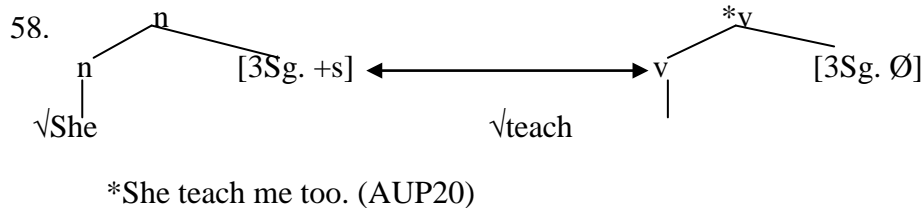
60.   *[Yes and *IP, Spec*he *INFL. +1SGL*Ø *V*win.] (AUP17)

61.   *[*NP, +1SGL*My daddy *INFL.*Ø *V*come to school here to take me.] (AUP14)

62.   *[My mummy_i… *NP,+1SGL* she_i*INFL.*Ø *V*hire somebody to help her do some stuff.]

        (AUP20)

63.   *[uh *NP,+1SGL*he *INFL INF*Ø *V*have it.] (AUP13)

64.   *[*NP, +1SGL*She *INFL.*Ø *V*wait for me always.] (AUP12)

The structures above are characterised by violation of the Spec-Head agreement. Despite the structural reduction by which the participant in (54) eliminated the plural features of the seemingly complex subject NP (*the complexities of our bodies*), the participant failed to inflect the verb for the singular feature. Similarly in (55), the *+3Sgl* f-morpheme feature was deleted in the verb. The performances in the participants' self generated structures (56-64) are not different from those of the structures contained in the SP. As seen above, the participants use the root verbs *live* (56), *check* (57), *teach* (58), *take* (59), *win* (60), *come* (61), *hire* (62), *has* (63) and *wait* (64) in locations that select *+3Sgl* f-morpheme (for *she*, *my mum*, *she*, *Phil*, *she*, *daddy*, *she'*, *he* and *she*). Generally, therefore, AGReement morphology is not preserved in Nigerian bilingual autistic brain.

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6.3.3 Aspect

The following structures exemplify the pattern of the performance of autistics in English aspect.

65.   *[IP, Spec This boy VPfeeling cold yesterday.] (AUP17)

66
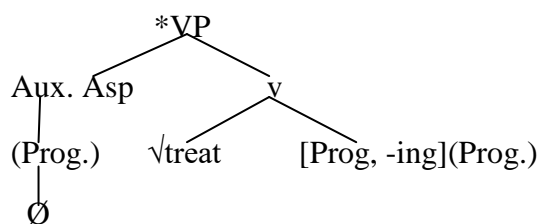
*They treating people. (AUP17).

67
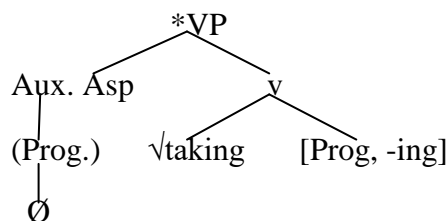
        *He taking see book. (AUP10)

68   *[IP, SpecI VPehh using NPit [IPto take picture.]] (AUP5)

69.   *[IP, SpecDishonesty VPcharacterise other profession in absolutely *checking*.] (AUP12)

70.   *[IP, SpecPersonal overall health VPcan measure NPhealth of the brain.] (AUP4)

71.
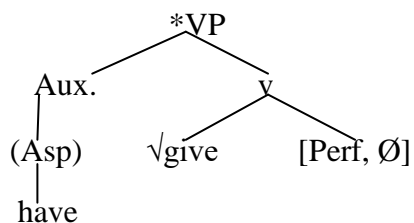
        He have always give me due attention (AUP12)

72   [IP, SpecThey VPalways do their job well] (AUP8)

In (65), the participant (without being asked questions relating to his utterance) was informing the researcher that another participant (who was being interacted with at the

time the utterance was made) had had cold the previous day. Such a structure expressing *Asp Prog* requires the *aux-be* for grammaticality, which the participant did not produce. Similar anomaly characterises structure (66). The participant was earlier asked what he would like to become in future and he said "doctor". So the next question put to him by the researcher was "What do doctors do?" He responded "*They treating people". First, it is possible that the participant intended to say "*They are treating people", which will reflect direct transfer of the speaker's L1 system, Yoruba, (Wọ́n (máa) n tọ́jú àwọn èèyàn), into English. However, the produced English structure has the *aux-be* deleted, which actually exists in his L1 system. Also in (67), another participant was taking a book which the researcher had earlier collected from him (because he was struggling over it with two other participants). In a bid to report his friend to the researcher, he made the utterance which was supposed to be "He is taking the book". The problem with the construction (aside from the inclusion of the superfluous element, VP-see) is the omission of the required *aux-be*. The 'stimulus' presented to the participant in (68) as contained in the SP is "I am using it to take a picture…" In his production, he deleted the *aux-be*. Structure (69) actually reads "The dishonesty that characterises many other professions is absolutely checked (*Pres, Perf Asp*) in the medical field". The participant's production shows that the given structure was subjected to re-transformational processes by which the *Perf-Asp* was changed *to Prog-Asp*. However, the sentence is seriously impaired by the participants' deletion of the *aux-be*, 'is'. Furthermore, it is evident that the outcome of the participant's re-transformation at best might be "*Dishonesty characterise other profession is absolutely checking". In this case, except for the violation of Spec-head agreement (between the subject NP, 'dishonesty' and plural inflection of the verb 'characterise'), the structure will still be ungrammatical because the verb 'check' is used in the active form, and, being transitive, requires an internal argument to which it will assign accusative case. Also, the supposed outcome may pose some interpretation problems as thematic roles of arguments are modified.

The common feature of the participants' use of the English progressive aspect (structures 65-69) is omission of the *aux-be*, which is a required condition for expressing the English *Asp Prog*. It is worthy to note that while some of the participants' English utterances appear to be Nigerian, the omission of the *aux-be* is a major deviation from Nigerian

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English structures. It is, therefore, arguable that the actual *Asp Prog* constructions of the participants are not entirely transferred from their L1 system. For most of them, the *Asp Prog* is available in their L1 system and such constructions require syntactic components that are (almost) equivalents of the English *aux-be.* For example, in Yoruba, which is the L1 for AUP 5 and AUP10 (structures 185 and 188, respectively) *Asp Prog* is marked by a high tone nasal consonant, /n/. Since this feature is available in their L1, it is expected that they should not have difficulty with similar structures *Asp Prog* in their L2 system. Therefore, it is posited in this study that the syntax of *Asp Prog* is impaired in autism.

In (70), the participant was required to produce the structure "A person's overall health can be measure by the health of the brain". In his production, the participant reprocessed the passive structure to produce the active sentence. As a result, the *Asp Perf* (be measured) was eliminated and eventually, the participant produced a simple present tense structure. Structurally, the VP 'can measure' is an acceptable phrase in English, given that modality already takes care of the inflection on the verb. Thus, the sentence appears to be grammatical. However, the actual meaning of the structure is lost in that the event conveyed in the sentence indicates perfective aspect. Similarly, another participant in (71) was required to produce the structure: "They have always given me due attention". The first syntactic modification observed is the switch from the *3.Pl* subject to the *3.Sg* subject without a corresponding switch in the *NUM*ber feature of the verb. This results in the ungrammaticality of the sentence; (it violates Spec-Head agreement). What is of more concern to the discussion in this section is the participant's failure to inflect the verb 'give' to indicate perfective aspect even though he produced the *aux-have* (have) which marks the V (give) for *Asp Perf.* Again, the actual structure in the SP, which the participant in (72) was required to produce, is "They have always done their job well". As seen in his production, the participant eliminated the AspP marker 'have' as well as the f-morpheme (Asp inflection) of the verb, hence producing the l-morpheme of the verb only. This AspP structure was reprocessed by the participant as TeNSe phrase as against the actual (perfective) AspP. This may not be dissociated from the fact that the participant had a problem with the use of the English (perfective) aspect. Though this syntactic reprocessing yielded a grammatically correct construction, the switch from event reference (ASPect) to time reference (TeNSe) brings about the loss of actual meaning of the structure.

The discussion so far reveals that Nigerian bilingual autistics have difficulty with the use of the English ASPect. Their main problem with the use of the English progressive aspect is omission of the required *aux-be* even though the verbs were inflected for the *–ing*. Similarly, they often deleted the *Perf Asp* marker in the VP such that ASP was produced as TNS. In addition, they failed to inflect the V for the *+-en* structure in sentences where perfective aspect is required.

The findings of the study on verbal inflection are in consonance with Ambridge, Bannard and Jackson (2015) who report that autistic participants showed worse violation performance in tense marking as well as inflection for number and person. In addition, it supports Park *et al*. (2012b) who avow that

> When autistic preschool-age children are compared with non-autistic preschool-age children who have other developmental disabilities, the autistic children do not differ from the non-autistic children in their correct production of sentence structures, plurals, singulars, or past-tense inflections.

Several studies of elicited verb production in children with autism have reported an increased number of incorrect verb forms in contexts that require the past tense and number (Botting and Conti-Ramsden, 2003; Seung, 2007; Walenski, Mostofsky and Ullman, 2014), as well as in contexts that require the present tense (Roberts, Rice, and Tager-Flusberg, 2004; Walenski, Mostofsky and Ullman, 2014). In addition to these submissions, the current study has included examination of the English ASPect morphology, which was not included in the previous studies. It is should be noted that while Park *et al*. (2012b) as well as Ambridge, Bannard and Jackson (2015) conducted their research among pre-school children (aged less than 6 years), the participants in Botting and Conti-Ramsden (2003), Roberts, Rice, and Tager-Flusberg (2004), Seung (2007), and Walenski, Mostofsky and Ullman (2014) range between age 7 to 10years. The participants in the current study are within the age range of 10 to 19 years. Thus, at the point of the current report, research among the autistic group has included pre-school children, children in the early education stage and those who have been enrolled in formal classroom and have used/been taught the English language for a number of years. More importantly, this study's participants have grown past the 'critical period' (discussed in 2.2.2). Following the agreement in the findings of these studies, it is posited here that

inflectional morphology is generally impaired in autistic speeches. Hence, inflectional morphology impairment is described as a core feature of autistic grammar.

6.4   Phrasal categories in Nigerian bilingual autistic speeches

Beyond verbal inflection, which is commonly investigated in autistic research, victims' performance in phrasal categories may also provide useful details about autistic grammar. Thus, this section examines headedness in phrasal and functional categories.

6.4.1   Determiner phrase

In this section, attention is given to function words in English, particularly determiners as heads in phrasal categories.

73.
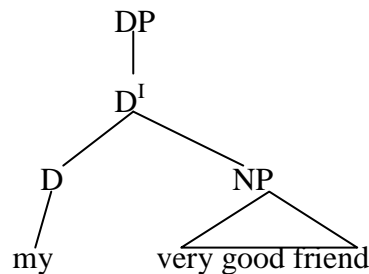
Doctor ist my very good friend. (AUP12)

74.   *[$_{IP, Spec}$He's $_{VP}$no read $_{DP, D}$**his** $_{NP}$**book**.] (AUP10)

75.   *[$_{IP, Spec, DP, D}$*My* $_{DP, Spec}$*doctor* $_D$*O* $_{NP}$*comment* $_{VP}$amaze me.] (AUP1)

76

Doctor responsibility to treat illness. (AUP17)
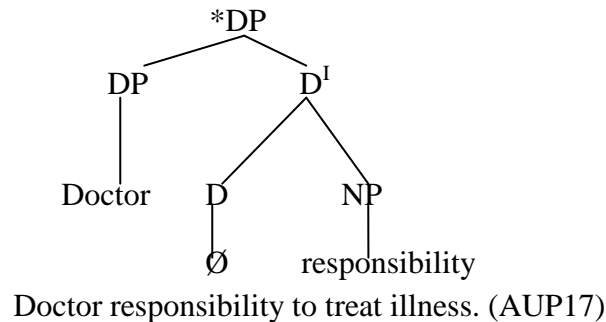
77   *[$_{DP, Spec}$Aunty $_D$Ø $_{NP}$table] (AUP6)

78.   *[$_{DP, Spec}$person $_D$Ø overall health (AUP1)

79.   *[$_{IP, Spec, DP}$Personal $_D$Ø $_{NP}$overall health can measure health of brain.] (AUP3)

As seen in the structures above, the participants in (73) and (74) correctly produced the DPs *my very good friend'* and *his book,* respectively. There are two (possessive) DETerminers in (75) as it is contained in the SP, the pronominal (my) and nominal possessor (*'s* in *doctor's*). The participant correctly produced the possessive pronominal but deleted the nominal possessor, which should assign the genitive case to the NP 'doctor'. A similar problem characterises structures (76-79). In (76), the D position is null. Hence, no case is assigned to *doctor*. The same applies to *aunty* in (77). The participant said that he was going to take his ruler (which was on the teacher's table). When he was asked "Which table?", he pointed to his teacher's table as he produced structure (77). As it is seen, the nominal possessor in *aunty's* was not produced by the participant. Hence, *aunty* is without case. AUP1 produced "a person's overall health" (contained in the SP) as (78). The D position is also null, showing its deletion in the participant's production. Aside from this, the participant also omitted the article 'a' contained in the actual structure presented to the participant. AUP2 (in 79) was also required to produce the same structure (*a person's overall health*) presented to AUP1 (in 78). The structural output of the participant (in 79) indicates that certain re-transformation took place. The re-transformation eliminated the genitive structure of the NP 'person' to produce an AdjP 'personal'. This process eventually yielded a seemingly grammatical structure (if considered independent of the sentence in which it was used). In each of the structures discussed above, it is common that all the participants were able to use the possessive pronouns in their speech production whereas, they all omitted the nominal possessor (*'s*) in structures where the functional head is present. (Generally, therefore, rather than producing DP, they produced NPs in which two lexical heads were projected).

An inference that could be drawn from these features is that possessive pronoun (*Pro-Gen)* is preserved in autistics while possessive noun (*Nom-Gen*) is impaired. As will be further seen in other structures discussed below, the non-production of the required article 'a' in structure (198) suggests that autistics' sentence production is characterised by frequent omission of articles.

80. *[*IP, Spec, DP*We *VP*can gather *DP, D*many *NP*detail.] (AUP2)

81. *[*IP, Spec, DP*We *VP*gather *DP, D*Ø lot and detail] (AUP3)

82   *[$_{IP,\ Spec}$He $_{VP}$taking [$_{VP}$see $_{DP,\ D}$Ø $_{NP}$book] (AUP10)

83   *[$_{IP,Spec,\ DP}$Doctors $_{VP}$are $_{DP,\ D}$Ø $_{NP}$cleverest humans.] (AUP8)

As earlier mentioned, the participants in (78 and 79) above did not produce the articles in the given DP "a person's overall health…" Structures (80) and (81) show how participants AUP2 and AUP3 produced the structure "We can gather a lot of details…" (contained in the SP). The participant's production in (80) shows accurate interpretation of the same DP structure. As the participant did in (79), he reprocessed the given DP "a lot of" and substituted it with another determiner 'many' (which is probably easily accessible/processed in his mental lexicon). (While the production of 'many' is correct, its lack of agreement with the NP details makes the entire structure ungrammatical). In 81, AUP3 omitted the article 'a' (in *a lot*). The omitted article is crucial in shaping the meaning of the 'lot' (as a determiner meaning *a large number of something*). Hence, the article is required in the DP (*a lot of details*). As mentioned earlier (see 67), the participant in (82) referred to a particular book. Thus, there is the need for the determiner 'the', which the participant deleted. The participant in (83) also eliminated the NP N, PP structure of 'the cleverest set of humans' and thus produced the ungrammatical NP 'cleverest humans'. Despite the productive syntactic reprocessing, the participant's construction is still marred by his omission of the article 'the' which is required for grammaticality of the sentence. These structures show that autistic participants do not only have difficulty with production of the English nominal possessor ('*s*) but also with the articles as determiners.

6.4.2   Prepositional phrase

In section 6.1.2, some structures reveal some ungrammaticality that resulted from the participants' production of prepositions. In this section, more structures involving prepositional phrases are examined in order to ascertain the kind of impairment that characterise autistic speeches with respect to prepositions.

84

```
              *IP
         ┌─────┴─────┐
       Spec          I'
        │        ┌────┴────┐
       DP        I         VP
             ⎡+TNS⎤         │
             ⎣+AGR⎦         V'
                       ┌────┴────┐
       We             V'         PP
                  ┌────┴────┐     │
                  V       AdvP    P'
                  │         │  ┌──┴──┐
                dance      Adv P     DP
                           │   │      │
                         there on   morning
```
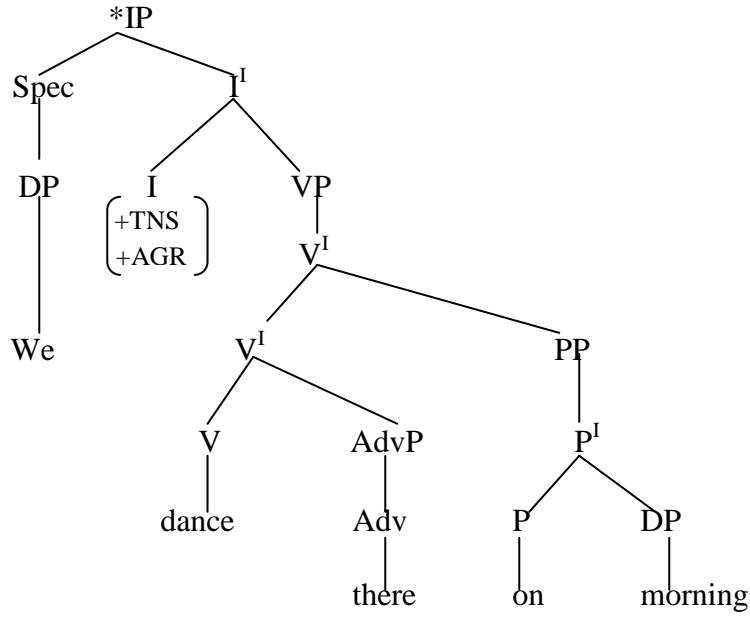
We dance there *on morning. (AUP18)

85

```
                *IP
           ┌─────┴─────┐
         Spec          I'
          │        ┌────┴────┐
         DP        I         VP
               ⎡+TNS⎤         │
               ⎣+AGR⎦         V'
                         ┌────┴──────┐
         She            V'          AdvP
                    ┌────┴────┐      /\
                    V        PP    here and here
                    │         │
                  live        P'
                          ┌───┴───┐
                          P      DP
                          │      /\
                          Ø   my house
```
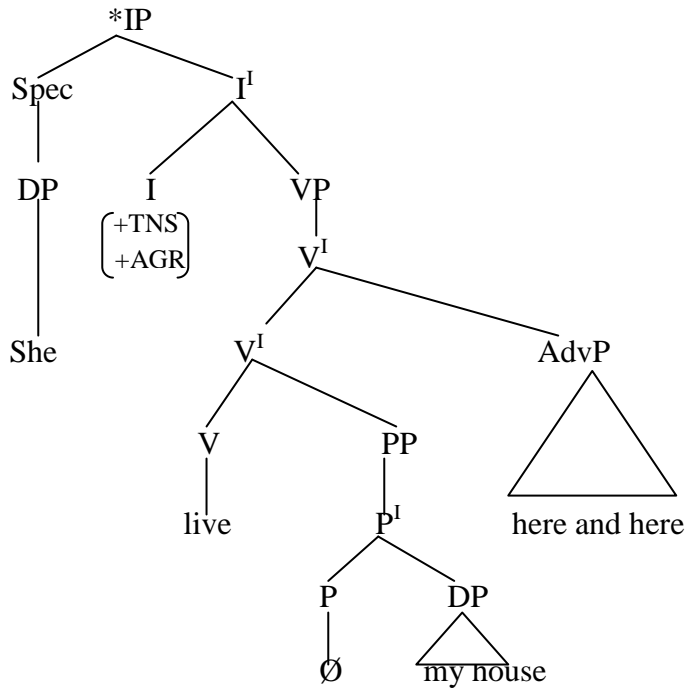
She live my house here and here (AUP16)

86.   *[in table] (AUP6)

87.   *[I'm stage 3 before but now stage 5.] (AUP15)

The participant in (84) was giving the spatial and temporal details of the action expressed by the (wrongly inflected) verb 'dance'. Thus, the structure requires obligatory 'in', which heads the PP (indicating the time of the action expressed by the verb) in the sentence. The participant's non-production of this (required) preposition makes the sentence ungrammatical. Similarly, the conversation between AUP21 (structure 85) and the researcher showed that the two possible intended structures are "She lives beside my house" and "She lives around my house" (interpreted within the co-text 'here and here', as similar structure is common in Nigerian English). The phrase marker shows that the P position is null. Thus, the head of the phrase is not projected at that level of syntactic representation, and consequently, the structure violates the Projection Principle.

Further, the (complement) NP 'my house' in the structure violates Case Filter). The participant in (86) was walking out of the conversation and when the researcher asked where he was going, his response, 'ruler', showed that he was going to take a ruler (which was on a nearby table). When he was asked where the ruler was, he simply said 'in table'. Obviously, therefore, he intended to say *[It is] on the table*. Instead of the proposition 'on', the participant produced 'in'. This substitution will definitely misinform the audience about the actual location of the ruler though the NP 'ruler' is still assigned the location theta role.

Noticeably, AUP15 in (87) intended to assert that he was no longer a Stage 3 pupil. Hence, the intended structure is "I was in Stage 3 before, but now I am in stage 5". It is evident that the elimination of constituents in the intended structure resulted in semantic shift. Structurally, the NP 'stage three' is produced as complement NP to the VP, having accusative case as against the actual PP complement NP which is assigned oblique case. Similar omissions characterise structures 88-90 below.

88.   *[Jenny hide two day] (AUP17)
89.   [Tell him to remove everything ohhh his pocket]. (AUP11)

90a *IP

Spec   I^I

DP   I   VP
        +TNS
        +AGR   V^I

  I   V   DP

              go   DP

                          my grandma house

I go my grandma house. (AUP13)

90b   IP

Spec   I^I

DP   I   VP
        +TNS
        +AGR   V^I

 She   V   PP

              went   P^I

                          P   DP

                         to   my grandma's house
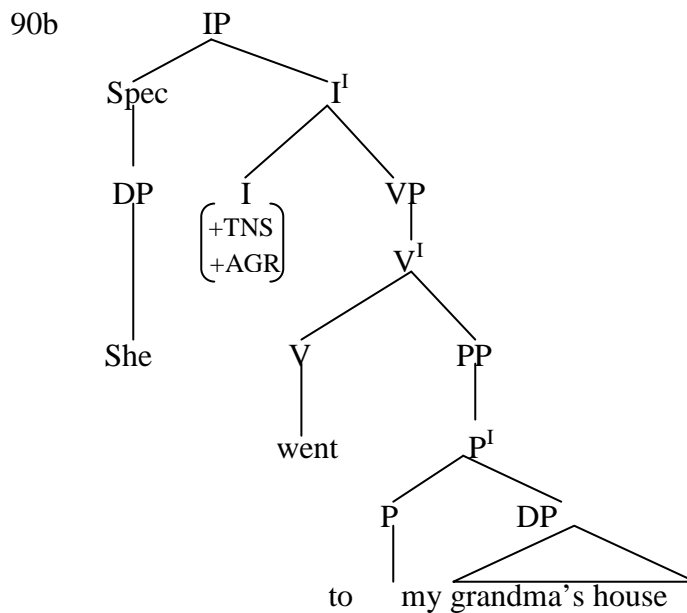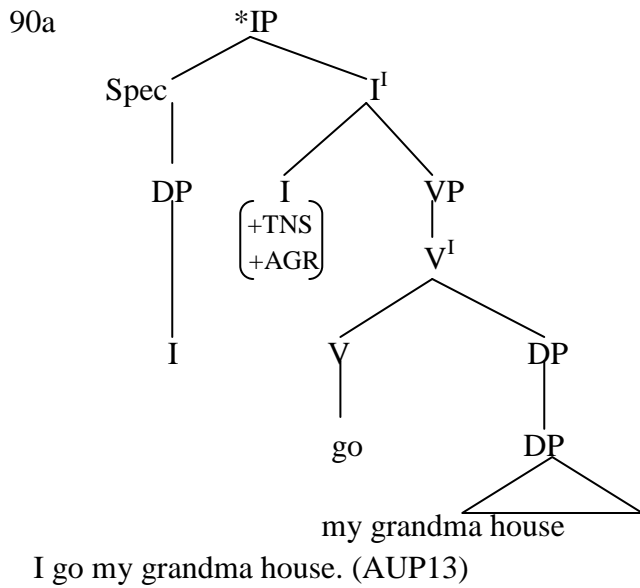
91. I *went to* my *grandma's* house

92. *[It('s) my bag.] (AUP17)

In the participant's narration of a scene in his favourite cartoon videos, he wanted to report that a character (Jenny) hid (from his friends) for two days. As seen in (88), the participant omitted the preposition. This in addition to other syntactic inadequacies (such as tense, agreement and number) results in the ungrammaticality of the sentence. The omission of

the preposition affects the case property of the NP *two day*. As produced by the participant, the NP is assigned accusative case instead of the oblique case. Similar omission is found in (89). As suggested by the co-text *to remove*, the preposition 'from' is obligatory in the post VP position such that the VP takes complement DP (*everything*) and a complement PP in which the DP will be assigned oblique case and source theta role. On the contrary, two complement DPs are projected from the VP. As a result, the DP *his pocket* is not assigned any case or theta role, and the meaning of the utterance is elusive. In (90a), the DP *"my grandma place" is produced as an accusative argument as a result of the participant's omission of the locative preposition 'to' (in 90b). It is also evident that the verb *go* (90a) does not require an internal argument (since it is intransitive). As seen in (90b), the DP *"my grandma place" logically takes an oblique case, not the accusative. AUP14 has a painting of the rainbow in his book. When he was asked whether he had seen a rainbow before, he made the sentence in (91) to affirm that he had seen a rainbow (in the sky). Structure (92) is the participant's answer to the question on where his health education exercise book was. It is seen in the two structures (91 and 92) that the internal arguments of the verb in (91) and (92) violate Case Filter as a result of non-projection of the locative prepositions 'in' and 'inside' as respectively required in the sentences. In addition, they are not assigned the theta role of location which the co-texts suggest.

One obvious implication of the participants' difficulty with prepositions is that most of their sentence constructions will frequently violate the Projection Principle and Case Filter (because there would not be heads to assign oblique case). Also, the complement N of the PP will not be assigned theta roles (such as locative, instrumentality and benefactive).

6.4.3 Complementiser phrase

The goal of this section is to examine the performance of autistics in the use of English complementiser phrases (CPs). The CP projections found in this study fall into three categories: base generated COMPs (*that*; *for*), relative constructions and wh-movement. While structures (93) and (94) below are examples of base generated COMPs, structure (95) contains both base generated COMP (*that*) and relative *that*. Structure (96) involves a relative clause. Structures (97) and (98) involve wh-movement while the wh-phrase in

(99) is in situ. Structure 95 is bi-structural; it contains a functional COMP and down the tree there is a relative construction

93. *[_IP, _Spec_It in _AdjP_remarkable [_CP, c_that _IP, Spec_personal overall health _VP_can measure _DP_health of brain.]]]   (AUP5)

94. [_IP, _Spec_I _VP_thank _DP_you_i doctor_i [_CONJ_for [_IP, _Spec_you _VP_do _DP_your job _AdvP_conscientiously]]] (AUP1)

95 *[_IP, _Spec_I'm _AdjP_impress [_CP, c_that [_IP, Spec_someone _VP_invent _DP_camera [_CP, c_that [_IP, _Spec_it _VP_can do _DP_that.]]]]] (AUP7)

96a. *[_IP, _Spec_Doctor _VP_haul _DP_equipment [_CP, c_that [_IP, _Spec_I _VP_see _DP_it _AdvP_before.]]] (AUP4)

96b. *[_IP, _Spec_Doctor _VP_hauled (out) _DP_equipment [_CP, c_that_i [_IP, _Spec_I _VP_hadn't seen _DP_t_i _AdvP_before.]]]

97a. *[_IP, _Spec_I _VP_ask _DP_him _DP_device _CONJ_and [_IP, _Spec_he _V_respond.] (AUP7)

97b

I asked him what the device was…

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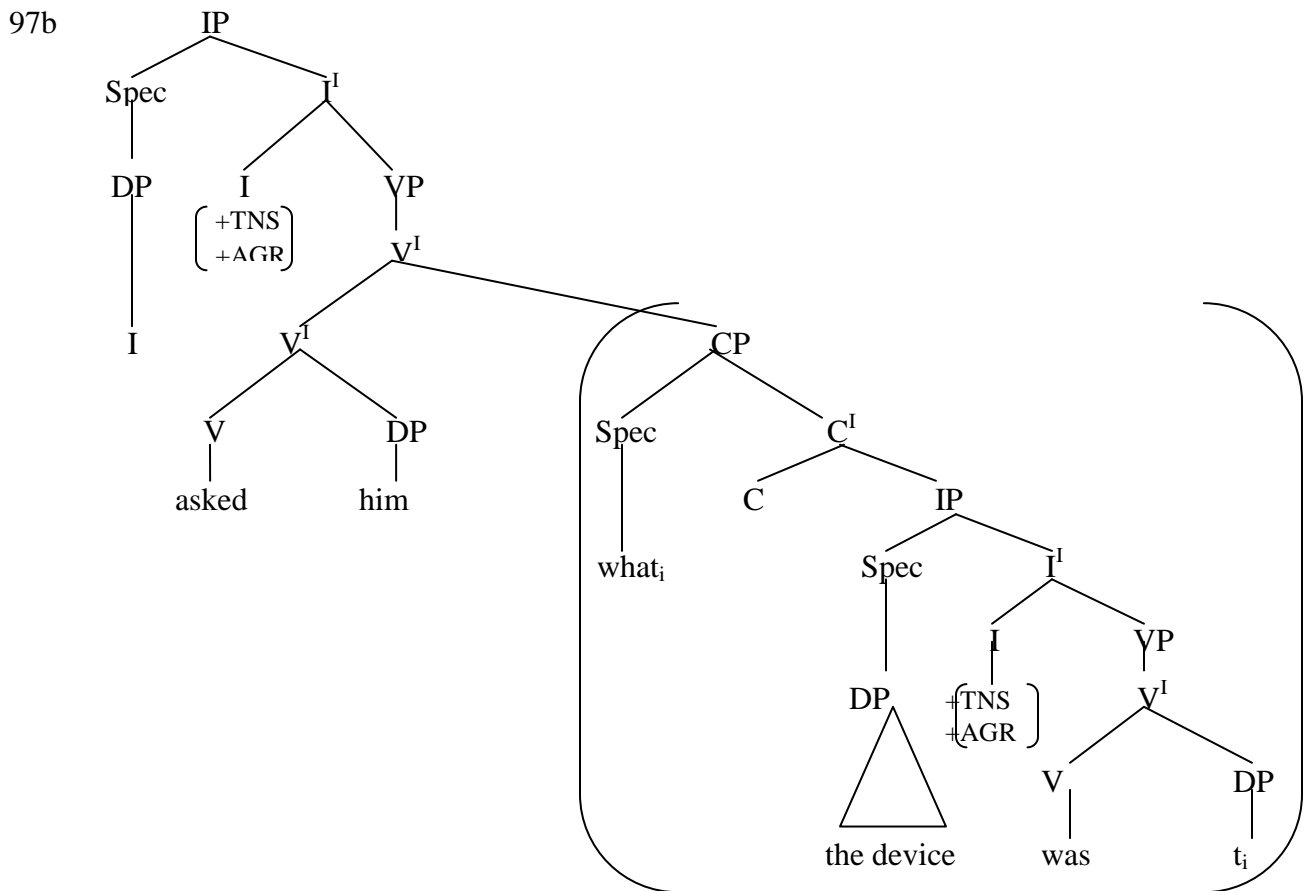
98b.
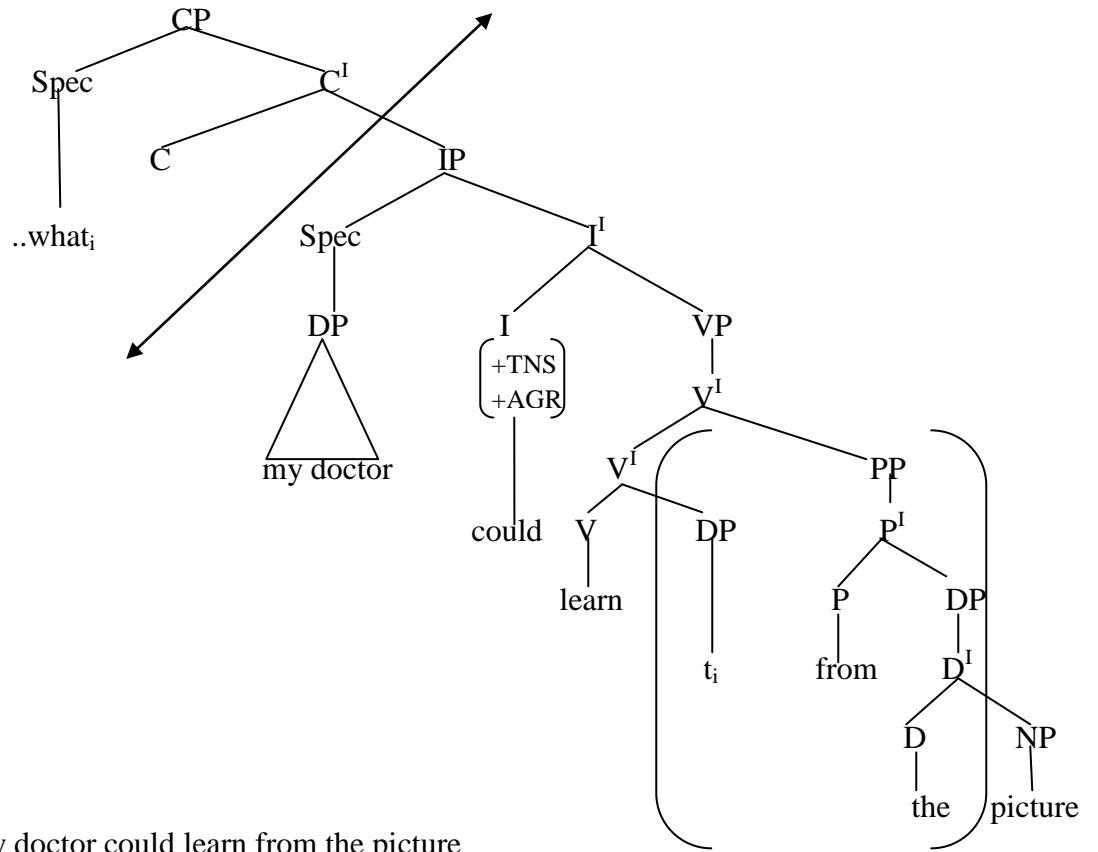
…what my doctor could learn from the picture

99
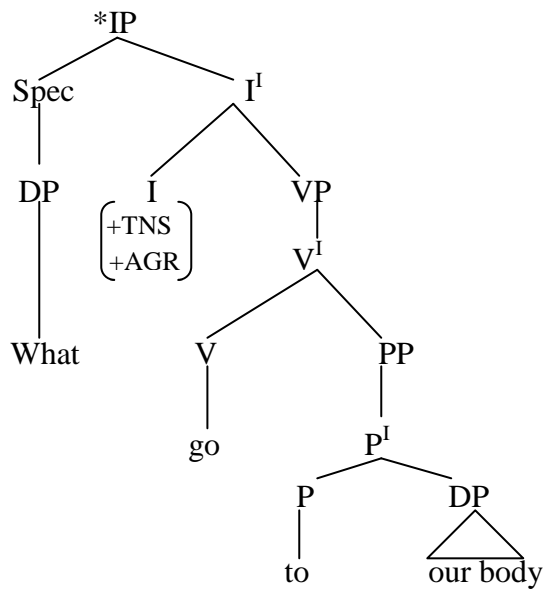
What go to our body (AUP2)

The participants showed some level of syntactic preservation for complementisers in the above structures. In (93), the AdjP, *remarkable...* takes a CP complement, "that personal…" The participant had no difficulty producing the CP structures. (The reason for the ungrammaticality of the sentence, which is the participant's omission of the D in the DP, has been discussed earlier). In (94), the COMP *for*, contained in the SP was produced as a conjunction, conjoining the subordinate clause to the main clause. Thus, instead of an embedded CP, the participant produced an embedded IP. Nevertheless, the three constructions show that while ungrammaticality may arise as a result of the impairment of other syntactic components in the CP structures, the COMP (which is the head of the CP) is projected by the participant. Structure (95) contains two Complementiser Phrases; the first is headed by a base generated (***that** someone invent...*) and the second is a relativiser (*camera **that** do that*). The participant produced the first CP without resorting to restructuring the given construction and for the second CP, he produced the lexical marker of relativisation as expected. However, instead of trace at the extraction site (where NP 'camera' was moved from), the participant produced a resumptive pronoun 'it' in the extraction site. Similarly, in (96a) the COMP (which introduces the relative clause) is projected which suggests the participant's awareness of movement somewhere within the CP. On the contrary, instead of the expected trace (shown in 96b) which indicates the movement of the equipment from the object position of the verb *seen* in the embedded clause to the object position of *hauled out* in the matrix clause, the participant projected a pronominal at the object position of the embedded clause. It is evident that the relativised NPs in the embedded clauses in (95) and (96) are in the subject and object positions, respectively. It can be deduced from the similarity in the participants' production of the two structures that the participants have difficulty with relative COMP, and perhaps by extension, relative clauses. As seen here, they are not sensitive to syntactic gaps (at least for now, gaps in relative clauses), and this results in their use of resumptive pronoun where a trace is required.

In (97a), the participant eliminated most of the constituents within the CP in the actual structure presented to him. As shown in (97b), the original structure involves wh-movement; the movement domain is marked by the bracket. The participant reduced the entire CP to a word, *device*. Consequently, the participant produced the simple IP structure

in (217a). However, the constituent elimination (which the participant engaged in) eventually produced an ungrammatical structure (97a) in which the argument *device* is not case marked. Similar structure elimination is seen in (98a). Instead of the expected CP "…what my doctor could learn from the picture" (98b), the participant produced a syntactically impaired IP *doctor learn picture* (other ungrammatical features in the structure, lack of agreement and omission of preposition, have been discussed in sections 6.3.2 and 6.4.2, respectively). The arrow and the bracket in (98b) show the eliminated constituent in the original structure. The arrow indicates that the participant could not produce the CP structure, which is above the IP. Thus, structures (97b and 98b) originally involve the movement of the wh-phrase *what* from the internal argument positions to the verbs *was* and *learn*, respectively. These movements were not processed by the participants.

Like (97) and (98), structure (99) involves wh-phrase. However, the wh-phrase in the structure differs from what is found in the former two structures in that it is in-situ. Apart from the morphological problem (relating to number), the structure does not show any (other) syntactic impairment. It could be inferred that the participant's ability to produce such structure (as against what obtains in 97 and 98) relates to the fact that overt movement is not involved.

In summary, the participants replicated the base generated COMP phrases in the SP without impairment to the functional heads (for/that). Also, there was no difficulty with the production wh-construction where wh-phrase is in situ. For relative constructions that involve movement, there was difficulty processing the moved item irrespective of its structural position (whether subject or object). Further, the participants engage in *structure reduction* in constructions that involve wh-movement. Given these characteristics therefore, it is posited in this study that Nigerian bilingual autistics can produce structures larger than IP (TP in Friedmann and Grodzinsky, 1997) only if movement is not involved. By implication, it can be argued that trace is not preserved in autism. Further, the difference in the participants' production of relative constructions and wh-phrases suggest that there are variations in movement up the tree in autistic speeches; wh-movement is seriously impaired while movement of relative marker is mildly impaired.

6.4.4 Infinitival structures

Section 6.3 above discussed verbal inflection, in which tense (number) agreement and aspect were considered. It was reported in the section that impairment of verbal inflection is a core feature of autistic grammar. In this section, focus is on zero inflection (0-INFL) structures. 0-INFL is used in this study to refer to structures in which the Inflection node has –TNS and –AGR features.

100.   [$_{IP, Spec}$PRO $_{inf(-TNS; -AGR)}$To $_{VP}$be $_{AdjP}$honest with you…] (AUP1)

101.   *[So no reason [to feel insecure or unsafe]] (AUP12)

102.   [$_{IP, Spec}$I $_{VP}$want $_{IP, Spec}$PRO $_{inf(-TNS; -AGR)}$to $_{VP}$play.] (AUP15)

103.   *[$_{IP, Spec}$I eee $_{VP}$using $_{DP}$it [$_{IP, Spec}$PRO $_{inf(-TNS; -AGR)}$to $_{VP}$take $_{DP}$a picture…]] (AUP5)

104.   [$_{IP, Spec}$ e$_{VP}$get $_{DP}$medical attention $_{AdvP}$recently] (AUP8)

105a. [$_{IP, Spec}$I $_{VP}$thank $_{DP}$you doctor [$_{CONJ}$for [$_{IP, Spec}$you $_{VP}$do $_{DP}$your job $_{AdvP}$conscientiously]]]
        (AUP1)

105b. [$_{IP, Spec}$I $_{VP}$thank $_{DP}$you doctor [$_{CP, C}$for [$_{IP, Spec}$PRO $_{VP}$doing $_{DP}$your job $_{AdvP}$conscientiously]]] (AUP1)

Structures (100-103) above are infinitival structures (*PRO-inf*). While structures (104) and (105) have finite features, their inclusion in this discussion has implication for the discussion of nonfinite constructions in this study. The participants correctly produced the infinitival constituents in (100), (101), (102) and (103) without any modification to the Inflection node. However, it should be noted that the violation of extension of the Extended Projection Principle in (101) brings about the ungrammaticality of the sentence. On the other hand, the produced structures in (104) and (105) compared to the actual stimuli presented to the participants reveal that they engaged in some syntactic reprocessing. The actual structure given to the participants, represented in structure (104) is "…while getting medical attention recently…" (which involves *PRO-ing* structure). The transformational re-processing by the participant substituted the *PRO-ing* with the finite variant of the verb 'get'. The participant therefore produced a finite (imperative) structure in which the subject position is null (marked as *e*). Similarly, in (105a), the participant projected an overt subject NP *you* in the IP structure embedded within the CP. He went further to eliminate –TNS, –AGR features that characterise the INFL node (shown in

105b). The result of this morphosyntactic modification is the production of +TNS, +AGR INFL in (105a). Thus, instead of the expected non-finite clause (in 105b) introduced by the COMP *for*, the participant adjoined the embedded clauses to the main clause by a conjunction *for*. Also, instead of the expected null Spec, IP position (contained in the SP), a pronominal element was projected as the (agent)/external argument of the hitherto infinitival verb. However, this syntactic reprocessing does not affect the grammaticality and meaning of the sentence.

As observed above, participants freely produced infinitival structures in the passage reading test (PRT) and their self generated sentences. On the contrary, none of them produced *PRO-ing* structures. For structures in the PRT that involve the *PRO-ing*, the participants resorted to structural reprocessing and they eventually produced finite structures. It is, therefore, posited in this study that autistics are sensitive to infinitival *PRO* but they are not sensitive to *PRO-ing*. Considering the patterns in the two structures, the case, therefore, with autism in the production/use of English non-finite constructions is that *PRO-inf* is preserved while *PRO-ing* is not. In addition, the participants' structural outputs considered above show that syntax is not completely impaired in autism, especially given the fact that some of the re-processings preserve some conditions necessary for grammaticality.

6.5   NP distribution in Nigerian bilingual autistic speeches

Arguments are crucial constituents of a sentence. In GB, many of the constraints set for grammaticality relate directly or indirectly to arguments. Examples are the case, theta and binding theories. As a matter of fact, there is none of the modules in GB that does not have implications for arguments (whether true, qausi or null). From the data discussed so far in this study, argument distribution appears to be one of the most preserved syntactic constituents in autistic speeches. Beginning with the discussion of DPs in section 6.4.1, arguments are relatively well distributed, especially in terms of inherent case features (of pronominals). However, there are cases in which arguments (particularly, nouns) constitute ungrammaticality. Most of these are found in structures in which functional heads were not projected. For example, the ungrammaticality in *"My doctor comment amaze me" (75) *"Doctor responsibility is to treat *illness"* (76)*, and *"person overall

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health" (78), among others, are as a result of non-projection of the DETerminers that are heads in the DP structures. Also, the non projection and/or substitution of prepositions (for instance in 85, 87 and 88) may result in misinterpretation and faulty distribution of semantic roles to NPs in the structures. Again, some other problems with the NPs (in terms of structural case marking and theta role assignment) relate to the autistics' violation of the projection principle (particularly in structures such as 89 and 91) where heads of phrasal categories are not projected.

Except for these characteristics, other usages of NPs in autistics speeches reveal that they are well presented for syntactic properties. This sharply contrasts what characterised aphasic speeches where nominative pronouns constitute ungrammaticality because such pronouns are not projected where they may be assigned such case (see section 5.5). The recurrent violation of the Extended Projection Principles as a result of non-production of subject NPs in aphasia makes autism a more NP preserving disorder than aphasia. More interestingly, structures (95) and (96) offer support for this claim. In these structures, the participants resorted to NP resumption in structures that involve movement. The resumptive pronoun they projected is such that agrees with the moved NP (true argument) in relevant features such as number, gender and case.

6.6 Summary

This chapter has examined the performance of Nigerian bilingual autistics in their use of the English morphology and syntax. The discussion reveals that the word order syntax is preserved in autism irrespective of the variation between the participants' L1 (their individual indigenous languages) and L2 (the English language) systems. Also, it is observed that there were mostly noun phrases in the participants' sentence constructions; only few instances of self-generated verb phrases, adjectival phrases and adverbial phrases were found in their sentences. In structures involving verb phrases in the PRT, many of the participants deleted the (grammatical) auxiliaries and they used the lexical verbs alone. Prepositional phrases were sparsely used in their constructions. However, in the instances of these phrases, all the participants correctly produced the head initial/head last structure that characterises English head parameters. Thus, it is posited that the L2 head parameter is preserved as well in autism.

The discussion also reveals that the derivational morphology is preserved in autism. However, their greatest problems seem to be with the use of inflectional morphology. For most of the participants, the tense as well as agreement inflection is seriously impaired. In most cases, the participants omit these inflections in their sentence constructions as well as in their reading of the test passage. However, few of the participants were able to use the English past tense correctly. As a result of their omission of auxiliary verbs, many of the participants performed poorly in their use of the English Aspect, especially the progressive aspect. Also, their sentence constructions often feature omission of the +-*en* f-morpheme. In structures where such feature is required, the participants only produced the root morphemes of the verbs. In addition to tense, agreement and aspect inflection, two functional categories (determiner phrase and complementiser phrase) were examined in the chapter.

Furthermore, the findings reveal that the autistic participants, unlike the aphasic group (examined in chapter five), were able to produce pronominal possessors. However, they omitted articles and nominal possessor ('s). Thus, it is posited that the DP is selectively impaired in autism. Again, the participants were only able to produce complementiser phrases where the COMPlementiser is base generated. For structures that involve movement (such as relative constructions and wh-movement), participants engaged in structure reduction such that the CP environment was often eliminated. However, the chapter reveals that despite the structure reduction, some level of grammaticality is still maintained. In addition, the examination of the PP in autistic speeches yielded two observations. Some of the participants often omitted prepositions in their sentences, which resulted in a violation of the Case Filter or a modification in the semantics of their sentences. In some cases, they substituted the required preposition for another.

On the other hand, it appears that the most preserved syntax in autism is the *PRO-inf*. The participants correctly produced the infinitival constructions in the PRT and they freely used such structures in their self-generated sentences. However, it is posited in this study that autistics possibly have difficulty with the PRO-ing. This is because none of them produced such structures in their self-generated sentences and where the PRO-ing is found in the PRT, they resorted to syntactic reprocessing, which in most cases, yielded

grammatical finite constructions. Following the ability of the autistic participants to reprocess given structures such that entirely different syntax is generated, this study submits that syntax is relatively spared in autism. From the foregoing, this study further submits that as in their aphasic counterparts, morphosyntactic impairments in autism are selective.

CHAPTER SEVEN

SUMMARY AND CONCLUSION

7.0   Introduction

This study describes the morphosyntactic features of selected bilingual aphasic and autistic speeches in southwestern Nigeria. Particularly, the aphasic participants are those who have been diagnosed with Broca's aphasia and the dysphasic subtype. The aphasic participants (APPs) are literate (in the English language) and the autistic participants (AUPs) also can read in the English language. Participants in both groups have been taught or are being taught in the English language, and they use the English language as a second language (L2). Although the participants are in the southwestern Nigeria, their first language (L1) is not necessarily Yoruba. The participants' ages range between 10 and 74 years. The study examines the two components of the Universal Grammar (UG), lexical derivation (of nouns, adjectives and adverbs) and functional categories (tense, agreement, aspect, null inflections, determiners, and complementisers). The morphosyntactic analysis is done within the frameworks of Chomsky's Principles and Parameters Theory (PPT) and Halle and Marantz' Distributed Morphology (DM).

7.1   Summary of findings

The word order and head parameters are preserved in Nigerian bilingual aphasic and autistic speeches. However, prepositional phrases (PPs) are impaired both in aphasia and autism. The impairment results from frequent omission of the lexical heads of prepositional phrases and in some cases, substitution of the required prepositional head with another. This happens especially when the PP is projected in VP complement position; such omission does not occur when the PP projection is in NP complement position. This often (but not always) brings about violation of the Projection Principle and Case Filter, and in most cases, LF problems arise. For instance, omission or substitution of prepositions often affects the distribution of thematic roles to arguments.

Also, while nominalisation is impaired in aphasia, it is preserved in autism. Such impairment in aphasia is characterised by omission of *f*-morphemes or substitution of required *f*-morpheme with *–ing* (when the nominalisation process involves verb syntax). However, the derivation of gerunds is preserved in aphasia. Similarly, the derivation of adjectives is impaired in aphasia, especially when the *l*-morpheme is a verb. Aphasics often substitute the *f*-morphemes with the *–ing*. Negation morphemes are as well impaired in aphasia. On the other hand, derivation of adjectives is preserved in autism. Derivation of adverbs is preserved in both neurological conditions.

In addition, tense (TNS), for both regular and irregular verbs, is impaired both in aphasia and in autism. Impairment of TNS in both conditions is often marked by omission of the past tense *f*-morpheme or in some cases substitution of such morpheme in the *–ing*. Further, while agreement (AGR) is relatively preserved in aphasia, it is severely impaired in autism. Where number AGR holds between the Spec, IP and the I^0, it is replicated in the expression of number in nominals (both nouns and pronouns) in the aphasic speeches. In speeches where such AGR between the Spec, IP and the I^0 is impaired, the same feature occurs in the aphasic participants' production of nominals. On the contrary, AGR (between Spec, IP and the I^0 as well as NPs and their antecedents) is severely impaired in autism. Again, aspect (ASP) is impaired both in aphasia and in autism. Impairment is characterised by omission of aux-be, non-inflection of lexical verb for ASP or substitution of *ASPperf* with *ASPprog*. The syntax of non-finite constructions (*PRO-inf* and *PRO-ing*) is preserved syntax in both aphasia and autism. It is frequently used and well structurally distributed irrespective of its position (whether A or A^I) in sentence. However, the *PRO-ing* is often reprocessed such that the meaning of structures is modified, though grammaticality is still achieved. In autistic speeches, such (*PRO-ing*) structure is reprocessed such that it is produced as a finite construction, thereby bringing about shift in meaning.

The DP is severely impaired in aphasia, whereas it is selectively impaired in autism. Both conditions are characterised by omission of articles. In Nigerian bilingual aphasic speeches, both the pronominal possessor (*Pro-Gen*) and the nominal possessor (*Nom-Gen*) are omitted, whereas the nominal possessor alone is impaired in autism. It is arguable,

based on evidence from Nigerian bilingual aphasics' and autistics' performance in the use of English *Nom-Gen* that their problem arises from their inability to process the movement involved in the realisation of such structures. For instance, the realisation of the DP "doctors comment" (shown below) involves movement of the NP doctor from the Spec position where it has the agent theta role but is without a case assigned to it.
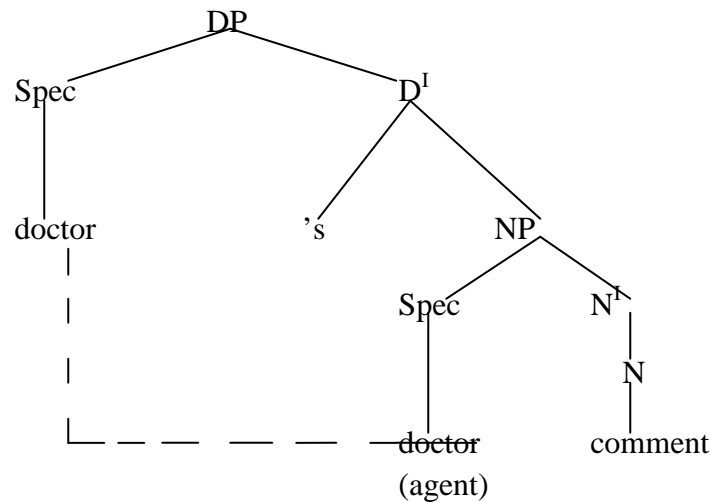
It is moved up the tree to a position where it could be case marked by a functional governor. In fulfilment of head to head movement (which requires that a moved item from a head position lands in a corresponding head position; Carnie, 2006: 243), 'doctor', being a specifier in its extraction site, can only land in another specifier position in a higher node. Thus, it is a specifier to the possessive marker, *'s*. In its landing site, 'doctor' is assigned genitive case while its semantic role of agent is still retained. These syntactic transformations are not processed in the Nigerian bilingual aphasic and autistic brain.

Also, seemingly complex quantifiers involving phrases (for example, 'a lot of') are problematic in both conditions. However, while such determiners are completely deleted in Nigerian bilingual aphasic speeches, they are substituted with another (lexical) determiner in Nigerian bilingual autistic speeches. Furthermore, while the complementiser phrase (CP) is severely impaired in aphasia, it is selectively impaired in autism. The CP node is only problematic in autism when overt movement is involved. Generally, therefore, the similarities between the two conditions are preservation of UG, preservation

of null inflection, impairment of tense, impairment of aspect, omission of prepositional head (in VP complement position), impairment of DP, selective impairment and structure reduction. Derivation of adverb is as well preserved in both aphasia and autism. The syntax of verbs is most impaired in both neurological conditions. They however differ in a number of ways. While nominalisation, derivation of adjective and negation morphemes are impaired in aphasia, they are preserved in autism. Also, they differ in the nature of impairment. While the impairment of AGR is selective in aphasia it is not selective in autism. The DP and the CP, on the other hand, are selectively impaired in autism whereas their impairments in aphasia are not selective. Furthermore, Nigerian bilingual aphasic speeches are characterised by difficulty with the use of nominative case pronominals (irrespective of number). Often too, aphasics use the accusative in the nominative position. None of these features manifest in autistic speeches.

7.2   Conclusion

Nigerian bilingual aphasic' and autistics' production of the English morphosyntactic features is characterised by selective impairment, syntactic simplification and structure reduction. Selective impairment denotes impairment of some morphosyntactic features while some other aspects of syntactic features are unaffected. Speech therapists can, therefore, harness aphasics' and autistics' areas of competence to aid their speech rehabilitation and their areas of difficulties should be considered, as well, in designing speech recovery strategies for them. Syntactic simplification refers to the participants' production of structurally simpler constructions, easily accessible to them, as make up for their difficulty with seemingly complex structures. Their ability to simplify complex constructions (especially those involving CP structure) shows some preservation for the syntax of the second language (in this case, English) despite the brain damage. Thus, avoiding complex structures would enhance better communication with aphasics and autistics. Nigerian bilingual aphasics' and autistics' sentence reduction involves removing higher structures from the syntactic nodes in an input sentence, and consequently creating a new sentence, in which the meaning of the original sentence is often changed. These have implications for some assumptions/claims of some existing sociolinguistic and morphological/syntactic theories.

7.2.1   Implication of psycholinguistic factors for impaired bilingual brain

Studies in language variation have identified age and ethnicity, among others, as social factors that influence language use. This study reveals that age is not necessarily a factor responsible for speech patterns of aphasics and autistics. Despite the difference in age brackets of the aphasic and the autistic participants, their speeches have a number of features in common (summarized in section 7.1). The impairments in autistics speeches, therefore, do not necessarily result from the fact that they are children. Also, the study reveals that the differences between the word order and head parameters of the participants' L1 and English (L2) do not constitute impairment in their sentence production.

Various aspects of knowledge of English derivational morphology have been explored in second language environment and studies have established that English as second language learners (ESLs) have minimal problems with the syntactic knowledge of morphology (Lardiere, 2010; Zhang and Widyastuti, 2010). A common justification given for this is that even if an L2 speaker does not know the lexical stem of a word (for example 'ambiguous' and 'ambiguity'; Lardiere, 2010: 73), the syntactic classes of the words (adjective and noun, respectively) can be correctly identified. Also, Zhang and Widyastuti (2010) have asserted that ESLs demonstrate competence in selectional knowledge in the derivation of words. Thus, the difficulties that characterise nominalisation in English in Nigerian bilingual aphasics' speeches are not likely to result from bilingualism. Rather, it could only have been as a result of the brain impairment.

In addition, studies on the use of tense and aspect among ESLs without neurological impairment have reported that the tense and aspect features of English constitute major problems for the ESLs (Lawal, 2013; Ohakamike; 2016; Ojo, 2016). Although the participants' speeches show some similarities with the patterns found among users who do not suffer from brain impairment, it is argued that the patterns found in this study are not entirely as a result of the influence of their L1. Omission of the (past tense and aspect) inflection feature of the main verb has only been recorded as recurrent error in ESL English expressions. Aphasic and autistic often omit required auxiliaries as well as substitute the +*ed* and the +*en f* morphemes with –*ing*. These patterns are not found

among normal ESLs. Thus, the patterns found among this study's participants could only be as a result of their neurological impairment but not because of their ESL situation.

Also, several studies have reported subject-verb concord errors among normal ESL. This pattern is also found among some aphasics (but not all) and autistics. However, evidence from the study shows that participants who manifested impairment in agreement between the Spec, IP and the INFlection also show impairment in noun-referent agreements. Some participants made up for their inability to produce complex plural DPs by substituting them with another simple but plural determiner. Such structure simplification still showed lack of agreement between the produced determiner and the complement noun. The participants in this study manifest similarities with normal bilingual Nigerians in omission of articles where they are necessary. However, the impairment of *Pro-Gen* and *Nom-Gen* among the participants further differentiates the speech patterns of aphasics and autistics from the normal Nigerian ESLs. These are not likely to be effects of bilingualism. Furthermore, Lamidi (2003) asserts that complementisers do not constitute ungrammaticality in code-switching speeches of (normal) Nigerian bilinguals. The finding of this study shows that complementiser phrases are problematic for aphasics and autistics. This is not because of their bilingual nature but probably because the syntax of movement is not processed by the impaired bilingual brain. Substitution and outright omission of prepositions are some common characteristics of normal Nigerian bilinguals' usage of the English syntax. This feature is also found among aphasics and autistics. However, the inability of the study's participants to produce the prepositions contained in structured passage (as VP complements) suggests that such prepositions in such positions are not processed in the impaired bilingual brain.

7.2.2 Theoretical implications of findings

The findings of the study provide neurological evidence for certain claims in some linguistic theories. A few of these are discussed below.

7.2.2.1 Universal Grammar

Universal Grammar/Second Language Acquisition (UG/SLA) research, since the 1980s, has debated the question of whether UG mediates L2 acquisition, and to what extent. The

research has explored representational issues from the initial stage to the advanced fluency stage (that is, the final stage). Cases in which features of the language under investigation work differently in the L1 and the L2 have been used to demonstrate L2 logical problem in relation to likelihood UG involvement. The debate hypotheses varied as to whether L2 learners have no access, direct access or indirect access to UG (Cook, 1997; White, 2003). Nigerian bilingual aphasics' and autistics' correct production of the English features (especially word order, head parameter and PRO-*inf*) considered in this study proves that the no access argument is a misnomer. Despite the impairment of their bilingual brain, the settings of these features which differ from the participants' L1 are preserved. (The participants arrive at some of the L2 properties independently of their L1.) Also, the impairment of prepositional phrases in Nigerian bilingual aphasic and autistic speeches, which are structures available in the participants' L1, demonstrates that L2 speakers do not really access the UG via their L1, as advanced by the indirect access strand of the argument. It is rather that L2 users (of English, in this case) have partial access to the UG, which is evidenced by selective impairment.

7.2.2.2 Distributed Morphology/Principles and Parameters Theory

A common ground between Chomsky's Principles and Parameter Theory (PPT) and Halle and Marantz' Distributed Morphology is attempts towards a concise description of the organisation of grammar in natural languages. They however differ in that while PPT advances that the Phonetic Form (PF) is projected directly from the D-Structure (DS), DM recognises a fifth level, which is the intermediate level between the DS and the PF. By the DM architecture therefore, it is implied that morphological conditions precede phonetic realisation in the organisation of grammar. The Nigerian bilingual aphasics' and autistics' performance in the production of the English tense in this study provides evidence for DM's argument for the Morphological Structure (MS) level in the organisation of grammar, (at least for English). The English past tense (for both regular and irregular verb) is severely impaired both in Nigerian bilingual aphasics' and autistics' speeches. Thus, the phonological distribution (morphophonemics) of the past tense morpheme (/-d/, /-t/ or /-Id/) does not apply in Nigerian bilingual aphasic and autistic speeches primarily

because the morphological process that precedes and necessitates such realisations does not take place.

7.2.2.3 Representation of Tense/Agreement

Chomsky's PPT posits that the tense and agreement features fill the same head position, I^0 (Chomsky, 1993; Black, 1998). Loosely speaking, this should suggest that an impairment of one (for instance, tense) should necessitate the impairment of the other. Evidence from this study reveals that impairment of tense does not translate to impairment of agreement. The preservation of the syntax of non-finite constructions in Nigerian bilingual aphasic and autistic speeches suggests that the tense phrase (headed by T) is represented in the (bilingual) brain as tenseless phrase (headed by I). Thus, the participant' L2 performance (in this study) provides neurological evidence for Pollock's (1989) Split Inflection Hypothesis, which argues for the separation of tense and agreement, and other inflections (including zero inflection) as distinct functional categories.

7.2.2.4 Tree Pruning Hypothesis

A prominent syntactic account that has been proposed to explain some impairment in aphasia is Friedmann and Grodzinsky's (1997) Tree Pruning Hypothesis (TPH). The TPH claims that agrammatic syntactic trees are truncated at the level of a particular node such that impairment at a lower node results in impairment in other higher nodes. The Tree Pruning Hypothesis was originally suggested as an account for dissociations found between tense and agreement inflections. Friedmann and Grodzinsky (2000) and Friedmann (2001) found a dissociation between tense and agreement inflection in agrammatic sentence production. While tense was found to be severely impaired, agreement was intact. The TPH was revised to claim that the agrammatic phrase marker is impaired at a certain node in the tree. The more severe patients are impaired in a lower site (TP) and show a deficit in larger parts of the tree, whereas the milder patients are impaired at a higher node (CP) and are impaired in a smaller part of the tree. Given the crucial role of heads (functional heads in particular) in the projection of higher nodes, the TPH suggests that when a node is impaired, the tree is pruned from this node upward. This is illustrated below.

CP
C^I
C   TP
T^I
T^0   NegP
Neg^I
Neg^0   AgrP
Agr^I
Agr^0   VP
V^I
V   DP
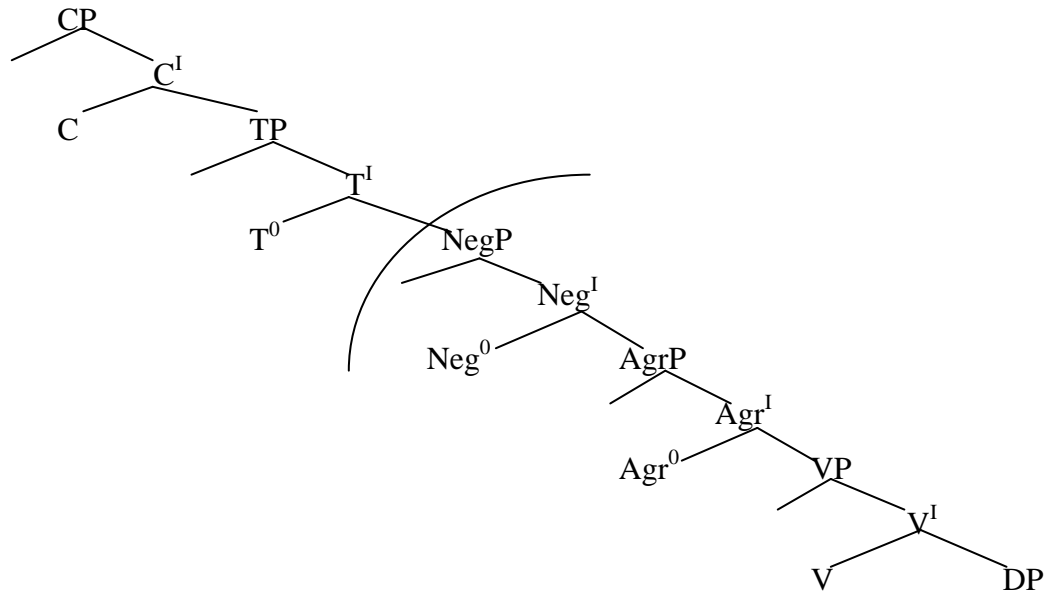
(Friedmann and Grodzinsky, 1997: 415)

Friedmann and Grodzinsky (1997), following Pollock's (1989) Split-Inflection Hypothesis and Cnomsky's (1995) Minimalist Program, posit that syntactic structures (in Hebrew aphasics) are pruned between the two categories AgrP and TP, which causes an impairment of TP and all categories above it while AgrP and all nodes below it stay intact. The arch in the (agrammatic) phrase marker represents site of deficit. The TPH finds relevance with this study. Most of the Nigerian bilingual aphasics showed preservation of AGR node but the TNS and COMP nodes were impaired. It thus implies that syntactic structure is 'truncated' at TNS. Therefore, the syntactic location of the defective node in the phrase marker determines the severity of impairment in bilingual aphasia. That is, the lower the location of the impaired node is, the greater the number of impaired functional categories, and hence the more severe the impairment.

7.4   Further studies

The scope of this study was only on spoken language with emphasis on deficits in spontaneous sentence production. In addition, the data did not adequately cater for inflectional morphemes such as comparative and superlative forms. These morphosyntactic components may be explored in future studies. Also, this study reveals that the use of the English tense system varies among Nigerian bilingual autistic people,

and such variation does not necessarily relate to differences in age, L1 background or their neurological condition (that is, they all suffer from autistics). Hence, the study suggested that the disparity in their use of tense may be as a result of individual competence level. This may be explored in further studies to provide empirical justification for such disparity.

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INTERACTIONS WITH APHASIC PARTICIPANTS

Interaction 1

RCH: Baba, good morning

APP: Gu morin

RCH: E ku irin ojo

APP: Nods

RCH: I hope you still remember me?

APP: Yes ((nods))

RCH: Like I told you that day, I won't bother you too much. I will just want you to read this ((Gives him the typed passage))

APP: Ah! ((Points to a young man close by)) Bring glasses. Wait o! Ok, hmm see… Ok…

RCH: E pele baba

APP: Thank you. ((Clears throat))

Doctor::: hmmm good friend. heeeee always::: give me::: due attentime::: I meet them. Getting medical atten shhhh recently::: hmmm doctor::: haul out:: pieces and equip::: equipping::: aaav see before. ((Clears throat))

RCH: E pele. Maybe I should give you some time to rest.

APP: Ok. ((Continues)) I ask him::: ahhh device is responding:::<I> hmm::: use:::ehhhhn::: to take picture hmmm::: inside oooo back::: head. Ahh impress someone::: invent camera to do it. even impress::: Doctor can learn::: detail::: <a>bout general health. Doctor have::: clear picture::: inside oooo bodies.

RCH: I want to really thank you. You have tried but you know there are still few more lines.

APP. Yes. I continue::: but:::Continues)) oya. Hmmm doctor comment amaze me. eeee remark inbel:: person overall all health::: ehmm can measure:::health oorrrrrr brain. Ehhn then imply::: complex human body::: reflect genius and ehhhhh wis…dom <ah> great creator.

RCH: It's okay. Let's stop here. Baba, you have tried a lot.

APP: ((Smiles))

RCH: I am very sure that you will be healed totally, and very soon. **(PRT/NBAPP/1/Male/August 2015)**

Interaction 2

RCH: Good afternoon sir.

APP: ((Stretches out his hands for a shake))

RCH: I hope you are feeling better.

APP: <I> hope so too:::<be>cause I tired.

RCH: Ah, no sir. You shouldn't be tired. One thing that is certain is that you are being attended to by the best experts.

APP: You said?

RCH: Your doctors are the best.

APP: Ok

RCH: So, just have faith that you will be healed.

APP: Ok

RCH: So that I don't bother you for too long, let me just ask you to read this passage for me.

APP: Ok. Oya. Bring it.

RCH: Ok daddy.

APP: Doctors <are> good friends::: always giving::: hmmmm due atten…shhhan getting medicine attention hmmmmm::: recently. Doctor hauled out piece uhhnn equip:::ment <I> saw before. <i.> ask device was and he responded. Ama using picture <on> inside of your back head ((halts)). No. Let<s> start again.

RCH: Ok

APP: Doctors <are> good friends::: always::: giving::: due atten…shhhantime. Getting medicine attention hmmmmm::: recently. Doctor hauled out::: piece uhhnn equip:::ment <I> saw before.<I> ask device was and he responded. Ama using it to take::: picture of back head. My doctor comment::: amazed me. It <in. remarkable::: person::: overall health::: can measure brain health. It implies that::: body complex reflects the genius wisdom of ehmmm great creator. The belief::: people is add::: doctors hnnnn proud. Well, ahhhh don't believe hmmm doctor not proud. Also, dishonesty::: char…acterises other professions::: shhhhh absolute check::: medical field. So, no reason::: to fee::: secure or safe. I encourage::: doctor read…ness to attend to me. **(PRT/NBAPP/2/Male/September 2015)**

Interaction 3

Doctors::: good friend have always::: give::: ehhhhn::: due::: attention anytime. I meet them. While getting medi… medicine::: recently docto::: hmm bring a piece hmmm::: taking picture::: oohhhhhh::: inside back::: head. I impress someone:::. Inventing camera to do it::: even::: doctor learn::: hmmm picture and gather::: detail::: general health::: simply look back::: head::: can have::: clear picture going inside. Doctor comment amaze me. Remarking::: per…son overall health::: measure brain health. Complex::: hmmmm body reflect::: genius hmmm wisdom hmmmm great creator::: Thank doctor to do the job.

(PRT/NBAPP/3/Male/September 2015)

Interaction 4

Doctors ooohhhhh good friend. They always give due. Attending time. I meet them. Getting oooohh medicine::: recently::: doctor haul out piece equipping to see. I ask hmmmmm the device annhhhhh respond. I use it::: to take picture hmmm inside head. (I')m impress::: someone invent camera::: to do it but even more::: impress doc…tor learn picture. Doctor gather::: detail. Doctor comment amaze me. Remarking person::: hmmmm ove::: all health hmmm can::: hmmm measure brain. <It> imply complexit hmmmm body ahhh reflect the genius and wise creator. Hmmm honest hmmm, doctor are clever hmmm human::: ,<I> ever meet. Always doing their job well. Thank you::: doctor hmm do ooooooohhhhh job conscience.

(PRT/NBAPP/4/Male/September 2015)

Interaction 5

Doctors are good::: friend. They always::: give::: attention::: and time. <I> meet him. Ooohh getting melicine::: recently::: Doctor haul:::quip…ment equipment sees before. I ask him. Device::: is responding::: and using::: to take picture. I impress. Someone::: invent camera and more::: even doctor::: learning picture to gather detail::: about general health::: simply looking back::: ahhh see clear picture and bodies. It remarking::: body complexion reflect genius and wise creator. To be honest <in> you. Doctor hmmmmm clever humans. <I> meet them. Doctors always do::: hunn job::: well. Thank you.

(PRT/NBAPP/5/Female/February 2016)

Interaction 6

Doc..doc…tors are very good friends. They are always giving. Getting medicine::: ehhn::: atten.. attending.. no.. attend ahh… recently. Doctor hauling pieces:::equipping are seeing before. I ask him::: device and respond::: using it::: to take picture inside here::: (points to the head) head. Honestly::: honest. Doctors are cle…ver humans in world. They do well. Honesty characterise::: other professing and a…solute… abso…lutely checking::: the field. So noreason::: to feel secure or safe. <,I> encourage doctor::: readiness::: to attend to me.

(PRT/NBAPP/6/Male/April 2016)

Interaction 7

Doctor::: good friend::: always giving::: due attention anytime. Doctor hauling piece::: equipping have see it::: before asking device::: and responding. Doctor ehnn gather detail::: about ge…neral health. Simply look back. Head have clear pic...tor in ma body ((coughs)).

RCH: That should be okay for now.

APP: No. hmmm let me read ehhnn ok… this place ((points to a line in the text)) It show body complexing an<d> reflecting::: genius::: wisdom of great creator. Thank doctor to do your job con…con…science…tious.

(PRT/NBAPP/7/Female/April 2016)

Interaction 8

Doctors:::<and> very good friends::: always give due attempt. I get medicine recently. And doctor haul equip…ment have ahhh before. Asking him device is responding. I am using it to take picture inside back hnnnnnn your head. Doctor comment amaze me. It is remarkable. Personal over…all health::: can measure brain health. It implies bodies complexities… bodies reflect genius wisdom <and> ah creator. Honest<ly>. Doctors are clever. They have always doing good job. And honesty characterising other profession is absolute in medical field. No reason::: to feel insecure or safe.

(PRT/NBAPP/8/Male/April 2016)

Interaction 9

Doctor <as> very good friend. They::: always give me::: due and time. I meet them Getting medicine attending recent time. Doctor::: haul out equipment<and. I see it before. <So> asked him. Device. Responding. ,<I> use it. <I. take picture. See head. Someone::: is inventing camera to do it. Doctor::: learn picture::: saying::: (coughs)

RCH: Take care

APP: ((Attempts to continue with the reading))

RCH: Daddy, wait. You will continue later.

APP: Ok but…

RCH: You will continue after some time.

APP: ((Continues)) Doctor are honest. Also, honest character::: professing is absolutely checking medic…med ((coughs))

RCH: Ok daddy, you know what. I really appreciate your willingness to read this. Honestly, you have tried. Let us stop here. Hm! You have tried. Thank you very much

APP: ((nods with thumbs up)).   **(PRT/NBAPP/9/Female/June 2016)**

Interaction 10

Doctors have very good friends. They always give::: Attentime I meet them. Get medicine recently. ((mumbles)) doctor::: haul out pieces to equip…equip. Device::: respond. I use it to take picture ((mumbles)) inside::: head.,<I> impress someone inventing to do::: it. As even impress. Doctor… doctor learns from picture::: and gather details ((mumbles)). Doctor comment amaze me::: remarkingly. Personal over…o..verall health measuring::: Ahh… health (in) brain. So, complex body reflects the genius <and<or> God::: creator. Honest… honesty characterises other::: professing and absolutely checks medicine. Thank you, doctor.   **(PRT/NBAPP/10/Male/June 2016)**

Interaction 11

APP: Doctor::: good friend::: alway give time. Doctor hao… equip… equip dadada no see before. Device. He respond... I huuuhhhhh take picture. <I.> impress::: someone inventi::: camera ah…hmmmmmm impress ahhh doctor learning picture. Eeeee mark kkkkkkk person vall health eeeee measure:::<plai> eeeeeehhhhh body reflect the genius and wise oohhhhhh crate. Do…doctors are clever::: human::: set and honest::: character is checking… medicine field. See… lemme stop.

RCH: Ok.

APP: I won't stress you any further.

APP: Thank

RCH: I may come to greet at another time o. So when next you see me, I won't come to ask you to read for me again.

APP: Thank. Yes.

(PRT/NBAPP/11/Male/June 2016)

Interaction 12

,<I> was impressed. Some…one invent a camera. It can::: do that. Even impress doctor learning pic…tor and gathering detail. It is remarking::: person over…all health measuring is simple. Body complexion reflects::: genius and wise::: creat<or.. To be honest<ly>… doctors::: they clever…human. No reason to feel secure or safe. I encourage<ing> doctor is ready. Doctor… thank. You do ehhh job consciously.

(PRT/NBAPP/12/Male/July 2016)

Interaction 11

Doctors:::<and> good friends always give me::: due ((mumbles)) time <so>::: meet them. Getting medical… attllending recently::: doctor haul equipping do::: see before. Asking the device::: to respond::: using it to picture the head. Impressing someone::: inventing camera and even more. Impressing doctor can learn from picture. Doctor can gather a lot of detail and general health::: simply looking back head::: Having clearer picture…body picture. Doctor comment amaze. Remarking person over…all health can measure brain health.

Interaction 14

Getting medical attention recently. Doctor haul equip…ment:::<I> see it before and get impress someone invent camera::: camera can do impressing thing and doctor can learn from picture… Doctor gathers detail about general health… To see clear body picture. Honest,<ly>::: <with>::: you. doctors are clever. Clever…rest set::: human. Hmmm honesty characterises other professions::: is absolutely check::: medicine. I encourage doctor::: ready to attend to me. <I> thank doctor::: conscientiously.

(PRT/NBAPP/14/Male/July 2016)

Interaction 15

RCH: Good afternoon, daddy

APP: Afternoon

RCH: Like the doctor said the, I did not want to disrupt you people's conversation. I hope you are satisfied with your today's meeting with the doctor?

APP: Yes, thank you.

RCH: Great!

APP: ((cuts in)) Uhh I like doctor disposition::: here::: show concern.

RCH: They do! I have seen that in many of them. But why did you say 'here'? Have you had experience with doctors in other places?

APP: No<t>. really! Some private hospital::: ehn ((shakes head))

RCH: Ok sir. I know you have had a long session with the doctor, so I won't you much stress anymore but can I come to see you at home.

APP: ((reluctant))

RCH: Like the doctor said when we were insider, it is just for research

APP: Research ((HT))?

RCH: Yes, sir. Language research

APP: Ok

RCH: Thank you, sir. Can he ((points to the relative)) give me your address?

APP: Ok ((points)) give him

RCH: Thank you, sir. I shall call you when I want to come.

APP: Ok

RCH: Thank you, sir   **(PRT/NBAPP/15/Male/August 2015)**

Interaction 16

RCH: Baba, mo ti de o ((smiles))

APP: Hun

RCH: I believe you are getting better

APP: Yes. Responding to treatment. You see.

RCH: That's nice. If I may ask, who recommended UCH for you?

APP: Me (HT)?

RCH: Yes

APP: Friends::: advise to seek health in UCH.

RCH: Really?

APP: Yes

RCH: Have you sought health care in another place before?

APP: Ahn ((HT))?

RCH: Have you gone to another hospital before?

APP: Yes.

RCH: Where?

APP: Ahn ((HT))?

RCH: Is it in Ibadan here?

APP: Yes.

RCH: So your friends told you to come here

APP: Yes

RCH: They are good friends. They really want to see you in good health.

APP: Yes

RCH: So if they ask you how the service is in UCH, what will you tell them?

APP: Say ((HT))?

RCH: Do you like the service in UCH?

APP: Ah! Yes o! Nurses apply drugs for me.

RCH: Nurses are always caring.

APP: ((with surprise)) Nurses like to shout::: patient::: <in> private hospital::: attitude discourage me. Hmmmm::::: nurses are still good <sha>.

RCH: What about the doctors?

APP: Hun ((HT))?

RCH: Doctors, what can you say about them?

APP: Doctors come for regular check. Doctors and nurses examine me. See ((brings out some pills)) one nurse give me.

RCH: Really:

APP: Yes. Doctors do regular checking.

RCH: Would you want to seek medical help in another hospital?

APP:<I> patronising other hospitals. Now::: children, wife::: and me have agree to stay here until healing is restore

R: That's good.

(IDI/NBAPP/16/Male/September 2015)

Interaction 17

RCH: When was the first time you were admitted to this hospital?

APP: No! Not first time visiting::: hospital. <I> treat tern… term…terminal disease.

<I'm> looking <unto>God in divine healing.

RCH: For how long have you been going to UCH?

APP: I spend more 3 days now.

RCH: Tell me what you feel about UCH

APP: Tell UCH?

RCH: Services in UCH

APP: Service is really good ist UCH. Doctors have friendly and kind character::: attend to patients regularly. Doctors come at right time::: to::: respond treati…ment.

RCH: What are your complaints or don't you have any?

APP: Complain?

RCH: Yes.

APP: no have complain. <Al>though…sometime::: health worker no do ,<their> work quite regularly… Well! Patients have rights to complain::: <and> doctor and nurse must work <in> collaborating. Patient want to get well.

(IDI/NBAPP/17/Male/November 2016)

Interaction 18

RCH: I won't want to bother you too much today.

APP: Ok…thank you

RCH: Just tell me five things about FMC.

APP: Ah.. ehhnn.. Ok… Two doctors attend to me. Doctors explain::: ailment nature.. do test… results and… wo o.. ((Pauses))

RCH: You have only said three things

APP: Wait!

RCH: Ok. E ma binu

APP: Doctors come checking me… and always give me hope to recover. Ahhh complying to instruction. Receive my drugs.

(IDI/NBAPP/18/Male/November 2015)

Interaction 19

Can you remember how it happened?

APP: Hmm ok.. remember.. ok Family has motor vehicle accident…way:::Lagos. Ahhh rush to hospital to rescue my life.

RCH: Oh! On your way to Lagos?

APP: Yes

RCH: You rushed? Were you able to help anybody in the vehicle?

APP: People

RCH: What happen to people?

APP: People carry me.

RCH: Oh! You were rushed to the hospital?

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APP: Yes

RCH: This hospital?

APP: No

RCH: So, how did you get here?

APP: Knowledge <and> power. Hmmmmmm good to know service to consume ((points to his head))

RCH: I don't get that!

APP: Hmmmm… know….ehhhhhh hmm lie strength to reject ehhhhh accept product…

RCH: What again?

APP: Hospital, Owo has pharmacy shop::: good ventilating and bed space. Federal hospitals have qualify staff.

RCH: For how long have you been here?

APP: Ah! <I> spend three days::: ehnnnadmitting.

RCH: And what about the doctor

APP: Doctor see me seven time. Thank God… getting fine hmmm day.

(IDI/NBAPP/19/Male/February/2016)

Interaction 20

RCH: ((to participant's relative)) Good morning sir

RCH: Good morning, welcome

RCH: Thank you, sir. Hope he's feeling better?

RCH: ((shrugs)). I hope so

RCH: He will be fine

RCH: Amen. Do you want to talk to him now?

RH: Hmmm!!! Maybe I should come back again. I, honestly, don't want to bother him

APP: ((opens eyes, smiles))

RCH: Baba, Yahyah

APP: ((smiles))

RCH: Am I not correct?

APP: Correct

RCH: How are you?

APP: Want to go home

RCH: Ah! Home!! Don't worry, you will go home soon. You will get well soon

APP: ((sighs))

RCH: E pele; ((smiles)). Let me greet you in Yoruba language.

APP: ((chuckles)) Hmm! stayinghere::: two month:::adminssion.

RCH: You will be fine, uhn!

APP: Want to unite <with> family member

(IDI/NBAPP/20/Male/April/2016)

Interaction 21

RCH: Ibí yìí mọ́. Ẹwá jòkó. ((This place is clean. Come and sit down))

APP: ((aided by relative; sits)). Ba ((waves))

RCH: E káàbọ̀, sir

APP: Thank ((you)).

RCH: I hope your name has not been called? Maybe he ((points to the male relative close by)) should find out on your behalf.

APP: No! ehhn finis now. Waiting… doctor to give report… Tank

RCH: Kò t'ópẹ́, sir

APP: Name

RCH: Akinyemi, sir, from UI, Ibadan

APP: Doctor ((HT))?

RCH: I'm here for research.

APP: Ok.

RCH: Hope you are enjoying the services rendered in this centre?

APP: Well! Trying… Hospital provide medicine facrilaty. Doctor pliscibe::: treating part and nurses obey.

RCH: You mean there are specific parts of your body that need to be specially treated?

APP: Ehn?

RCH: I don't understand what you meant by part.

APP: ((points to the researcher)) You! ((spells)) P-A-T-H.

RCH: Oh! Apologies!! Silly me

APP: ((smiles)). Ehn ehn!

RCH: So you have come today to see the pathologist?

APP: Do<n't> know. Come last week. Doctor (inly) help me to rest mind… to get well (soon).

(IDI/NBAPP/21/Male/February/2016)

Interaction 22

APP: Honestly, UCH::: have friendly procedure. Patient gets treating card easy::: and cheap.

RCH: Have you collected your report?

APP: No. Doctors tell illness diagnosing me.

RCH: You mean?

APP: Health worker teach patients right and response. Doctors have good relating patients.

RCH: I didn't get what you said earlier.

APP: Ehn?

RCH: You mentioned illness and diagnosing.

APP: Don<'t> know jòọ́   **(IDI/NBAPP/22/Male/July 2016)**

Interaction 23

RCH: I can see you are getting better

APP: Tank you

RCH: ((Pointing to a photo in the participants' hand)) What's this?

APCP: Caption picture::: Bringing me to hospital.

RH: You mean this is what brought you to this hospital?

APP: No. first time.

RCH: Ok. When you first came to the hospital?

APP: Yes can<'t. walk. Me:::<I> suffer panshal stroke.

RCH: But that was then.

APP: Ehn?

RCH: Can you walk now?

APP: No. ,<I> move legs and arms sha better <than> before.

RCH: Then the doctors and nurses here must have tried for you so much.

APP: Ama happy::: ,<and> santify doctor and nurse attending to me.

RCH: They are nice people

APP: Yes. Get drugs::: hospital pharmacy::: and sanctify...happy… responding well

(IDI/NBAPP/23/Male/July 2016)

Interaction 24

APP: Research?

RCH: My research! Ah! Thank you, ma. You really have me in mind.

APP: ((Chuckles)) Little boy.

RCH: Mama, what's your impression about the services rendered in the clinic.

APP:<I> satisfy services <in>. UCH. Clinic have good enthic approach::: communicating well::: doctor and nurse available… and drug… patient relate person..person doctor. Doctor and nurse raise patient hope to get well. Satisfy.

RCH: That's good. I am sure you will get the best health care from here.

APP: Yes   **(IDI/NBAPP/24/Female/March 2016)**

Interaction 25

RCH: I have heard many people who said UCH is the best. Do you agree?

APP: Yes

CHR: Why? What are your reasons?

APP: Government hospital::: have facility

RCH: Because it is government owned hospital?

APP: Yes... and facility

RCH: Good hospitals should have facilities; it is normal

PCP: Also… confidence

RCHA: Confidence?

APP: Yes! Doctor and nurses give me.

RCHA: But what about the cost?

APPC: Money?

RCH: Yes. The money you paid. Is it not much?

APP: Money give joy but happy::: no.

RCH: Money gives you joy?

APP: No…

RCH: Happiness?

APP: Yes

RCH: I like your idea, or should I call it philosophy.

<center>**(IDI/NBAPP/25/Male/March 2016)**</center>

Interaction 26

RCH: For how long have you been here

APP: Spending 3 week::: treating dabentes disease now.

RCH: E pele. You know age factor could have contributed to it as well.

APP: Hun! Getting better though::: but drug cost::: giving me pressure.

RCH: But I think what is more important is the improvement in your health.

APP: Improving… Yes… Doing good different yesterday.

RCH: You mean you are getting better?

RCH: Yes.

RCH: Thank God. You had so much pain yesterday

APP: Feeling pain.

RCH: Don't worry; it will soon be over.

(IDI/NBAPP/26/Female/March 2016)

Interaction 27

Family register me here… close::: easy. Again… hospital::: has relating adequateping::: tools::: to treat patients.

RCH: Hospitals generally or you mean here in Owo?

APP: Here

RCH: Ok.

APP: ((continues)) No regret. My healing improving fast.

(IDI/NBAPP/27/Male/May 2016)

Interaction 28

APP: Omo Ondo. Come.

RCH: ((Bows, then sits))

APP: ((Finishes eating, begins to take his pills))

RCH: Ah, you're just taking your pills; it's past eleven.

APP: See… dear brother, <I>'m core Edo man.<I've> live herb medicine quite long time hnnn <in> life. The only miracle is herb.

RCH: Herbs?

APP: Yes, herb

RCH: You need orthodox medicine for your healing and quick recovery, not herbs

APP: Hmmm <uses gestures to show disagreement>::: very interes<ing> oyinbo::: abi ehhh modern medicine. See, like… no like, me::: believe efficacy of tradition

RCH: Ok, why did you go to the hospital then?

APP: Me

RCH: Yes, you

APP: Ehn

RCH: Will you stop going to the hospital?

APP: No o

RCH: Why?

APP: Children

RCH: Children? Which children?

APP: ((gestures to show possession))

RCH: Your children?

APP: Yes. Children force me to seek health care here. <I. sronging believe tradition medicine.

RCH: Ok, but I will still advise that you continue with the western medicine.

APP: You… Ondo

RCHA: I'm your neighbor. Ondo-Edo, they sound alike.

APP: ((giggles))

(IDI/NBAPP/28/Male/May 2016)

Interaction 29

RCHA: I am Akinyemi. May I know your name?

APP: Philip

RCH: Oh, you're a Christian?

APP: Yes

RCH: I thought that you're a Muslim because when daddy was talking to you, I heard him pray for you in Allah's name.

APP: Yes. Muslim

RCH: How? You are both Christian and Muslim?

APP: No. Me…Christian… daddy… husband…Muslim.

RCH: That's nice

APP: Yes…nice husband

RCH: I have no doubt that he is

APP: Ah! Last year suffer heart problem, after university

RCH: Oh! After you graduated?

APP: Yes <I. graduate Unimaid two years ago

RCH: What is Unimaid?

APP: Maijuguni, Borno

RCH: University of Maiduguri is a popular school in the north.

APP: You know?

RCH: Yes. I have been there. So you live in Maiduguri?

APP: Yes

RH: And you come here for medical care?

APP: Yes… hmm admit ahh hospital <by> hmm nice husband

RCH: Were you brought here by your husband?

APP: Yes

RCH: Your husband must be really nice. ((To the husband)). Sir, you are the best.

Husband: ((smiles)) Thank you. She's my wife. She needs the best care, especially from me.

APP: UCH ok… sell original drug and well know to get well

RCH: You will, definitely.

<center>**(IDI/NBAPP/29/Female/June 2016)**</center>

Interaction 30

Daddy… really contributes… gives me confidence to get well…

RCH: Do you mean your daddy or your husband or any other relation?

APP: Daddy, husband

RCH: Apart from him, who else helps you?

APP: have relations around me.

RCH: Sincerely, you are a lucky person.

APP: Hmmm mother visit son…time. People give me emotion<al> support.. and really working to give happy<…ness>

RCH: What about the health workers.

APP: Too::: uhhh give drugs to inject me.

RCH: I know that the nurses are also very important, and doctors.

APP: Yes   **(IDI/NBAPP/30/Male/July 2016)**

Interaction 31

APP: I can<'> wish away wife role and church members::: support and care.

RCH: You too must have been nice to them

APP: Don<'t> know. But… you see this<my> standing with::: church members

RCH: I can see.

APP: Show me love and care

<div align="center">

(IDI/NBAPP/31/Female/July 2016)

</div>

Interaction 32

RCH: For how long have you been here?

APP: Long?

RCH: Yes. When did you come here?

APP: Ok. April.

RCH: Which April? This year or last year?

APP: April ((gestures)).

RCH: This year?

APP: Yes

RCH: How did you know about this hospital?

APP: Doctor refer

RCH: A doctor referred you?

Rel: ((cuts in)) A neighbour first mentioned it that he might get better service down here.

R: Ok

Rel: Then doctors from the hospital we patronised before later referred us to this place.

RCH: That's better. ((to the participant)) Sir, I want you to know that you will be fine.

APP: I know. I pray.

RCH: God will answer your prayer

APP: Amen ((doctor and nurses enter))

RCH: Good afternoon doctor, good afternoon, ma.

Doc and Nurses: Afternoon.

Doc: You will please have to excuse us for now.

RCH: Alright sir. ((to the participant)) I will come later, sir.

APP: ((waves))   **(IDI/NBAPP/32/Male/July 2016)**

Interaction 33

RCH: Were you well informed about your health status before you began to receive treatment?

APP: Yes.::: very important. Informing you makes <you> better.

RCH: What job do you do?

APP: Doctor.

RCH: Currently?

APP: Retired.

RCH: For how long did you practice before you were retired?

APP: Hmmm <beats his chest to ask whether a question asked by the researcher was directed to him> Practising! Twenty year now.

RCH: So you were being consulted in all of those years?

APP: Yes. <I'm>consulting regular apponmon

RCH: As medical doctor, which of these would you recommend for someone who needs health care, government hospital or private?

APP: Me… prefer govern<ment> hospital…

RCH: Why? Is it because you worked with the government when you were in service?

APP: Doctors protect patient right and patient fulfil hmmm… obligation.

RCH: Sure?

APP: Ah! <I>have practising as medicine doctor <for> twenty years. <I> know.

RCH: What can you say are the challenges of health ervices in Nigeria?

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APP: See ehhhn thing affect health (counts fingers), fund, health educate people, access, cost and government.   **(IDI/NBAPP/33/Female/July 2016)**

Interaction 34

RCH: Tell me about your experiences here

APP: Nurse and doctor try me… Nurse gives me medicine::: and doctor come to see me and write medicine for me.

RCH: So they are all nice to you.

APP: No Sometime::: nurse attitude hmmm government hospita::: discourage health seeking.

RCH: Are you saying private is better?

APP: Money

RCH: Is it really expensive?

APP: Yes

RCH: Have patronised any before?

APP: Yes

RCH: But were the nurses in such hospital not better?

APP: Ehn?

RCHA: Were nurses private hospital better

APP: Not really::: fair   **(IDI/NBAPP/34/Male/September 2016)**

Interaction 35

RCH: The last time I talked with you, you told me that you left one hospital for this place.

APP: Yes.

RCH: Why?

APP: Worry.

RCH: You're worried?

APP: No. You

RCHA: I am not worried!

APP: Yes

RCH: When did you leave the hospital?

PAP: Going to three months now.

RCH: Why?

APP: Doctor.

RCH: Doctors? Doctors are your friends. They want to ensure that you are healed.

APP: Huhhhh! Question::: no answer

RCH: Did you ask them any questions that they refused to answer?

APP: Ask them question::: regarding healing.

RCH: Yes, did you?

APP: Yes

RCH: Don't they answer you?

APP: Ah! Doctor use big grammar and ehnnn answer me well...

RCH: Are the ones here different?

APP: Yes. Doctors come::: to large number

RCH: Little wonder you prefer this place.

APP: Yes. Different doctors taking turn one…one, one to check me.

RCH: And they answer your questions?

APP: Yes o. Sometime not facing me but talk only ọ̀gá (rolls hand again to show possibly, "among") them.

(IDI/NBAPP/35/Male/October 2015)

Interaction 36

RCH: How have you been coping especially when you're alone?

APP: Ehn?

RCH: Are you alone?

APP: No

RCH: Do you feel lonely?

APP: Sometime

RCH: How do cope with loneliness?

APP: Fidelis...Fidelis tell me joke, but enjoy reading interesting story

RCHA: Who is Fidelis?

APP: ((points)) Daughter

RCHA: Your biological daughter?

APP: No.

RCH: But she lives with you.

APP: Yes

(IDI/NBAPP/36/Male/April 2016)

Interaction 37

Doc: E káàbọ̀ bàbá.

APP: Tank you.

Doc: Where is your boy?

APP: ((points towards the door))

Doc: Is he outside?

APP: Yes.

Doc: I know you don't come alone

APP: Yes. Two people::: come with me::: last week. Neighbour son follows me all time.

Doc: I know. Have you bought your drugs?

APP: Yes. Doctor mention many drug <and>::: don<'t> remember sha:::
ehm one <is> like *plavix ,<and> warfarin*

Doc: Ok... you tried. You seem to remember things better now.

APP: Yes. Doctors are trying::: me all time.

Doc: ((Checks the patient's case note)). You were given a slip last week. Where is it?

APP: Hmmm wife has give <that> doctor ((points))

Doc: ((reads the case note silently; rises)). Excuse me ((steps out))

RCH: E pẹ̀lẹ́bàbá.

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Doc: ((Enters)) Bàbá, e ma binu. S'e ri sir, you have to complete your dose before you do any other test. S'e gbọ́

APP: ((shows some pills)) Èyí nkọ́?

Doc: That inclusive. Ensure you don't miss any of them. You can see that you are stronger now. Ehn

APP: ((nods))

Doc: So, just continue. Ọlọ́run á se alaafia yin ni pipe.

APP: E se   **(NPO/NBAPP/37/Female/June 2016)**

Interaction 38

Doc: Elder

APP: ((Giggles))

Doc: Elder, elder

APP: You!

Doc: How is family?

APP: Fine

Doc: Mo jeri mama. She would have given you nice meal this morning

APP: Food ((HT))? Eat food, ahh take drugs ahh doctor say<ing>.

Doc: That's good ((examines the patient's legs)). Hope it's not that you have been trying to walk about?

APP: No o. Doctor ehn::: He told me walking is no good.

Doc: Please o elder, ehn

APP: Yes

Doc: And your balm?

APP: Finish::: hmm daughter rub <in/the> aboniki::: ehn <my> hand and leg

Doc: Well, it's not too bad, but you should have called me or the other doctor

Doc: You will have to get another one before you leave here today.

APP: Yes. Tank you.

Doc: Olorun lo l'ope. Hope you sleep better these days

APP: Yes

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Doc: Sure

APP: Yes::: night

Doc: Elder elder, you need to sleep sometimes in the afternoon too o. S'e mo pe ara ti n d'ara agba?

APP: ((smiles))   **(NPO/NBAPP/38/Male/June 2016)**

Interaction 39

Doc: Morning ma

Accompany: Good morning, sir

Doc: Mama, e da mi lohun

APP: ((waves)) moring.

Doc: ((To accompany)) She is responding strangely today. Is anything wrong?

Accompany: ((Shrugs)) I don't know.

Doc: Mama, what's wrong?

APP: Nothing

Doc: No ma, something is wrong somewhere. Tell me

APP: ((Quiet))

Doc: I will collect your purse from you if you don't tell me.

APP: ((opens the mouth, tries to speak))

Doc: ((Attempts to take the patients' purse))

APP: ((Smiles)). See, no go shop::: no business hmm rich purse always empty

Doc: Mama, you and business! ((To the accompany)) What happen in her shop? Has she been going to shop?

Accompany: No. Nothing really. The shopkeeper has been ill for a while now so it has not been opened for some days.

Doc: Mama, what is important first is that you should get well. Huhn?

APP: Ok

Doc: Mama, ((writes)) I told you last week that you will go for a test when you come today

APP: Yes

Doc: ((To Accompany)) Please, you will have to be more patient today. She has to do these two tests, and the result should be submitted today.

Accompany: Ok, sir

Doc: Mama, You know I enjoy it when you talk with me.

APP: ((Smiles)).   **(NPO/NBAPP/39/Male/August 2016)**

Interaction 40

APP Wife: Doctor, e kaaro sir

Doc: E kaa ro ma. Bawo ni ara won?

APP Wife: He's better. At least, now he eats and sleeps well.

Doc: Well, if he continues with the drugs, the persistent cold will vanish. ((To the aphasic)). E pele sir

APP: Thank you.

Doc: Sir, do you feel the cold in every part of your body or only some places?

APP: Leg::: sometime hand too

Doc: Ok. Don't worry. Everything will be fine. You have nothing to be afraid of.

APP: I know. Uhn! <my> son is going to be happy.

Doc: Your son! E ma worry. Emi gan an I want to be happy, and that will happen when you feel better. I know that will happen now that you have come here.

Wife: Ka nip e a ti tete mo ni, sebi a ba ti bere treatment yen nibi

Doc: It's not too late. At least...

APP: ((cuts in)) <I> know but

Doc: Don't worry. All will be well. Also, remember that ohun gbogbo nsise po fun rere {Trans: All things work together for good}.

APP: ((soliloquising)). Wasting time::: is one thing <I> hate.

Wife: Doctor, I know he is really improving. We only have our fears. See, we just consider here as our last hope. Sppech won need lati pada

Doc: Gbogbo 'wonye la ma attend see, I am sure that your family will still rejoice again and again

Wife: S'eri sir, one thing t'o fi wa lokan bale nipe a kuro nibeyen, a wa si UCH nibi.

APP: Yes, specially omo. They like service here. Children like all qualities hmm tell them UCH.

Wife: Yes. They really liked it when we told them pe a ti gbe won wa si UCH.

Doc: E ma se favour kan fun mi ma

Wife: Ok

Doc: He will complete the current dose in two weeks

APP: Yes… true

Doc: ((impressed, smiles)). Good! I want you to continue with this ((gives a prescription note to the aphasic's wife)). Sir, these will be taken twice daily, morning and night.

APP ((with wife)): Ok

Doc: Daddy, you will wait for her here while she goes to pay and then…

APP: Ok..

Doc: Or, ma it is not compulsory you buy them today. Maybe you can do all that later so that we don't keep him for too long

APP: Thank you, doctor.   **(NPO/NBAPP/40/Female/September 2016)**

INTERACTIONS WITH AUTISTIC PARTICIPANTS

Interaction 41

Doctor::: are my very good friends. They alwaysh give me::: due atten…tion::: any…time. I meet them before. Get me…di…cal aitention… recenty::: doctor haul out piece ohhinquipment that I see it before. I ask him::: device is responding. I'm using it to take a picture inside and back in your head. I was impress that someone invent camera to do it. I even more impress::: Doctor learn in picture. Doctor is saying. We gather detail::: in your::: general health:::simpuli::: look back in your head::: and ehmm have clear picture what go to our body. My doctor comment amaze me. It inmarkable that personoveral::: health can measure healthy huhn ((expresses surprise)) brain. It imply that our body reflect ohh wisdom aaa of our great creator. To be honest with you. Doctors are the clever…rest set in human. I have::: ever::: meet in world::: and they always do their job well. Ehmm di…dis..hones…ty characterises many other profession is absolutely checking… ouch… medical field. No reason::: to feel in…secure or unsafe. I thank you. Doctor for you do your job conscientiously.

(PRT/NBAUP/1/Male/December 2015)

Interaction 42

AUP: Take ((gives a bottle of soft drink))… Aunty ((points))…

RCH: Thank you. Aunty told you to give me?

AUPP: Yes

RCH: Oh! That's nice. Let's go and say thanks to aunty ((both walk along)). What's your name?

AUP: Name. Timi

RCH: TimiTimi, is it Oluwatimilehin or what?

AUP: Timi.

RCH: Ok ((pauses)). I like your dress.

AUP: Yes… ok… Aunty told me to dress::: to show my tradition.

RCH: Good. It is really good. Did you also dance in the morning?

AUP: Dance. No.

RCH: Why?

AUP: I didn't go home. I stayed in school

RCH: Home?

AUP: Yes ((points))

RCH: Oh! You mean that place.

AUP: Yes

RCH: Ok, Timi, can you read something for me?

AUP: Read! Yes.

RCH: Ok, here is

AUP: Doctors are my very good friends. They have always give me::: due attention::: anytime. Ehhahh… getting medical attention recently::: my doctor hauled out a piece of equipment. I see it before. I asking him. ((pauses)) Ahh! Ok… Device ((pauses)) respond. I am using it to take picture inside ehmm ok our… no your head. We can gather many detail about your general health. It simple. ((long pause)) Look back… ehmm ok… your head and we ehmm see clear picture of what go to our body.

RCH: It's ok. You have tried.

AUP: No

RCH: Ah! See ((points)). They are going. Let us go.

AUP: Oh! Ok… here

RCH: Ok… continue.

AUP: My doctor comment amazed me. Ehn! It remarkable that a person o…ver… over…all health can measure brain health. It imply ehmm ok… body com…plexity reflect genius and wisdom ahhh creator.

RCH: Timi, it's ok. Let's go.

AUP: Ok   **(PRT/NBAUP/2/Male/December 2015)**

Interaction 43

Doctor::: my very good flend. They have alway give me::: due attentchion anytime I meet them. Who get medical attentchionrecently. Ah! Doctor haul::: piece equipment that I see it before. I am *asking* him ehmm the device is ehmm he is responding. I impress. Someone invent camera that can do it. but I even::: more impless::: my doctor can learn::: picture. We can gather lot and detail bhor your general health::: simply <by> looking in<the> back <in> your head::: and can have clear…rerpincture. It go on…side our body. My doctor comment amaze me. It remarkable. (that) personal over…all health can measure. Ohh! Can::: measure <for> healthy brain. It imply. Complexity of our body reflec::: that genius and wis…dom in our great creator.To be honest. Doctor is clever. No reason to feel insecure <or> unsafe. I encourage doctor::: ready::: readiness to attend to me.

(PRT/NBAUP/3/Male/December 2015)

Interaction 44

Doctors::: my good friends. They alway give me duen attention anytime. Recently, my doctor haul ou::: equipment that I have see it before. I impress that someone invent camera that it can that but I even impress that doctor can learn from picture. He…doctor say::: we gather details aborehnn general health simple…simply in looking on your head and we can see clear…er picture::: what go to your body. So my doctor comment amaze:: me and it remarkable::: that personal overall health can measure health of the brain and complexinton on our body reflect genius::: wisdom orrh our great creator. To be honest. You::: doctor are clever… clever human. I ever meet in world. They always do their job well and dishonesty:::characterise many profession can absolutely check medical field. So, no reason to feel insecure or unsafe. I am encouraged by my doctor readiness to attend to me. I thank you. Doctor do your job consciously.

(PRT/NBAUP/4/Male/December 2015)

Interaction 45

Doctor::: my very good friends. They have always give me due attention. ::: I meet them anytime::: to get medical attention::: recently. My doctor hauled out a piece of equipment that I hadn't seen before. I am *asking* him ehmm the device is ehmm he is responding. I eee using it to take picture inside...back in your head. Impress::: Someone vent camera that do that::: and even impress docto::: doctor learn picture. We can gather many detail. Your ge…neral health simple…ly look back in your head. It in remarkable that personal overall health can measure health of brain. Thank you. Doctor do your job conscience…tiously. **(PRT/NBAUP/5/Female/March 2016)**

Interaction 46

Doctors are my very good friend. I get medical attention recently and my doctor haul piece and equip…ment that I have no…see. I ask him advice and he respond. We gather many detail about your general health. It is simply::: looking back::: your head and we have::: picture::: inside our bodysh. ((Walks away))

RCH: Come. Where are you going?

AUP: Going.

RCH: ((holds him)) Tell me.

AUP: Ruler

RCH: Ruler?

AUP: Yes… my ruler… aunty table ((points))

RCH: Where is it?

AUP: In table ((points))

RCH: Table?

AUP: Yes. Aunty table

RCH: Wait. We will go together.

AUP: No

RCH: Ok, go. Go and take but I will wait for you here.

AUP: No.   **(PRT/NBAUP/6/Male/April 2016)**

Interaction 47

Doctors are my very good friends. He always give me due attention; they have always given me due attention anytime I meet them. Why get medical attention::: recently. Doctor is hauling out piece of equipment that I see before. I ask him device and he respond. Using **it**::: to take picture your head.<I'm> impress that someone invent camera that it can do that. Oh::: my doctor learn it::: picture. We can gathe::: detail about your general health::: simply::: by look back and your head. We see clear pictor of our body.

RCH: Continue.

AUP: No.

RCH: Are you tired.

AUP: Yes.

RCH: Ok.   **(PRT/NBAUP/7/Female/April 2016)**

Interaction 48

Doctors are good friends. They all…ways gave me antention. Anytime::: I met them.::: Get medical attention recently. My doctor hauled out peace::: equipment. I see it before. I asked him. What device and he respon…ded. I used it to take picture inside and back ohh your head. My doctor comment amaze me. It in remarkable.:::person over…all health measured ahhh brain health. Eee imply::: that complexities of our body reflect genus and wise…dom of our great creator. To be honest in you::: doctors are cleverest humans. I meet them in world. They have always do their job well. I thank you::: doctor::: you do your job well.

(PRT/NBAUP/8/Male/April 2016)

Interaction 49

AUP: ((Pulls the researcher)) What my name?

RCH: Your name?

AUP: Yes.

RCH: You did not tell me your name in the morning.

AUP: Yes.

RCH: ((chuckles)) Ok tell me now.

AUP: No

RCH: Please

AUP: Desire

RCH: Desire!

AUP: Yes

RCH: I like your name.

AUP: ((smiles)) Him… ((points)) Gift

RCH: ((turns to another participant)) Is your name 'Gift'?

AUP2: Yes

RCH: ((to P2)) Good boy.

AUP2: ((Walks away))

RCH: Desire, Uncle will be waiting for you

UP: Yes

RCH: Will you go to meet him now?

AUP: Yes ((chuckles))… Uncle is so funny.

RCH: Funny? I know you like him, don't you?

AUP: Yes

RCH: And Gift, do you like him

AUP: Yes. My friend

CHR: You are a good boy too

AUP: Yes but:::

RCH: Let's go to uncle.

(IDI/NBAUP/9/Male/December 2015)

Interaction 50

AUP: ((call out to the researcher)) Uncle…uncle..

RCH: ((turns; sees two boys struggle over a book)) Common. You shouldn't fight. Huhn!

AUP1: My book

RCHA: ((takes the book from them)) Wait. You will collect it later

AUCP1: No

RCH: Ok. I will hold it.

AUP1: No.

RCH: I won't give it to you.

AUP: Why?

RCH: I don't want you to fight over it.

AUP: Yes

RCH: Jesus does not want you to fight.

AUP: Yes

RCH: Do you love Jesus?

AUP: Yes.

RCH: Why were you fighting then?

AUP: ((point)) Him

RCH: Yes. I know you were fighting with your friend. I want to know why.

AUP: No

RCH: What is no! Is he not your friend?

AUP: No no. he<'s>lazy boy. He's no read his books.

RCH: Is that why he is not your friend?

AUP: Yes

RCH: No, he is still your friend

AUP: Sill!

RCH: I said ((spells)) s-t-i-l-l, still

AUP: Ok. ((taps the researcher)) Tell him::: to remove everything::: ohhh his pocket.

RCH: What?

AUP: ((points))

RCH: Tell me. What?

AUP: ((attempts to leave))

RCH: Where are you going?

AUP: To skip

RCH: Really? Do you like it?

AUP: Yes. I like skipping

((P2 walks in the direction of the book earlier collected from the participant))

RCH: How did you learn it?

AUP: No

RCH: You didn't learn it?

AUP: Yes

RCH: Yes to what? Did anyone teach you?

AUP: Yes.

RCH: Who?

AUP: Mama

RCH: Who is mama?

AUP: My mama

RCH: Ok

AUP: See..he::: taking see book.

RCH: ((Collects the book from the P2)) Don't worry. I will keep it.

AUP: Ok

RCH: Can we go now?

AUP: No

RCH: Why?

AUP: No. ((Points)) see she getting it out of school

RCH: Don't worry. He won't go out of the school. Ok?

AUP: Yes   **(IDI/NBAUP/10/Male/December 2015)**

Interaction 51

AUP: I danced

RCH: You danced? Can you dance?

AUP: Yes

RCH: That's good. Did you collect any gift?

AUP: No

RCH: Why?

AUP: ((clasps))

RCH: So else did you do in the morning?

AUP: I *ate* cornflakes, and ice cream.

RCH: What again did you eat?

AUP: Nothing

RCH: Nothing?

AUP: Mama beat me.

RCH: What did you do?

AUP: Huhn ((HT))?

RCH: Why did mama beat you?

AUP: No

RCH: You just said so.

AUP: No

RCH: Mama did not beat you.

AUP: Yes

RCH: Did she want to beat you?

AUP: Yes

RCH: Ok. What again did you do?

AUP: School

RCH: What about school?

AUP: Ehn?

RCH: What happened to school?

AUP: Yes. Came to school

(IDI/NBAUP/11/Female/December 2015)

Interaction 52

RCHA: Mabel, How are you?

AUP: Fine

RCH: What are you doing here?

AUP: Do?

RCH: Yes. Tell me. What are you doing here ((accompanied with gestures))

AUP: Waiting for Airen

RCH: Who is Airen?

AUP: My flend

RCH: Why are you waiting for her?

AUP: She wait for me always.

RCH: That's nice of her, and you too.

AUP: Ehn?

RCH: I said you are nice and Airen is nice too

AUP: Yes.

RCH: Before she comes, let's read together.

AUP: Huhn!

RCH: Don't worry. You will just read few sentences.

AUP: Oya

RCH: ((hands over a paper containing typed sentences))

AUP: Doctor ist my very good friend.

He have always give me due attention

We no/<know> gather lot of detail.

No reason to feel *insecure* or *unsafe*.

Dishonesty characterise other *profession* in absolutely checking.

RCH: She is coming. Stand up, let's go and meet her.

(IDI/NBAUP/12/Female/January 2016)

Interaction 53

RCH: ((Flips through the pages of the participants notebook)) Who helps you with your assignment?

AUP: My assignment?

RCH: Yes. Who does it for you?

AUP: I::: doing my assignment myself.

RCH: Really? That's what a good boy should do.

AUP: Good

RCH: Yes. You are a good boy. Why didn't you allow mum to do this for you.

AUP: No. I go my grandma house.

RCH: Your grandma?

RCH: Yes

AUP: Did she build her own house

RCH: uh she have it.

RCH: Ok, don't worry. I want you to read this.

RCH: Ok

AUP: Start

My doctor comment amazed me. It in *remarkable* person overall health can measure::: (the) brain. It imply that the *complexity* in our body reflect the genius and *wisdom* in our great creator.   **(IDI/NBAUP/13/Male/January 2016)**

Interaction 54

RCH: I didn't see you in school when I came last week

AUP: Say?

RCH: You did not come to school last week

AUP: I come to school.

RCH: But I didn't see you. I came on Thursday.

AUP: Thursday?

RCH: Yes.

AUP: I go for holiday?

RCH: Holiday on Thursday?

AUP: Open day.

RCH: Holiday or open day?

AUP: Yes. My daddy.

RCH: Your dad?

AUP: Yes My daddy come to school here to take me.

RCH: Where did you go?

AUP: Home.

RCH: Ok ((the participant has a page of his textbook opened; the points at a picture in the textbook)) have you seen aeroplane before?

AUP: Yes

RCH: ((Surprised)) Where?

AUP: We see it sky and airport.

RCH: What is it?

AUP: ((Chuckle)) Aeroplane station. Parking aeroplane

RCH: Have you gone to the airport before?

AUP: Yes

RCH: When?

AUP: I travel.

RCH: Travel to where?

AUP: US

RCH: When next will you go?

AUP: Don<'t> know. **(IDI/NBAUP/14/Male/March 2016)**

Interaction 55

RCH: You are in what class?

AUP: Class?

RCHC: Yes…

((A voice)): He understands stage not class

RCH: Yes ma, I know. It was deliberate. Thanks

RCH: You have not answered me. You are in what class?

AUP: ((keeps quiet))

RCH: Ok… You are in stage?

AUP: Five

RCH: Oh! Really!! I thought that you are in stage three

AUP: I'm stage 3 before but now stage 5.

RCHA: Oh! Ok. What subject do you like best?

AUP: Ehn?

RCH: Subject

AUP: I want PRO to play.

RCH: Play? I said subject. Tell me. Do you like English?

AUP: No. want to play

RCH: I know that it's your break time but just tell me this.

AUP: No

RCH: Ok. Go and meet your friends

AUP: Michael will follow me

RCH: Is it Michael only you will play with?

AUP: No. <Michael will follow me.>

<div align="center">**(IDI/NBAUP/15/Male/March 2016)**</div>

Interaction 56

RCH: I did not see you in class in the morning

AUP: Yes

RCH: Where did you go

AUP: Go ((HT))?

RCH: Yes, where?

AUP: Ehmm! I *go* to dance class; I *have* good time.

RCH: You went to dance?

AUP: Ehn?

RCH: Did you actually go to dance?

AUP: Dance…Yes… Dance

RCH: ((points)) Did all of them go to dance too

AUP: Yes

RCH: But I saw Timi in the morning when I came!

AUP: Don<'t> know.

RCH: Yes, I saw him. He wore another shirt and trousers

AUP: No. He *wear* blue dress and black trouser

RCH: May I did not see him then.

AUP: Yes… This boy feeling cold yesterday.

RCH: No I saw him; I can't tell lies.

AUP: We go to dance

RCH: Ok. Now that Christmas is coming soon, what will you do?

AUP: Chlismas… yes ((chuckles))

RCH: What will you do on Christmas day?

AUP: Go to church.

RCH: Is Christmas a church day?

AUP: Yes

RCH: You go to church every Christmas day?

AUP: Yes

RCHA: What do you do in church?

AUP: We sing and dance. We pray.

RCH: What else do you do?

AUP: We will eat.

RCH: Do you sing very well?

AUP: Yes. Everybody and me sing very well

RCH: Do you sing with your friends in church?

AUP: Yes.

RCH: Mention some of them

AUP: Joan… Desmond… Ore…

RCHA: Who sings better between you and Joan

AUP: Better… me

RCH: Where is Joan?

AUP: She live my house.

RCH: She lives in ((HT)) your house?

AUP: No

RCH: But that is what you just said!

AUP: No, She live my house here and here

RCH: Your house is here ((points)) and her house is here ((points))?

AUP: Yes

RCH: Ok… tell me that she lives beside my house

AUCP: Yes… ok

RCH: Say so.

AUP: No ((pauses)). Oyen ((pauses)). See Phil take cup on shelf

RCH: Oyen! I don't get

AUP: Ohhh!

RCH: Ok, ok; don't worry. It's ok   **(IDI/NBAUP/16/Male/April 2016)**

Interaction 57

RCH: I was told you like cartoons

AUP: Cartoon.

RCH: Yes cartoon.

AUP: Yes. I like cartoon… ultimate spiderman. I like Arjun warrior prince. And::: nothing

RCH: Tell me about Ultimate Spiderman.

AUP: Spiderman can run very fast

RCH: Ok… tell me more

AUP: He use hand to stop car.

RCH: Ah! Really?

AUP: Yes… very strong and he win.

RCH: What again?

AUP: Jenny hide two day

RCH: Who is boy?

AUP: Jenny, Spiderman

RCH: Is Jenny the Spiderman?

AUP: No. Jenny… ohhh! This boy feeling cold yesterday.

RCH: Which boy?

AUP: Ah Jenny now!

RCH: Ok

RCH: Do you want to be like Spiderman?

AUP: No

RCH: Why?

AUP: I want to be doctor

RCH: Doctor?

AUP: Yes

RCH: What do doctors do? Their responsibility

AUP: Doctor responsibility to treat illness.

RCH: Are you sure?

AUP: Yes…

RCH: Where do doctors work?

AUP: Work?

RCH: Yes, where?

AUP: Ehmm Hospital. They treating people ((starts picking out things one after another from his bag)).

RCH: What are you looking for?

AUP: My drawing

RCH: Your drawing?

AUP: Yes… my health education drawing

RCH: Where did you keep it?

AUP: It('s) my bag.

RCH: Let's check together   **(IDI/NBAUP/17/Male/July 2016)**

Interaction 58

RCH: What's your name:::

AUP: Me! Phiv:::

RCH: Phil? Can you spell it please?

AUP: Spell… P-H-I-L

RCH: Good. Phil! Phil!!

AUP: ((smiles))

RCH: I was watching all of you in the morning.

AUP: We *danced* there on morning.

RCH: When last did you dance like that

AUP: Last Sunday.

RCH: Last Sunday?

AUP: Yes. I go to church

RCH: So, you danced in church on Sunday

AUP: Yes… Dance>> offering ehnn!!!

RCH: Do you do that every Sunday?

AUP: Ehn?

RCH: Do you dance every Sunday?

AUP: Yes, every Sunday

RCH: Maybe I will attend you church on Sunday.

AUP: ((smiles))   **(IDI/NBAUP/18/Male/July 2016)**

Interaction 59

AUP: ((hold a plastic object, moody))

RCH: Ben, good morning

AUP: ((Keeps quiet))

RCH: Ben, I am greeting you

AUP: ((Quiet still))

RCH: Say something to me, Ben

AUP: ((Keeps quiet))

RCH: ((holds participant's hands)) Good morning

AUP: ((reluctantly)) Good morning

RCH: Ehnehn! Fine!! That's what I want!!! So what's the problem?

AUP: ((quite again))

RCH: What is this ((touches the plastic object in the participant's hand))

AUP: I want to use it to scratch me::: my body.

RCH: Does your body itch?

AUP: Itch me.

RCH: No, don't say "itch me"; say "it itches" or "my body itches"

AUP: Ok

RCH: I want you to say it.

AUP: ((keeps quiet))

RCH: Tell me, what is the problem?

AUP: Problem

RCH: Yes, did anyone beat you?

AUP: No

RCH: Tell me

AUP: Aunty *collect* assignment.

RCH: Your aunty collected your assignment?

AUP: Yes

RCH: Is that why you are sad?

AUP: Yes, I *don<'t>*finish it

RCH: Oh, ok. She wants you to learn how to write fast.

AUP: Ehn?

RCH: Next time, you should be fast with your assignment. Ok?

AUP: No

RCH: ((draws him closer)) Don't worry. She will allow you to finish next time.

(IDI/NBAUP/19/Male/July 2016)

Interaction 60

RCH: How old are you?

AUCP: Ahn?

RCH: Tell me your age

AUP: I ((counts fingers))… thirsteen.

RCH: Do you mean ((spells)) t-h-i-r-t-e-e-n?

AUP: Yes

RCH: It is thirteen not thirsteen.

AUP: Yes

RCH: I can see that you are reading about air

AUP: Yes, science

RCH: Good. Do you like science?

AUP: Yes

RCH: So, what is air?

AUP: Air. Air have *pressure*.

RCH: That is one of the characteristics of air. Tell me what air is

AUP: Air:::ehm… air…air... gas

RCH: Ok

AUP: You will read it again so that you can tell me what air is.CR: Ok.

RCH: Maybe you tell mummy to help you.

AUP: My mum check my note every day.

RCH: That's good. So, she will help you with this.

AUP: She teach me too.

RH: What else does she do?

AUP: My mummy:::she hire somebody to help her do some stuff.

RCH: I mean what does she do for you?

AUP: Ehn?

RCH: Ok. Don't worry

(IDI/NBAUP/20/Male/November 2016)

Structured Passage

Doctors are my very good friends; they have always given me due attention anytime I meet them. While getting a medical attention recently, my doctor hauled out a piece of equipment that I hadn't seen before. I asked him what the device was, and he responded, "I am using it to take a picture of the inside of the back of your head."

I was impressed that someone invented a camera that could do that but I was even more impressed by what my doctor could learn from the picture. He said, "We can gather a lot of details about your general health simply by looking at the back of your head and we can have a clearer picture of what goes on inside our bodies."

My doctor's comment amazed me. It is remarkable that a person's overall health can be measured by the health of the brain. It implies that the complexities of our bodies reflect the genius and wisdom of our great creator.

To be honest with you, doctors are the cleverest set of humans I have ever met in the world and they have always done their job well. Also, the dishonesty that characterises many other professions is absolutely checked in the medical field so there is no reason to feel insecure or unsafe. I am encouraged by my doctor's readiness to attend to me.

I thank you doctor for doing your job conscientiously.

(Source: Researcher's creation)

APPENDIX IV

ETHICAL APPROVAL

INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IAMRAT)

College of Medicine, University of Ibadan, Ibadan, Nigeria.

Director: **Prof. Catherine O. Falade**, MBBS (Ib), M.Sc, FMCP, FWACP
Tel: 0803 326 4593, 0802 360 9151
e-mail: cfalade@comui.edu.ng lillyfunke@yahoo.com

UI/UCH EC Registration Number: **NHREC/05/01/2008a**

NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW

Re: A Morphosyntactic Investigation of Selected Bilingual Aphasic and Autistic Speeches in Nigeria

UI/UCH Ethics Committee assigned number: UI/EC/15/0157

Name of Principal Investigator: **Akinyemi. T. Akinmurele**

Address of Principal Investigator: Department of English,
Faculty of Arts,
University of Ibadan, Ibadan

Date of receipt of valid application: 04/06/2015

Date of meeting when final determination on ethical approval was made: **N/A**

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and *given full approval by the UI/UCH Ethics Committee.*

This approval dates from **03/08/2015 to 02/08/2016.** If there is delay in starting the research, please inform the UI/UCH Ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the UI/UCH EC assigned number and duration of UI/UCH EC approval of the study.* It is expected that you submit your annual report as well as an annual request for the project renewal to the UI/UCH EC early in order to obtain renewal of your approval to avoid disruption of your research.

The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. No changes are permitted in the research without prior approval by the UI/UCH EC except in circumstances outlined in the Code. The UI/UCH EC reserves the right to conduct compliance visit to your research site without previous notification.
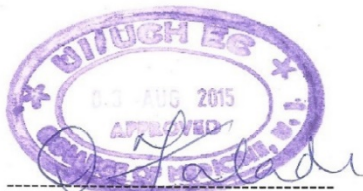
Professor Catherine O. Falade
Director, IAMRAT
Chairperson, UI/UCH Ethics Committee
E-mail: uiuchec@gmail.com

APPENDIX V

INFORMED CONSENT FORM

Title of the research

A morphosyntactic investigation of selected bilingual aphasic and autistic speeches in Nigeria

Name and affiliation of researcher of applicant

This study is being conducted by Akinmurele Akinyemi Temitope of the Department of English, University of Ibadan, Ibadan.

Sponsor

This study is self-sponsored.

Purposes of research

The purposes of this research are to find out what morphological and syntactic impairments characterise the speeches of aphasic and autistic people, and to find out whether the difference in the causes of the selected disorders result in difference in language impairment.

Procedure of the research

A total of 66 participants will be recruited into the study. A passage will be constructed, which the participants will read. The researcher will also conduct interview with the participants. Also, the researcher will observe doctors' interaction with aphasics, and caregivers' interaction with people living with autism. The researcher will simply have to record the speeches of the participants during their interaction(s) with the researcher. The participants' speeches to be recorded will be those made when reading the structured passage and/or those made during the in-depth interview section. Speeches may also be recorded during patient-aphasic interaction (for aphasics), and care-giver/educators' discussion with people living with autism (for autistics). However, the researcher will shield every detail that can identify the participants.

Expected duration of research and participant's involvement

Each participant involved in the reading of the structured passage and in-depth interview will only be involved in this research for a maximum of twenty minutes. However, a participants is free to withdraw at the shortest time he/she considers convenient for him/her. For the aphasic participants whose interactions with the doctors are observed, they will only be involved within the hours of contact with doctors. Autistic participants whose interactions with their caregivers are observed, their involvement will be the contact hours permitted by the management of the selected Autistic Centres.

Risks

This research does not involve serious risks. Basically what could be considered to be the risk involved is the possibility that talking may be effortful. However, when you decide not to talk, you have nothing to lose.

Costs to the participants

Your participation in this research will cost you just a few minutes.

Benefit

The ultimate goal of this research is to identify the language impairments that characterise the speeches of aphasics and autistics with a view to providing clues to achieving language recovery for the affected persons.

Confidentiality

In this study, your name will not be recorded. The information collected cannot be linked to you in anyway. Also, the details of your participation in this study will not be recorded.

Voluntariness

Your participation is entirely voluntary. You are free to withdraw your consent at any time.

Alternatives to participation

If you choose not to participate, this will not affect your treatment in this hospital/clinic/centre in any way.

Due inducements

This study costs you nothing; so you have nothing to lose. Your involvement in the study is restricted to your contact hour with your doctor. You will not be paid any fees for participating in this research.

Consequences of participants' decision to withdraw from research and procedure for orderly termination of participation

You have the liberty to withdraw from the research at anytime. However, the information obtained from you may still constitute a part of the data for the study. Even when you withdraw, you have the promise of the researcher to make effort in good faith to comply with your wishes as much as practicable.

Modality of providing treatment and action(s) to be taken in case of injury or adverse event(s)

It is very unlikely any injury or adverse effect occurs during your participation in this study.

What happens to research participants and communities when the research is over

As a participant, you may have nothing to do with the researcher once the research is over. However, you will be informed about any information that may affect your continued interaction. Communities will be informed of the outcome of the research through publications. This will basically be recommendations that will enhance communicating with aphasics and autistics, as well as focus areas in fashioning speech rehabilitation scheme.

Statement of person obtaining informed consent

I have fully explained this research to _____ and have given sufficient information, including objectives of the study, as well as risks and benefits, to make an informed decision.

Date: _____   Signature: _____

Name: _____

Statement of person giving consent

I have read the description of the research. I understand that my participation is voluntary. I know enough about the purpose, methods, risks and benefits of the research study to judge that I want to take part in it. I understand that I may freely stop being part of this study at any time. I have received a copy of this consent form.

DATE: _____   SIGNATURE: _____

NAME: _____

If you have any question about your participation in this research, you can contact the principal investigator.

Name: Akinmurele Akinyemi Temitope
Department: English
Phone: 08032200186
E-mail: yemiakinmurele@yahoo.com