

Nature and Nurture in the Acquisition of the English Possessive and Agreement Inflections in Sequential and Simultaneous Situations at home

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Abstract

English Language acquisition in a multilingual situation as Nigeria is faced with a context where most children are bilinguals from birth. Children acquire two languages through home and environmental exposure, leading to both sequential and simultaneous bilingual development in typical home environments. However, limited studies in Nigeria have examined the acquisition patterns of bilinguals in sequential and simultaneous situations. Hence, this study examines the processing and use of the possessive and agreement inflections by four sequential and simultaneous Nigeria bilinguals aged 2;0-6;6 years at home using the nature and nurture approach. It aims to compare the acquisition patterns in both sequential and simultaneous situations. It employs Amuda and Medubi (2018) Model for Psycholinguistics Knowledge of Language Acquisition in Children to show how nature and nurture influence the acquisition process. This study involved recording and observing children's utterances in interactions at home over a period of two and a half years. Parents were interviewed at the beginning of the study to identify children who acquired English either simultaneously from birth or sequentially. The findings show that only sequential bilinguals acquire the possessive inflection and the use increases at an older age. The agreement inflection also records the same development in sequential bilinguals while limited use occurs in simultaneous bilinguals. Nevertheless, the acquisition process fluctuates in both situations and the agreement inflection occurs earlier in the simultaneous bilinguals. The shifts in the languages depict the influence of nature and nurture in the mental lexicon which in turn affects the acquisition processes. Consequently, the nature and nurture hinder the acquisition process as the bilinguals acquisition of both inflections fluctuates thereby showing a low acquisition rate.

Introduction

Fromkin et al. (2017) sees language as a source of human life and power (p.1). The use of language however entails several factors aside speech. The ability to speak involves vast knowledge that most speakers are ignorant of, most especially in bilingual and multilingual settings (p.2). They cited an example of a child who starts walking all of a sudden without understanding the concept of support and balance or the neurophysiological control mechanisms that allow them to walk (p.2). In the same vein, the progression of speech production reveals that the child begins with sound production and moves to the speech level where they produce one or more words. These developmental trajectories are not just produced because of the socio-environment factors but occur in conjunction with neurophysiological mechanisms which support comprehension and production of speech.

Thus, this present study examines how nature and nurture interact in the acquisition of two English inflections by children aged 2;0–6;6 years in sequential and simultaneous home situations. This further helps to elucidate the patterns of acquisition in both situations. This study's focus is due to limited studies on how children aged 2;0–6;6 years acquire English inflectional morphemes within sequential and simultaneous bilingual home situations in Nigeria.

According to Hoff et al. (2014), previous researches show that exposure of second language (L2) from non-native speakers who possess limited proficiency may have little effect on a child's L2 acquisition. They derived this through their study which revealed that English use at home depicted children's English skills only when a parent was a native English speaker while there was no impact on the children with non-native speaking parents (Logue, et al., 2024, p. 1403). Similarly, Paradis (2011) also claims that studies on the impact of L2 use at home on children's L2 proficiency remains inconclusive and generally does not really predict L2 outcomes (Logue, et al., 2024, p. 1403). Although, this present study is not particularly concerned with proficiency in the acquisition process, it, however, examines the acquisition patterns of the possessive and agreement inflections in the home setting. Using the nature and nurture approach, it attempts to show how physiological processes and socio-environmental factors help the child to acquire a language.

Hoff et al. (2012) also affirm that 'children exposed to two languages can learn them' but submit that there are no clear evidences on

whether bilingual children acquire language at the same rate as their monolingual counterpart (p. 1). In their study, they compared the language development of 47 Spanish-English bilinguals and 56 English-learning monolinguals aged 1;10, 2;1 and 2;6 to assess whether or not bilingualism facilitate language development (p. 4).

Nature and Nurture Approach to Language Acquisition

Language is a complex process, yet by age five, children have already mastered much of its grammar. They can form questions, use pronouns correctly, inflect words as well as produce and understand countless sentences they have never heard before even before learning skills like addition or tying their shoes (Fromkin et al., 2017, p. 383). Fromkin et al. add that children do not learn language by memorizing sentences; they acquire the grammatical rules underlying it. Without explicit instruction, they infer these rules across different languages and cultures around them and progress through similar stages of development. Therefore, this section explores how children achieve this remarkable feat of language acquisition using the nature and nurture approach to language acquisition.

There have been several debates on how innate abilities (nature) and socio-environmental factors (nurture) influence human behaviour. According to Cherry (2009), the controversies on nature versus nurture have been the oldest philosophical issues within psychology. She notes that the terms nature versus nurture and eugenics were coined by a cousin of the naturalist, Charles Darwin, named Psychologist Francis Galton-Galton, who believes that intelligence is the result of genetics. Again, Cherry defines nature as “all the genes and hereditary factors that influence who we are”, including our “physical appearance” and “personality characteristics”. Speaking on the innateness of human language acquisition, Huarte de San Juan, opines that ‘Normal human minds are such that...without the help of anybody, they will produce 1,000 (sentences) they never heard spoke of...inventing and saying such things as they never heard from their masters nor any mouth’ (Chomsky, 2006, p. 8). Yule (2010) states that children, including those who are born deaf and cannot talk, can become skilled in language or sign language if they are exposed to suitable conditions from the start (p. 6). He explains that this depicts that human offspring has innate ‘special capacity for language’ (p. 6). This natural ability is not limited to any

specific type of language. Therefore, he says that the origin of language is linked to human genetics.

In his study, Ted (2000) talked about scholarly views on the partition of nature and nurture and how they interact. According to him, 'nature' and 'nurture' originated through a teacher named Richard Mucosta in 1582 to describe factors that determine child development (p. 107). He explained that the nativists believe that they 'have found a gene for language' (p. 107). Also, Galton (1875) notes that the role of nature is prominent, 'when nature and nurture compete for supremacy on equal terms...the former proves stronger (Ted, 2000, p. 107). Nevertheless, the nativists have not been able to show evidence of a language-specific gene, thus, hindering their efforts to counter the empiricist perspective on language acquisition (Ted, 2000, p. 109).

On the other hand, Empiricists argue that language learners receive linguistic information together with 'domain-general multipurpose learning mechanisms' which are enough to explain how they achieve language competence (Ted, 2000, p. 110). Nurture is all the environmental variables that impact on who we are, including our early childhood experiences, how we were raised, social relationships and surrounding culture. They also argue whether or not reinforcement helps to enhance grammaticality. Empiricists conclude that direct reinforcement to language acquisition needs someone else to provide it intentionally, while automatic reinforcement happens without someone directly providing the linguistic information (Ted, 2000, p. 114). For example, children encounter direct negative evidence when their incorrect statements lead to corrections. They experience indirect negative evidence when they are usually not shown examples of incorrect grammar (Ted, 2000, p. 125). Pinker (1995) describes negative evidence as an 'information about which strings of words are not grammatical sentences in a language such as corrections or other forms of feedback from a parent that tell the child that one of his/her utterances is ungrammatical (Ted, 2000, p. 116).

Another perception to nature and nurture is interactionism which has become the most recent viewpoint of many developmental scientists (Ted, 2000, p. 107). Contemporary interactionism proposes that both genetic and environmental factors work together to shape an organism's traits but 'the extent of their respective contributions cannot be specified for any traits' (Ted, 2000, p. 107). They claim that 'every trait is produced by the interaction of many developmental resources' (Ted,

2000, p. 107). Hence, focus should be on how nature and nurture interact to contribute to human traits. Logue et al. (2024) present a cross-sectional study of 40 Arabic sequential bilingual children in Northern Ireland acquiring English. The bilinguals spoke Arabic at home, originated from 13 different Arabic countries and attended 9 primary schools in Northern Ireland. The study examined how internal (chronological age, age of L2 onset) and external (length/richness of L2 exposure, L2 use at home, maternal education/proficiency, environment) factors predict performance across linguistic domains such as vocabulary, morphology, syntax (pp. 1389-1390). To assess the connection between the internal and external factors across the language domains, the mixed effect logistic regression models were used to predict correct and incorrect responses in children's production and comprehension (p. 1394). The findings of the study revealed that the longer exposure to L2 facilitated the acquisition of both third person singular and past tense morphology. Moreover, internal and external factors affected all the language domains examined but the L2 use at home did not reflect proficiency. Further, the internal factors such as biological and cognitive elements (e.g., age of L2 onset, memory, attention, analytic reasoning) and external factors (e.g., language exposure quantity and quality) affect linguistic development. Lastly, younger age of L2 onset contributes to greater linguistic proficiency, while older participants show greater proficiency due to cumulative experience in both L1 and L2 (Logue, et al., 2024, pp. 1397-1400). In fact, they claim there were 'no interactions between the internal and external factors for morphemes' (p. 1401) but submit that vocabulary and morphology development require an overall exposure of the L2 (p. 1403).

The constructivist approach emphasises the need for 'theories that specify the learning and processing mechanisms that enable children to develop linguistic representations' (Rowland, et al., 2026, p. 26). Rowland et al. use the constructivist approach to language development which observes that children are able to actively construct language through prior knowledge and their interactions with the environment. This theory contrasts with the empiricist model, which focuses on structure-building through predictive learning (p. 26). Rowland et al. (2026) point out that constructivism influences how the brain acquires language throughout development which helps to elicit new input and developmental changes (p. 29). Thus, supporting the 'functional and structural adaptations to the neurobiological substrate of the brain' (p.

29). From the foregoing, they assert that language is interwoven with broader social, cognitive and motor systems and does not exist in isolation (p. 33). The study depicts that postnatal brain maturation constrains language acquisition at different age levels. Thus, ‘a certain period of time is necessary for the creation of increasingly complex representations which are built iteratively and interactively on earlier, simpler ones’ (p. 33).

Using the continuity and maturation hypothesis, Babatunde and Arokoyo (2011) examined the development of pronouns by children acquiring Yoruba as their first language. The database consisted of longitudinal and cross-sectional studies of children between the ages of fifteen (15) and sixty (60) months. The longitudinal study involved three children whose speeches were recorded by their parents between fifteen (15) and thirty-six (36) months; whereas the cross-sectional study involved 40 children between thirty-six (36) and sixty (60) months. The study revealed that there are different types of pronouns available to the child. It was also discovered that from the very early stage, the Yoruba child begins to use object pronouns and then gradually develop other pronouns. These pronouns occur in subject, direct object and indirect object positions. The study submitted that both cognitive and syntactic factors are responsible for the acquisition of pronouns by the Yoruba child. It was then concluded that the transition from nominal reference to pronominal reference marked an important point in the language acquisition ability of Yoruba-speaking children. The study upholds the impact of nature and nurture in the acquisition of pronouns by Yoruba children.

With respect to second language acquisition processes therefore, we should assume the natural essence or genetic codes that children in this situation have inherited from parents have been exhausted. This is because the Nigerian child has been exposed to their native language since birth and it is out of necessity or compulsion that the child learns English. Medubi (2003) asserts that “most users of English as L2 already have a native language in which their competence is comparable to a native speaker of English” (p. 135). Hence, the external influences such as nurturing, teaching and other social factors help the Nigerian child to acquire English as a second language since English is the official language.

For this study therefore, it comes to the fore that the naturally inherited ability to understand language is a foundation for the

acquisition of English as a second language. The development of English is almost completely dependent on environmental factors. Thus, in the Nigerian perspective, a Nigerian child cannot acquire English as a second language if there are no environmental influences such as the caregivers, parental speech, peer group, home and school environment and other social factors. Topically, it follows that even though the naturally inherited ability is important in the development of a second language, environmental influences are more imperative in enhancing the acquisition of English in Nigeria. It is imperative at this juncture to explain the elements that are evident in this study namely: sequential and simultaneous acquisition, age of acquisition, language modes and setting.

Sequential Acquisition

Steinberg (1993) describes the process of learning languages sequentially as a situation where a child learns one language at home and another in their community (p. 253). This means that the parents use one language while the community uses a different one. For example, a child might speak Yoruba at home but learn English outside in their neighbourhood. The different times when each language is learned are called sequential language acquisition. He believes that ‘children in natural situation acquire second language more quickly than the first’ (Steinberg, 1993, p. 255). In addition, Li (2013) claims that successive language acquisition can “occur across the lifespan in adolescence, adulthood and childhood” (p. 145). He notes that successive language acquisition and second language acquisition are closely related because of the clear distinction between the learner’s first and second languages. According to Li, “in most cases, the first language is the native language, the second language is the normative language, the less dominant, less frequently used and weaker language” (Li, 2013, p. 145). He further argues that the theoretical issues in simultaneous acquisition are similar to those in first language acquisition because both focus on childhood. Therefore, researchers avoid labelling a bilingual child’s languages as first and second in cases of simultaneous acquisition.

Simultaneous Acquisition

Yip (2013) on her part defines BFLA “as the concurrent acquisition of two languages in a child who is exposed to them from birth and uses both regularly in early childhood” (p. 120). She affirms that this definition does not include passive bilinguals who only produce one of the

languages they acquire. This portrays that there are divergent views on simultaneous acquisition of languages. Yip further explains that “early childhood” is assumed to be pre-school years to five years after which the effect of school creates a difficult picture of early childhood acquisition. Likewise, she notes that the two languages in a bilingual do not develop like the monolingual counterpart. More so, it does not mean that a bilingual child can become “two monolinguals”. She however argues that neither of the two languages in simultaneous acquisition has more privilege over the other, but she notes that “in practice however a dominant or stronger language can often be identified” (Yip, 2013, p. 120). On his part, Grosjean (2008) also reveals that some researchers claim that the simultaneous bilinguals are often in the bilingual mode because their caregivers are bilinguals (p. 255).

Age of Acquisition

McGregor (2001) states that “different generations of speakers often show differences in speech” (p. 163). He further observes that some terms in a language may become standard lexemes while many do not survive long but “their use can be characteristic of a particular generation group, the youth of a certain time”. He affirms that age essentially influences L2 acquisition amongst other factors (McGregor, 2001, p. 218). Likewise, Logue et al. (2024) observe that researchers in studies about bilingualism, usually look at age in two ways. The first is by checking the age when they collect data, called ‘age at time of testing or chronological age’. The second way is by noting when a person first has meaningful exposure to the second language, known as ‘age of L2 onset’. Both of these measures affect how language acquisition occurs in different but connected ways (p. 1384).

Language Setting

McLaughlin (1985) reveals that several researchers in child language “argued that for all children, the language of the school is different in significant ways, from the language of the home” (p. 160). Language is therefore restricted to its context of situation. This study predominantly compares the acquisition of two inflections by sequential and simultaneous bilinguals in the natural setting.

Theoretical Framework

Most theories of language acquisition emanate from the premise of nature and nurture. There are numerous theories and models which have discussed child language acquisition and development such as the innate theory, behaviorist theory, social interaction theory, cognitive development theory, interactionist theory and other models of language acquisition. This study employs a Model for Psycho-Sociolinguistics Knowledge of Language Acquisition by Amuda and Medubi (2018, p. 183). The model is based on the premise of the nature and nurture approach to linguistic development. It explains how linguistic information are processed through the coexistence of some internal and external factors. These factors may either facilitate or impede the acquisition and use of a language. In Amuda's study, the model exhibits the interaction between nature and nurture in the acquisition of six inflectional morphemes by Nigerian children aged 2:0-6:6 years at home and aged 3:0-9:0 years at school. Consequently, Amuda (2018) defines psycho-sociolinguistics 'as a critical analysis of linguistic knowledge through mental mechanisms in relation to socio-environmental factors (p. 179).

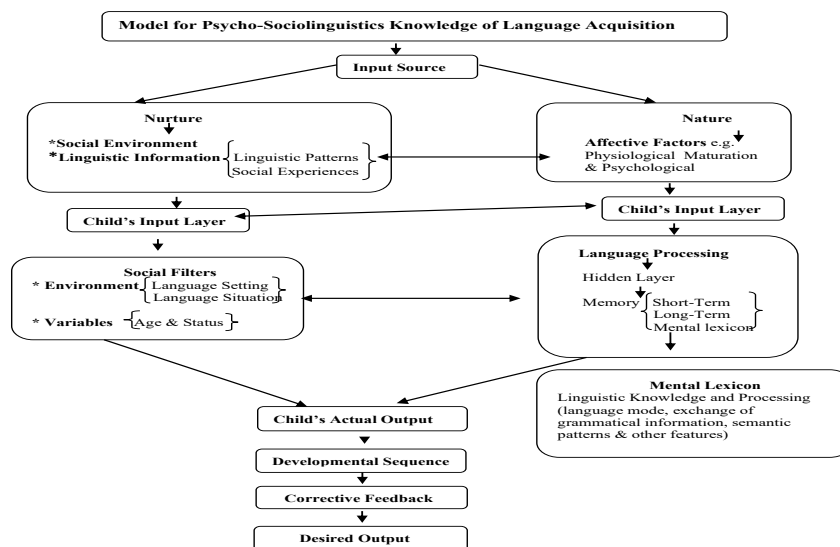


Fig. 1: Amuda, Medubi & Babatunde (2026) Model for Psycho-Sociolinguistics Knowledge of Language Acquisition in Children

In the model above, the child acquires linguistic knowledge through their conceptual experiences and exposure to linguistic data through interactions with caregivers, parents, teachers, peers, etc. For instance, Medubi (2010) claims that “interactions are socially organised, utterances convey rules about social living, bonding and even constraints” (p. 3) while social knowledge consists of “world, background and contextual knowledge...” (Medubi, 2010, p. 4). Thus, these linguistic data derived from social knowledge and interactions serve as the input for the child’s production. The quality, consistency and duration of input are crucial determining factors of input, intake and output. At the same time, every child has their internal or physical ability to perform any form of actions. The capacity of the child’s brain to process and assimilate linguistic information is very important.

Thus, as language is derived from nurture through socio-environmental factors and linguistic information, the processing of language in a child’s brain also depends on physiological and psychological maturations (Amuda, 2018, p. 184). These forms of maturation can either facilitate or impede language acquisition. Papalia, Olds and Feldman (2004) describe maturation of the body and brain as “the unfolding of a natural sequence of physical changes and behaviour pattern, including readiness to master new abilities such as walking and talking” (p. 9). In essence, physiological and psychological developments involve the “growth of the body, brain, sensory capacities, motor skills and health” (Papalia, Olds & Feldman, 2004, p. 8). Therefore, the nurture and nature sources of input coordinate the child’s input layer where they try to understand the linguistic information. Nonetheless, the child’s input layer is influenced by various external factors (social filters) which may cause variation in processing, acquisition and use. The social filters are socio-environmental influences which may either facilitate or hinder the processing and acquisition (Amuda, 2018, p. 185).

The hidden layer is the memory in the brain and it constitutes the language processing mechanism. In the memory, there are three components namely: short-term memory, long-term memory and the mental lexicon. The hidden layer is crucial for the internalisation of the grammar of the language. It is the actual processing point for all acquired and learnt linguistic knowledge. Network connections of the features of the units of both first and second languages are processed here, that is,

acquired linguistic knowledge is analysed in the hidden layer. The mental lexicon which the child derives from nurture sources contains the linguistic information and the analysis processes such as the exchange of grammatical information (shows mapping of lexical items/inflections in different contexts), language modes continuum (interactions of languages), semantic patterns (signify the word/inflection meaning), etc. In fact, the hidden layer gingers and helps to produce the child's output. The child's actual output forms the developmental sequences. The developmental sequences serve as the continuous production leading to the desired output and it shows the stages of development in the acquisition process. Nonetheless, the actual output receives corrective feedback which enables the child to produce the desired output at the appropriate age. This model is used to analyse the acquisition and use of the possessive and agreement inflections by four Nigerian children aged 2;0-6;6 years in a longitudinal study. Below is a brief discussion of the components in the mental lexicon which are employed for analysing the data for this study.

Exchange of Grammatical Information and Semantic Patterns

This section explains how the brain processes linguistic information and the meaning they represent. According to Wang et al. (2024), Research has shown phonological and semantic specialisation during word processing, but there is still no agreement on how semantic and syntactic processing are specialized during sentence comprehension. Different language models propose different brain regions for syntax and semantics (p. 1). For instance, some models assign separate areas to syntactic and semantic processing, whereas others argue that syntax and lexico-semantic processing are closely intertwined and cannot be clearly separated. Due to the fact that lexical items carry both semantic and syntactic information, changes in meaning often affect syntactic processing as well, making it difficult to localise syntax independently. Despite these disagreements, most theories consistently identify the left inferior frontal gyrus (IFG), superior temporal gyrus (STG), and middle temporal gyrus (MTG) as key regions involved in auditory sentence processing.

Research on the development of semantic and syntactic specialization in children remains limited (Wang et al., 2024, p. 1). A study of German-speaking children aged 5–6 years found greater activation in the left IFG pars opercularis when processing syntactic

violations than semantic violations or correct sentences. However, no brain regions showed stronger activation for semantic violations, providing only limited evidence for distinct semantic and syntactic specialization during childhood sentence processing. In a previous study, Wang et al. (2024) found that in 5–6-year-old children, the left MTG was specialized for semantic processing, while the left STG responded to both semantic and syntactic information without clear specialization. These patterns persisted in 7–8-year-old children and the left IFG pars triangularis additionally began to show semantic specialization during incorrect sentence processing (Wang et al., 2024, p. 2).

Researchers of behavioural studies depict that kids usually learn morphosyntactic knowledge by the time they are 9;0 or 10 years old, thus, they hypothesized that these children would keep showing special skills with meaning in certain brain areas like the left MTG and IFG pars triangularis (Wang et al., 2024, p. 3). They thought these kids would also be sensitive to both meaning and sentence structure in the left STG and start to develop sentence structure skills in the left IFG pars opercularis. They submit that this finding supports the Interactive Specialization Theory which ‘argues for increased specialization as children develop’ (p. 3). Wang et al., (2024) therefore conclude that children aged 9;0-10 show a specific use of syntax in the left part of the brain called IFG pars opercularis when they process incorrect sentences. This suggests that this area is important for understanding grammar. However, other areas like the left STG, MTG and IFG pars triangularis reacted to both meaning and grammar without a clear focus on one. For younger children aged 5;0-10 years, the results indicated that they are starting to develop this specific use of syntax in the left IFG pars opercularis, while their ability to understand meaning decreases. Nevertheless, they become more aware of grammatical information in the left MTG and IFG pars triangularis (p. 14).

Language Mode Continuum

Nigeria children are either bilingual or multilingual speakers. It is assumed that in a bilingual interaction, activation can occur at various levels of the language that is not in use. This will affect the internal processes that precede the actual output and amount of code-switching and borrowing that take place. These modes are the monolingual, intermediate and bilingual modes which are contained in Grosjean’s model (Grosjean, 2008, pp. 38 - 41).

According to Grosjean (2008), language mode is “the state of activation of the bilingual’s languages and language processing mechanisms, at a given point in time” (p. 38). The activation is a continuous variable which ranges from no activation to total activation and it usually concerns two languages (Grosjean, 2008, p. 39). Most importantly, there must be a base language referred to as Language A (Lang. A) which serves as the main language used in the specific interaction and the comparative activation level of the two languages. Put differently, the base language and the guest language which is the other implicit language that is activated according to the movement along the situation continuum (Grosjean, 2008, p. 41). Grosjean's (2008) Language Mode Continuum explains how bilinguals switch their language use based on the situation. In the monolingual mode, only one language is in use while the other is turned off. The intermediate mode allows code-mixing of words and phrases from another language (guest language) to the base language. In the bilingual mode, both languages are fully active, allowing for natural mixing of languages. This demonstrates that bilingual language behaviour changes and it is context-dependent rather than fixed. This study highlights how the selected children move from one mode to the other during the processing and use of the inflections. It is imperative to provide a succinct introduction on inflection.

Morphology

Demarcating morphological and syntactic usage of inflections, Aronoff and Fudeman (2011) assert that a morphologist believes multiple forms of a lexeme (a lexeme has a specific sound and meaning which vary according to the syntactic context (p. 43) determine the presence of inflection in a language. In other words, a lexeme with one form alone will not allow any inflectional formation. They explain that this is not the case to a syntactician who assumes that a specific notion such as number or case is present in the syntax even if it is absent in the language (Aronoff & Fudeman, 2011, p. 197). For instance, subject-verb agreement occurs even in an abstract sense. The abstract form occurs in Chinese where the verb is not dependent on the subject; English and Russian where the form of the verb changes according to the person (first, second and third). Thus, “morphological inflection is realized overtly, where syntactic inflection may or may not be” (Aronoff & Fudeman, 2011, p. 197).

More so, they claim that morphologists represent inflections in terms of bound forms; that is, a syntactic category should occur using bound forms to represent a morphological inflection. For example, the sentences, “She will come to the market and She must come to the market” are only different in the use of modal creating syntactic categories without any morphological process. This is because they are separate words rather than bound forms. Consequently, Aronoff and Fudeman, (2011) add that “it is surprisingly easy to find languages where verb inflection is obligatory in some contexts but impossible in others” (p. 197). These variations depend on the syntactic context, rather than the tense, which is expressed as an inflectional part of the verb itself”. (Aronoff & Fudeman, 2011, p. 199). This study focuses on the processing and use of the possessive -‘s and agreement ‘-s’ inflections. The possessive inflection shows ownership or compares relationships in sentences while the agreement marker “s” occurs with verbs when they (verbs) are preceded by third person singular pronouns, indefinite pronouns and singular nouns and are affected by person, number and tense.

Methodology

A psycho-sociolinguistic approach is employed in this study using Amuda and Medubi Model for Psycholinguistics Knowledge of Language Acquisition in Children (2018). The model highlights the nature and nurture interaction in the acquisition of the two inflections under study. Spontaneous utterances of four children aged 2:0-4:0 years in Nigeria were recorded in a longitudinal study carried out for a period of two and a half years. The recording was done when the children were in interactions with peer groups, neighbours, parents and relations. These utterances were observed in order to reveal the gradual acquisition of inflections in the natural setting. Also, interviews were conducted on their mothers (at the beginning of data collection) in the natural setting. The interviews were intended to know the languages the children spoke at home with their parents, siblings, friends, relatives and neighbours. This was to enable the researcher determine those of them that were simultaneous or sequential bilinguals from birth. All the parents were degree holders. However, at the end of the data collection, the least age was 4:0 years while the highest age was 6:6 years.

Two of the children are siblings whose parents spoke only Yoruba to whenever they are at home. However, their mother started

speaking English to them when the first child began school at age three (the second was almost 2:0 years). The children however communicate in English when they talk to each other and in interactions with their neighbours, friends or visitors who are not relations (when their residence was changed to a different environment). On the other hand, the parents of the other two children spoke both Yoruba and English to the children from birth (the children are from different parents). Hence, the first category are sequential bilinguals while the second are simultaneous bilinguals.

Data Analysis and Discussion

The data are represented with various tables while the model shows the processing and use of the inflections under study. The ages are grouped at six months interval – i.e. 2:0-2:6; 2:6-3:0 and so on. This is to help reveal the rate of acquisition and the changes that may have resulted from the acquisition of the inflections under study.

Table 1: The Possessive Inflection in Sequential and Simultaneous Situations

Age Group	Sequential Situation		Simultaneous Situation	
	Frequency	Percentage	Frequency	Percentage
2:0 - 2:6	0	0	0	0
2:6 - 3:0	0	0	0	0
3:0 - 3:6	0	0	0	0
3:6 - 4:0	0	0	0	0
4:0 - 4:6	1	2	0	0
4:6 - 5:0	0	0	0	0
5:0 - 5:6	7	7	0	0
5:6 - 6:0	13	12	0	0
6:0 - 6:6	2	3	0	0
Total	23	24	0	0

The possessive inflection did not emerge in the utterances of the children from ages 2:0 - 3:9 in both situations at home. This does not

indicate that the utterances do not represent its use. This omission is evident from age 2:6 years in the sequential situation and age 2:3 years in the simultaneous situation. The following extract exemplifies these uses.

Extract 1

- Its not shoe, is Kareema shoe
- He is touching Jaisha bombom.
- Grandma see, Eniola body is smelling.
- See Mubarak water.
- Come and sit down here, not Baba seat oo.
- Me, I am not touching Precious stomach.
- He is putting nylon inside this boy mouth.
- Is not your book, is mummy own book,
- My mummy is cooking indomie and Eniola indomie.
- Aunty phone is ringing.
- Ah, it is grandma shoe.
- Aunty, see Kareema mouth. Kareema is pushing her mouth.
- If my daddy say that I did not ranging (arrange) my mummy house, my daddy will started beating me.

Furthermore, the possessive inflection emerges at age 4:0 in sequential situation. At age 4:6 - 5:0, the possessive inflection is not used, but its uses increase from ages 5:0 - 6:0. Its occurrence eventually falls again at age 6:0 - 6:6. The table shows a fluctuation in the use of the possessive inflection. In addition, ages 5:6 - 6:0 have the highest frequency of occurrence (13). This means that the children in a sequential situation use the possessive inflection mostly at ages 5:6 - 6:0 while there are no correct uses at all in simultaneous situation.

Extract 2

The use of the possessive by sequential bilinguals.

- This one that you use to take this arugbo head to grandpa's house.
- One day, I was in grandpa's room, me, I was talking ni oo.
- I use to go to big mummy's place.
- I even watch one film in big mummy's house.
- Agba is grandpa's place.

- Is it your mummy's own?
- There is one house near big mummy's place, if big mummy is not at home, I will now go there and stay.
- Grandma's place the first road that is round like this, then you should be going straight.
- One girl remember that what of Aunty's duster, we now forget again.

There are numerous utterances in the data collected from this study that show absence of the possessive inflection. Hence, children at aged 4:0 - 6:6 in this study have not adequately mastered the use of the possessive inflection. Below is the model analysis. The possessive inflection emerges once at age 4:0 and reoccurs from ages 5:0 - 6:6. Hence, possessive inflection is absent in the mental lexicon from ages 2:0 - 4:0 and 4:6 - 5:0 in the sequential bilinguals and 2:0-6:6 in simultaneous bilinguals under study in the natural setting. Below is an illustration of the processing.

Fig. 2 Absence of the Possessive Inflection from Ages 2:0-4:0; 4:6-5:0 and 2:0-6:6

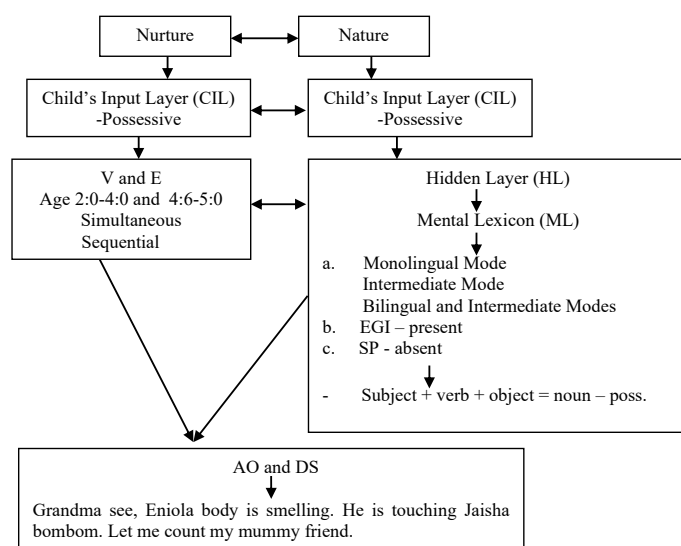


Fig. 2 Absence of the Possessive Inflection from Ages 2:0-4:0; 4:6-5:0 and 2:0-6:6

At age 5:0, the frequency of occurrence of the possessive inflection increases. However, the possessive inflection does not occur at all from ages 2:0 - 6:6 in the simultaneous situation. Therefore, from ages 5:0 - 6:0 in the sequential situation, children begin to process and use the possessive inflection gradually. Below is an illustration of the processing and use.

Fig. 3 Processing and Use of the Possessive Inflection from Ages 5:0-6:6

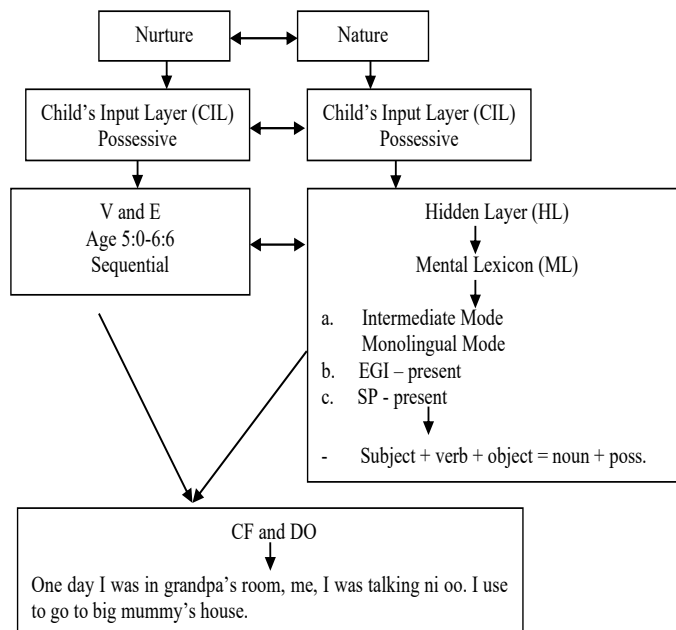


Table 2: The Agreement Marker in Sequential and Simultaneous Situations

Age Group	Sequential Situation		Simultaneous Situation	
	Frequency	Percentage	Frequency	Percentage
2:0 - 2:6	0	0	0	0
2:6 - 3:0	0	0	1	1
3:0 - 3:6	0	0	0	0
3:6 - 4:0	0	0	1	1
4:0 - 4:6	1	2	0	0
4:6 - 5:0	0	0	1	2
5:0 - 5:6	2	2	0	0
5:6 - 6:0	7	6	0	0
6:0 - 6:6	0	0	0	0
Total	10	10	3	4

The agreement marker emerges at age 2:8 and 3:7 in the simultaneous situation while it appears at age 4:0 in the sequential situation. Nonetheless, the occurrences are on regular words. So, the study shows that the agreement marker is rarely used in natural setting from ages 2:8 - 5:0. For example,

Extract 3

Is my aunt that owns it.
Who owns the water?

These utterances show that the word ‘owns’ is a regular word used by a child in the simultaneous situation. This does not mean that the child has mastered the appropriate use of the agreement marker. There are several utterances in the data collected, which are uninflected with the agreement marker in the required contexts. For instance,

Extract 4

- He want to watch it.
- Is Precious, he want to take your ball.
- Baraka want to bite me.
- Ojujuwant to carry you, you are big.
- Aunt, Eniola want to tear my cloth.
- Eniola wantto fall me down..
- This John like fighting somebody.
- Rain want to fall.
- If she want to collect my bottle, I will now throw it away, I will be looking for it.
- If she now see that we are looking T.V., she will not let the T.V. talk.
- He say that he like Samra.
- This my leg want to tear like this.

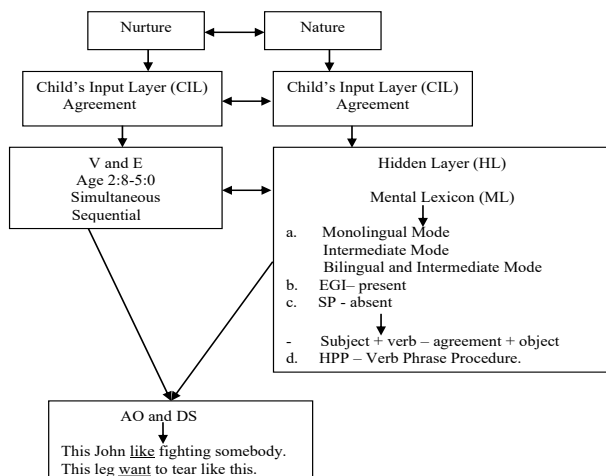
The table shows that the agreement marker occurs at ages 4:0 - 4:6; 5:0 - 5:6 and age 5:6 - 6:0 has the highest frequency of occurrence. This indicates the children use the agreement marker mostly at age 5:6 - 6:0. For example,

Extract 5

- She know how to work and she knows how to cook.
- Aunti Funmi come and collect fetcher, she wants to use it to fetch water.
- Who owns this?
- My brother likes playing ball.
- He likes drinking water.
- If he sees that I am drinking water and I will quickly give him what he wants.

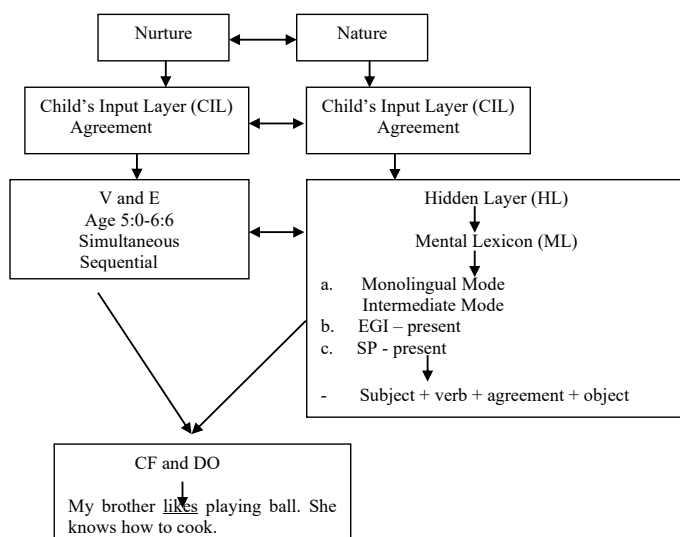
Thus, the table above depicts that the bilinguals under study have not mastered the use of the agreement marker in all other required contexts. The model below shows absence of the agreement marker.

Fig. 4 Absence of the Agreement Marker from Ages 2:8-5:0



From ages 5:0-6:6, the frequencies of occurrence increase. The processing and use of the inflection is as follows:

Fig. 5 Processing and Use of the Agreement Marker from Ages 5:0-6:6



Findings

Children in simultaneous (2:3) situation produce utterances that are unflected with the possessive inflection earlier than those in sequential (2:6) situation. Moreover, children in sequential situation use the agreement marker more as they grow older unlike those in simultaneous situation. Nevertheless, the agreement marker emerges earlier in simultaneous bilinguals. The processing and use of both inflections increase at age 5:6-6:0 in sequential bilinguals.

Explaining the nature and nurture approach to language acquisition in this study, the model shows that both sequential and simultaneous bilinguals switched between three different language modes during their interactions when using unflected forms. The possessive inflection indicates that the sequential bilingual shifted between intermediate and monolingual modes. In the monolingual mode, the main language changes from the indigenous language to English based on who the children are talking to and what type of conversation they are having. The intermediate mode leads to code mixing. However, the processing and use of the agreement marker show a shift from monolingual mode to intermediate mode.

In essence, this analysis helps to elucidate how both nature and nurture play a role in bilingual language development through the psychological and physiological maturation of children. This reflects in the increasing use of inflections as they grow older. This supports Rowland et al. (2026) claim that postnatal brain maturation constrains language acquisition at different age levels. In addition to Wang et al., (2024) view that children develop a certain use of syntax from age 5:0-10 years (p. 14).

Conclusion

The acquisition process is characterised by fluctuation in both sequential and simultaneous situations. Although the frequencies of occurrence of these inflections differ, children in both situations process and use both inflections the same way. Both nature and nurture influence the acquisition of the inflections in Nigerian bilinguals.

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