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**PHONOLOGICAL SIMPLIFICATION THROUGH CONSONANT  
SUBSTITUTION AND DELETION IN IBIBIO CHILD LANGUAGE**

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**Abstract**

Ibibio is a Lower Cross language spoken predominantly in Akwa Ibom State, Nigeria. This study investigates consonant substitution and deletion processes in the speech of Ibibio speaking children aged two to six years. The study demonstrates that children's speech reflects systematic phonological simplification strategies that contribute to developmental variation within the language. Using a descriptive method of data analysis, naturally occurring speech data were collected from five typically developing Ibibio speaking children and compared with adult target forms. The analysis reveals recurrent consonant substitution processes—such as fronting, backing, labialization, nasalization, denasalization, gliding, devoicing, and voicing as well as consonant deletion processes involving initial, medial, and final consonants. The findings further show that not all of Ingram's substitution processes are attested in the children's productions. Substitution and deletion processes are most frequent among children aged two to four years, while a marked reduction is observed in children aged five to six years, indicating a strong correlation between phonological maturation and chronological age. While some of the identified processes mirror patterns in adult Ibibio phonology, others are developmentally specific and peculiar to child speech. The study establishes that consonant substitution and deletion are normal features of phonological development in Ibibio speaking children and provides a baseline for distinguishing typical developmental patterns from potential speech disorders. Although consonant substitution is evident across all age groups, some of the observed processes reflect patterns found in adult Ibibio phonology, while others are uniquely characteristic of child speech. The study highlights the role of age-related phonological development in shaping the speech patterns of Ibibio speaking children and contributes to the documentation of child phonology in an understudied African language.

Keywords: Consonant substitution; Consonant deletion; Phonological development; Child language acquisition; Ibibio speaking children

## Introduction

Ibibio is a language spoken in Akwa Ibom State in the Niger-Delta region of Nigeria. Essien [1] puts the number of speakers at 4 million. Greenberg [2] classifies Ibibio under the Benue-Congo branch of the Niger-Congo family. It is subclassified as a Lower-Cross language of the Cross-River subfamily. Williamson's [3] classification groups it as part of the Lower Cross branch of Delta Cross, along with Efik and AnaaN. In the most recent and currently generally accepted classification, Connell [4] classifies Ibibio as part of the Central Lower Cross subgroup, with Efik, AnaaN and Ukwa forming its most closely related neighbours within this subgroup. (See also Williamson and Blench [5] Ibibio itself has a fair amount of dialect variation. The dialect we will discuss in this article is the Uruan dialect, as spoken in Mbaya, about eight miles from Uyo, the location of the state headquarters.

Ibibio language is mainly spoken in Akwa Ibom State of Nigeria and her environs by about 5million speakers Essien [6]. The language generally has 15 phonemic consonants, 10 phonemic vowels and 5 phonemic diphthongs Essien [7]. Each variety of Ibibio has its own unique phonetic and phonemic systems. The Western Itam variety of Ibibio which is our focus in this investigation has 14 phonemic consonants and 9 phonemic vowels considering only the single units. We shall consider only the consonant substitution and deletion phonetic sounds of the language in the present study.

These consonant substitution and deletion are part of phonological processes which are changes that connect the child's speech to the adults. They operate on the adult's speech as input data, resulting in the child's output. Thus, the child's output is a result of the short-cut processes he employs to simplify the adult speech while attempting to attain the adult forms of the language. There are three major classifications of phonological processes: substitution, assimilatory and syllable structure processes. Yul-Ifode [8] adds dissimilation as a fourth major process. Out of the four stated phonological processes, we focus on substitution processes. Consonant substitution processes involve changes, such as one sound class changing to another sound class. Changes may occur in place of articulation, manner of articulation, or voicing. Examples include fronting ("tall" for "call"), affrication ("chew" for "shoe"), and voicing (i.e. "doo" for "two").

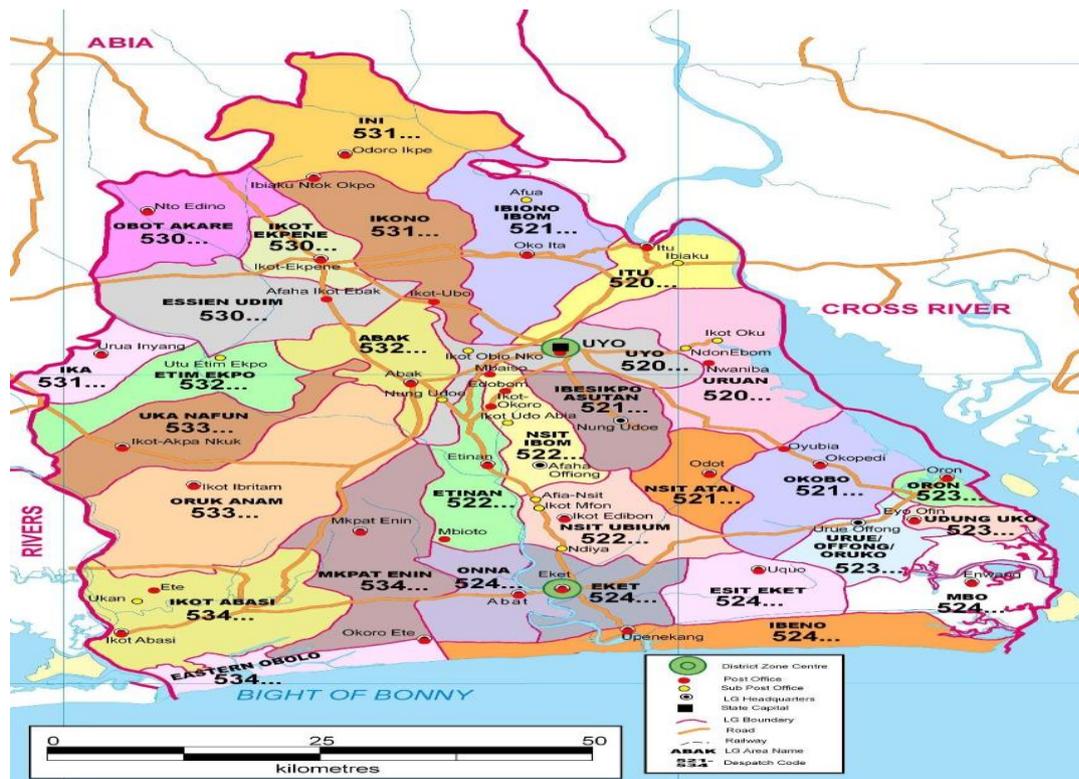
Available records show a long tradition of child language studies in different parts of the developed world such as Britain, America, Germany, etc. In Nigeria, however, the frontiers of linguistic research have been largely extended to incorporate this area, only in recent years. Presently, research on child language development constitutes a major field of interest. The call in linguistic circles for societal application and relevance has helped to boost the desire in scholars to probe deeper and break new grounds within developmental linguistics.

Consequently, Nigerian linguists from diverse linguistic groups have carried out research on children from these various linguistic backgrounds including Igbo, Yoruba, Hausa, Ikwerre, Okrika, Nembe, Urhobo, and other languages in Nigeria. These works are projects, dissertations, seminar papers from different Nigerian Universities, in addition to a few published articles on the subject. The availability of these works in Nigerian universities is a good indication that sooner than later the Nigerian linguistic school is going to witness the emergence of adequate published materials in this area of research. The research at hand is one of the pioneer works in the same direction. There is the great need for the Ibibio child to communicate effectively in the medium of language, with other members of his speech community. Effective communication can only take place when the information sent out is the same as the information received. Thus, at an early stage of life, where a child is unable to produce these basic sounds of communication, if care is not taken, those apparently minor deviations may become established disorders. This makes communication ineffective. For instance, one's voice quality can suggest one's age, sex and physical state, indicating some voice disorder. For a child to function well in society, he must be able to communicate adequately. His ability to communicate well means that he has acquired the sounds of his language, and can use the language in his everyday to day interaction with other members of his speech community. It is for this reason that our work, one of the pioneering studies on the Ibibio child, investigates the segments. Studies of normal child language like ours help to provide the norm from which the language of the abnormal can be studied.

This paper aims at investigating the consonant substitution and deletion in a two to six years old Ibibio speaking children. First, identify the consonant substitution and deletion types employed by a two to six years old Ibibio speaking children. Second, analyse the consonant substitution and deletion types in two to six years old Ibibio speaking children. Third, attest the number of consonant substitution and deletion types in the Ibibio children.

## Akwa Ibom Map

Ibibio is the major indigenous language of Akwa Ibom State in the South-South region of Nigeria. It is spoken by the Ibibio people in a large part of the state, particularly in local government areas such as **Etinan, Ibiono-Ibom, Ikono, Ikot Abasi, Itu, Mkpát Enin, Nsit Atai, Nsit-Ubium, Onna, Uruan, Uyo, and Ini**. These areas comprise the core Ibibio homeland within Akwa Ibom and reflect the territorial distribution of the language within the state.



## Literature Review

Studies on child phonological development have consistently shown that children's early speech differs systematically from adult target forms. These differences are not random errors but reflect developmental strategies used to simplify complex sound structures. Researchers such as Jakobson (as cited in Ingram [10]) describe phonological acquisition as an interaction between the child's internal cognitive organization and the linguistic input available in the environment. This interaction explains why children across languages exhibit similar developmental patterns despite differences in phonological systems.

Chomsky (as cited in Aleruchi [11]) proposes that the human capacity for language is innate, providing children with an underlying ability to acquire linguistic systems. However, the realization of this capacity depends on exposure to linguistic stimuli and social interaction. Consequently, phonological development is shaped by both biological predispositions and environmental factors. Children actively engage in communication long before they master adult-like pronunciation, using available phonetic resources to convey meaning.

Previous research indicates that children commonly experience articulation difficulties during early stages of language development, particularly with consonant sounds. By the age of two, children typically understand significantly more words than they can produce and are already active conversational participants (Yule [12]). During this period, misarticulations are common and are widely regarded as normal developmental phenomena. These patterns are referred to as phonological processes, reflecting children's attempts to simplify adult speech forms.

Several scholars have proposed classification systems for phonological processes (Hodson [13]; Ingram [14]; Khan [15]). These systems reveal shared characteristics across languages and provide analytical tools for relating children's productions to adult target forms. Grunwell [16] identifies three major categories of phonological processes: **syllable structure processes**, **substitution processes**, and **assimilation processes**. This framework enables systematic identification of deviations in child speech.

Empirical studies further suggest that phonological processes follow identifiable developmental timelines. Longitudinal and cross-sectional investigations (Crary et al. [17]; Hodson & Paden [18]) indicate that while some processes typically resolve by the age of three, others may persist beyond this age (Stoel-Gammon & Dunn [19]). Although individual variation is considerable, these findings provide a general developmental benchmark for evaluating typical and atypical phonological development in children.

### **Theoretical Framework**

This study is anchored in the **Usage-Based Theory of language acquisition**, as advanced by Tomasello [9]. The theory emphasizes that language is acquired through actual language use in communicative interaction rather than through the activation of a pre-specified grammatical system. Linguistic structures, including phonological patterns, are viewed as

emergent properties derived from repeated instances of language use in meaningful social contexts.

According to Tomasello, children begin language acquisition at approximately one year of age equipped with general cognitive abilities that originally evolved for non-linguistic purposes. Two central principles guide this process: **intention-reading** and **pattern-finding**. Intention-reading enables children to infer the communicative goals of adult speakers, while pattern-finding allows them to detect regularities across utterances and form abstract linguistic constructions.

Pattern-finding plays a crucial role in phonological development, as children gradually organize the sounds they hear into systematic patterns. Before acquiring conventional linguistic forms, children communicate through gestures, pointing, and shared attention within joint intentional frames. As exposure increases, they begin to internalize phonological patterns from their linguistic environment, leading to progressively adult-like sound production.

Within the usage-based framework, phonological development is understood as a gradual, stage-based process in which children employ simplification strategies to approximate adult targets. Consonant substitution and deletion are therefore viewed as natural outcomes of limited articulatory control and developing cognitive representations. These processes reflect children's active engagement with language input and their efforts to construct phonological systems from usage.

The usage-based approach is particularly suitable for the present study because it accounts for both universal developmental tendencies and language-specific variation. It provides a robust explanatory framework for analyzing consonant substitution and deletion in Ibibio-speaking children and for understanding how phonological patterns emerge through repeated interaction within the child's linguistic environment.

### **Empirical Review**

Everyone experiences the process of acquiring language differently. Language acquisition is the process of mastering the language that is done by children naturally when he learns his native language. Language acquisition is distinguished by language learning. A person's first language is the mother tongue that the child gets from his environment. Whereas language

learning is related to the processes that occur when a child learns a second language after he obtains his first language. Parents must understand language development in children and understand the character of social influence is very important for education. Thus, language acquisition is related to the first language, while language learning is related to the second language (Chaer, [20]; Djarwodidjojo, [21]; Tarigan, [22]; Fatmawati, [23]; Molai, [24]). In acquiring language, someone will go through several stages. This is as stated by Maksan[25] who divides the process of language acquisition into six stages: babbling (0; 0-1; 0), holophrase (1; 0-2; 0), two words (2; 0-2; 6), beginning of grammar (2; 6-3; 0), approaching adult language (3; 0-4; 0), and full skills (4; 0-5; 0).

Child language acquisition begins with phonology acquisition. Phonological studies aim to find phonemes including discussing the role of phonemes in forming syllabic structures. (Subroto, [26]; Amril, [27]) Therefore, phonology acquisition related to the preparation process comprising vowel, consonants and double vowels (diphthongs). Increasing age will widen the oral cavity. This growth provides a greater space for children to produce language sounds, Fatmawati [28].

### **Methodology**

The data of this research were the forms of consonant substitution and deletion, especially on the phonological processes which occurred in the consonant word production of phonology. Data source in this research was from five Ibibio speaking children's speech in naturalistic observation. All words were produced, the children were identified, chosen, and changed of the form of International Phonetic Alphabet along with the Ibibio Orthography for transcription on the note, and recording then moved into making a comparison between the actual words which were produced by the children (Subject) and the intended words' form which were produced by adult (Target). The Subject's speech forms were recorded manually using a recorder and a microphone and finally transcribed for analysis. The study adopts a descriptive approach in analysing the data. It investigates, identified, and analysed the consonant substitution and deletion types in the speech of the Ibibio speaking children.

### **Discussion of findings**

In Ibibio language as in other languages, consonant substitution and deletion was identified in two to six years old Ibibio speaking children which are fronting, backing, labialization, nasalization, gliding, devoicing and voicing consonant substitution, and consonant deletion.

**(a) Fronting in Ibibio speaking children**

A substitution of a sound made in the back of the mouth (velar) is replaced with a sound made in the front of the mouth in two to six years old Ibibio speaking children (e.g., alveolar). (e.g. /efuk/ for [efut] in 3 and 5yrs Subject) shown below in table 1.

**Table 1: Fronting substitution type in 2-6years old Ibibio speaking children.**

Type	Adult	Subject output					Gloss	Change
	Output	2yrs	3yrs	4yrs	5yrs	6yrs		
velar Fronting	/efuk/	[efu]	[efut]	[efu]	[efut]	[efu]	Buttock	[k→t] 3,5yrs
	/mfuk/	[onfo]	[fat]	[mfuk]	[mfuk]	[mfuk]	cheek/chin	[k→t] 3yrs
	/kúɔ/	[núɔ]	[kúɔ]	[kúɔ]	[kúɔ]	[kúɔ]	Sing	[k→n] 2yrs
velar nasal fronting	/sàŋá/	[tàná]	[sàŋá]	[sàŋá]	[sàná]	[sàŋá]	Walk	[ŋ→n] 2,5yrs
	/kpàŋ/	[pan]	[kpa]	[kpan]	[kpá]	[kpàŋ]	Fold	2,4yrs
	/táŋ/	[tán]	[tán]	[táŋ]	[tá]	[táŋ]	Speak	2,3yrs
	/wáŋ/	[won]	[wán]	[wáŋ]	[wán]	[wá]	Wrap	2,3,5yrs
	/utɔŋ/	[uton]	[uton]	[uton]	[uto]	[utɔŋ]	Ear	2,3,4yrs
	/ítaŋ/	[ita]	[ita]	[itam]	[itam]	[itam]	Hat	[ŋ→m] 4,3,5yrs
	/édɔŋ/	[édo]	[édon]	[édɔŋ]	[edɔ]	[édɔŋ]	Knee	[ŋ→n] 3yrs
	/ikpaŋ/	[ikpam]	[ikpa]	[ikpan]	[ikpa]	[ikpaŋ]	Spoon	[ŋ→m→n] 2,4yrs
	/usɔŋ/	[uso]	[usnn]	[usɔŋ]	[usɔŋ]	[usɔ]	Door	[ŋ→n] 3yrs
	liquid fronting	/áfàrá/	[áfàrá]	[áfàrá]	[áfàrá]	[áfàdá]	[áfàdá]	Shoulder
/kéré/		[kéné]	[kéré]	[kéré]	[kada]	[kéré]	Think	[r→d] 5yrs
/kpárá/		[pájá]	[kpárá]	[kpárá]	[kpádá]	[kpáwá]	Push	[r→d] 5yrs
/fúró/		[fúdó]	[fúdó]	[fúdó]	[fúdó]	[fúdó]	Fly	[r→d] 2- 6yrs

From table 1, fronting is the most precise term for the substitution described, especially when referring to a child's speech. Fronting is a type of consonant substitution in Ibibio speaking children where a back sound is replaced by a front sound as in "buttock" /efuk/ as the adult output was substituted to [efuk] by 3 years and 5years Ibibio children substituting the voiced velar plosive /k/ with the voiceless alveolar stop [t] sound, the 2years subject substitute voiced velar plosive /k/ sound with alveolar nasal sound /n/ as in "sing" /kúɔ/ (target) to

[núɔ]. When a velar nasal sound /ŋ/ such as /sàŋá/, /kâŋ/, /tâŋ/, /wâŋ/, /utôŋ/, /édôŋ/, /ikpâŋ/, usâŋ/ ('walk', 'fold', 'speak', 'wrap', 'ear', 'hat', 'knee', 'spoon', 'door') in the target subject was substituted with the alveolar nasal sound /n/ by the 2 years Ibibio child is know as velar fronting. Also, in [pan] and [kpan] "fold" 2 and 5 years subject, in [tâná] and [sâná] "walk" 2 and 5years subject, [tân], "speak" 2 and 3years subject, [won],[wân],[wán] "wrap" in 2,3,5years subjects, in 2,3, and 4years as in [uton], [uton] and [uton] "ear", in 4years subject [itan] "hat" shows palatal fronting. The Ibibio children also show Liquid fronting by substituting voiced alveolar trill /r/ for voiced alveolar plosive [d] such as /áfârá/ for [áfâdá] in 5 and 6years subject, /kéré/ for [kada] in 5years subject, /kpárá/ for [kpádá] in 5years subject and /fúró/ for [fúdó] in 2 and 6years subject and other subjects show accurate production and deletion types.

### (b) Backing substitution in Ibibio speaking children

Backing is the substitution of a sound produced in front of the mouth with a sound produced in the back of the mouth as show in the Ibibio speaking children (e.g. /kòp/ for [kok] in 5yrs Ibibio Subject) shown in table 2. Typically, children who are backing their sounds will require speech therapy. This is an unusual phonological process that often necessitates the help of a speech-language pathologist.

**Table 2: Backing substitution type in 2-6years old Ibibio speaking children**

Type	Adult output	Subject output					Gloss	Change
		2yrs	3yrs	4yrs	5yrs	6yrs		
Backing	/kòp/	[kò]	[kòp]	[kòp]	[kok]	[kòp]	hear	[p→k] 5yrs
	/idung/	[idung]	[idung]	[irun]	[idung]	[idung]	sing	[d→r] 4yrs
	/nkániká/	[kalika]	[nkániká ]	[nkániká]	[nkániká]	[nkániká]	clock	[n→l] 2yrs
	/údôŋ/	[uwo]	[údô]	[údô]	[údô]	[údô]	urge	[d→w] 2yrs

The 2years Ibibio child substitute alveolar nasal /n/ for voiced retroflex lateral approximant [l] such as /nkániká/ to [kalika] "clock" and voiced alveolar plosive /d/ for voiced labio-velar approximant [w] such as /údôŋ/ to [uwo] "urge" while the 4years subject substitute voiced alveolar plosive /d/ for voiced alveolar trill [r] such as /idung/ to [irun] "sing" and the 5years subject substitute voiced bilabial plosive /p/ for voiceless velar plosive [k] such as/kòp/ for

[kòk] “hear” as compare with the target. The other subject gave accurate realisation as that of the target while others show deletion types.

### (c) Labialization in Ibibio speaking children

This occurs when a sound is made more like another sound that uses the lips, or a labial sound in Ibibio speaking children, the voiceless velar plosive [k] in voiceless labiodental plosive /kp/ is influenced by the /p/ making it a simpler labialized sound in 2years child output in table 3 below. Labialization is the substitution of a labial sound for a non-labial sound (e.g. /kpi/ for [pi] in 2yrs Subject) which will resolve by age 6.

**Table 3: Labialization substitution type in 2-6years old Ibibio speaking children**

Type	Adult	Subject output					Gloss	Change
	output	2yrs	3yrs	4yrs	5yrs	6yrs		
Labialization	/kpi/	[pi]	[kpi]	[kpi]	[kpi]	[kpi]	cut	[kp→p] 2yrs
	/kâpa/	[pa]	[kâpa]	[kâpa]	[kâpa]	[kâpa]	die	[kp→p] 2yrs
	/kpàŋ /	[pan]	[kpa]	[kpan]	[kpá]	[kpàŋ ]	fold	[kp→p] 2yrs
	/kpéép/	[péép]	[kpa]	[kpéé]	[kpéép]	[kpéép]	Teach	2yrs
	/kpé/	[pe]	[kpé]	[kpé]	[kpé]	[kpé]	pay	2yrs
	/kpárá/	[pájá]	[kpárá]	[kpárá]	[kpárá]	[kpáwá]	push	2yrs
	/ikpat/	[mepa]	[ikpan]	[ikpa]	[ikpa]	[ikpa]	foot	[kp→p] 2yrs
	/ékpu/	[efu]	[ékpu]	[ékpu]	[ékpu]	[ékpu]	rat	[kp→f] 2yrs
	/ékpèmé/	[epeme]	[ékpèmé]	[ékpèmé]	[ékpèmé]	[ékpèmé]	Bottle	[kp→p] 2yrs

Table 3 shows labialisation in Ibibio speaking children , in the pronunciation of the velar consonant sound in the target subject labio dental velar /kp/ is substitute such as “cut” /kpi/, “die” /kâpa/, /kpàŋ / “fold”, /kpéép/ “teach”, /kpé/ “pay”, /kpárá/ “push”, /ikpat/ “foot”, /ékpu/ “rat”, /ékpèmé/ “bottle” becomes a simpler voiceless bilabial plosive/stop [p] and voiceless labio dental fricative in “rat” /éfu/ in 2years subject. This is an example of consonant substitution type called labialization. The complex labio dental velar sound /kp/ is simplified to a single voiceless bilabial stop /p/ because the /p/ sound is influenced by the neighbouring labial sound.

**(d) Nasalization in Ibibio speaking Children**

Nasalization as a substitution type occurs in Ibibio language as other languages where a consonant is replaced by a nasal sound that shares the same place of articulation as in two to six years old Ibibio speaking children as shown in table 4 below:

**Table 4: Nasalization substitution type in 2-6years old Ibibio speaking children**

Type	Adult output	Subject output					Gloss	Change
		2yrs	3yrs	4yrs	5yrs	6yrs		
Nasalization	/kéré/	[kene]	[kéré]	[kéré]	[kada]	[kéré]	think	[r→n] 2yrs
	/ndito/	[mito]	[nito]	[ndito]	[nito]	[ndito]	children	[m→n] 2yrs
	/kóót/	[ko]	[kood]	[kon]	[kóó]	[kóó]	read	[t→n] 4yrs
	/étòp/	[atom]	[eton]	[eto]	[etò]	[étòp]	message	[p→m→n] 2,3yrs
	/ekomubok/	[ekomubok]	[ekomubo]	[ekomubok]	[ekonuwo]	[ekomubok]	elbow	[m→n] 2yrs
	/iwang/	[iwon]	[iwai]	[iwang]	[iwang]	[iwá]	farm	[ng→n] 2yrs

In table 4, the target output bilabial nasal sound /m/ of /ekomubok/ “elbow”, /ndito/ “children” and /kóót/ “read” was replaced or substitute by 2years Ibibio subject output with alveolar nasal sound [n] as in [ekonuwo] “elbow” in 5 years Subject, and alveolar nasal /n/ to bilabial nasal [m] as in [mito] in 2years Subject. Also, 4years subject output as voiceless alveolar plosive /t/ to alveolar nasal [n] in /kóót/ to [kon] “read”. In 2 and 4years output the voiceless alveolar plosive was replaced with alveolar nasal. The 2years output shows the same as in voiced alveolar trill sound /r/ to voiced alveolar nasal [n] such as /kéré/ to [kéné] “think”, in 2,3years voiceless bilabial plosive /p/ to bilabial nasal and alveolar nasal as in /étòp/ to [etom] and [eton] “message”, and voiced labio dental /ng/ to voiced alveolar nasal [n] as in /iwang/ to [iwon] “farm” in 2years Subject. The original voiceless abstruent is replaced by this new nasal sound, resulting in a nasal consonant that shares the place of articulation of the original as compared to the target output in the 2,3 and 4years Ibibio speaking children replacing the alveolar plosive with alveolar nasal.

**(e) Denasalization in Ibibio speaking children**

Denasalization in the substitution process is when a child replaces a nasal sound like bilabial nasal/alveolar nasal ([m] or [n]) with a non-nasal sound like voiced bilabial plosive/voiced alveolar nasal([b] or [d]). in Ibibio language, six (6) years subject output substitute /n/ for [t] sound as in “waist” (e.g. /isin/ for [isit]).

**Table 5: Denasalization substitution type in 2-6years old Ibibio speaking children**

Type	Adult	Subject output					Gloss	Change
	output	2yrs	3yrs	4yrs	5yrs	6yrs		
Denasalization	/isin/	[isin]	[isin]	[isin]	[isin]	[isit]	waist	[n→t] 6yrs

Table 5 show how the 6years old Ibibio speaking child output substitute alveolar nasal /n/ for voiceless alveolar plosive [t] sound as in “waist” (e.g. /isin/ for [isit]).

**(f) Gliding in Ibibio speaking children**

Gliding is a substitution type which refers to a normal part of early speech development where children substitute liquid sounds /r/ and /l/ with glide sounds /w/ and /y/.

**Table 6: Gliding substitution type in 2-6years old Ibibio speaking children**

Type	Adult	Subject output					Gloss	Change
	output	2yrs	3yrs	4yrs	5yrs	6yrs		
Gliding	/wàt/	[jà]	[wa]	[wà]	[wà]	[wà]	drive	[w→j] 2yrs
	/twá/	[ra]	[twà]	[twà]	[twà]	[twà]	Hit	[w→r] 2yrs
	/kpárá/	[paja]	[kpárá]	[kpárá]	[kpádá]	[kpáwá]	push	[r→w] 2yrs
	/esegeye/	[eseje]	[eseje]	[esegeye]	[eseje]	[esegeye]	baby	[g→j] 2,3,5yrs

From table 6 the two (2)years old Ibibio subject substitute voiced labiodental velar approximant /w/ for voiced palatal approximant [j] in the adult output word as in “drive” /wàt/ for [jà], and also voiced labiodental velar approximant /w/ to voiced alveolar trill [r] as in “hit” /twà/ for [ra] in 2years Subject, and voiced alveolar trill /r/ to voiced palatal approximant [j] as in “push” /kpárá/ for [pájá] in 2years output and the four (4) years old Subject substitute the adult output of voiced alveolar trill /r/ to voiced labiodental approximant as in “push” /kpárá/ for [kpáwá] and “baby” /esegeye/ to [eseje] in 2,3, and

5years output known as gliding while the other Subjects gave the correct production of the adult Subject.

### (g) Devoicing substitution in Ibibio speaking children

Devoicing is when a voiced consonant (e.g. b, d) at the end of a word is substituted with a voiceless consonant (e.g. p, t) as shows in the Ibibio speaking children.

**Table 7: Devoicing substitution type in 2-6years old Ibibio speaking children**

Type	Adult	Subject output					Gloss	Change
	output	2yrs	3yrs	4yrs	5yrs	6yrs		
Devoicing	/úkòd/	[úko]	[úkòt]	[úkò]	[úkòd]	[úkòt]	Leg	[d→t] 3,6yrs
	/béd/	[ba]	[bé]	[bet]	[béd]	[ba]	wait	[d→t] 4yrs

In table 7, two years and six Ibibio Subject shows devoicing consonant substitution that is voiced alveolar plosive /d/ to voiceless alveolar plosive [t] as in /úkòd/ for [úkòt]) and /béd/ for [bet] in four years output as compared to the adult output. The 3,4, and 6years subject replaces the voiced /d/ sound with the voiceless /t/ sound, typically at the end of the words. This is a normal part of speech development for the Ibibio speaking children.

### (h) Voicing substitution in Ibibio speaking children

Voicing is when a voiceless consonant (e.g. t, f) in a word is substituted with a voiced consonant (e.g. d, v). as shown in the Ibibio speaking children.

**Table 8: Voicing substitution type in 2-6years old Ibibio speaking children**

Type	Adult	Subject output					Gloss	Change
	output	2yrs	3yrs	4yrs	5yrs	6yrs		
Voicing	/dòt/	[dò ]	[dòt]	[da]	[da]	[dòd]	draw	[t→d] 6yrs
	/kóót/	[ko]	[kóód]	[kon]	[kóó]	[kóó]	read	[t→d] 3yrs

From table 8, the six years Subject substitute voiceless alveolar plosive /t/ for voiced alveolar plosive [d] as in “draw” /dòt/ for [dòd] and three years Subject substitute voiceless alveolar plosive /t/ for voiced alveolar plosive [d] in the adult output as in “read” /kóót/ for [kóód] and the other Subjects applied deletion processes. This pattern can be present until age 6.

**(i) Consonant deletion in Ibibio speaking children**

Consonant deletion, specifically final consonant deletion, is a common phonological process in young children where they omit the last consonant sound in words. Final consonant deletion occurs in two to six years old Ibibio speaking children where the children drop the final consonant sound of a word, making their speech less clear. This simplification is a normal part of speech development as children learn to articulate complex sounds. Final consonant deletion refers to the tendency of children to drop the last consonant sound in words. Initial consonant deletion refers to drop the last consonant sound in words, and medial consonant deletion is done at the middle consonant sound in words as shown in table 9,10,11and 12.

**Table 9: Consonant deletion of alveolar sound in 2-6years old Ibibio speaking children**

Type	Adult	Subject output					Gloss	Deletion sounds
	output	2yrs	3yrs	4yrs	5yrs	6yrs		
FCD	/ébót/	[ebo]	[ebu]	[ebo]	[abu]	[ebo]	goat	[t] 2-6yrs
	/édèt/	[ede]	[ede]	[édèt]	[édèt]	[édèt]	tooth	[t] 2,3yrs
	/itɔŋukot	[itɔuko]	[itɔuko]	[itɔŋukot]	[itɔŋukot]	[itɔŋukot]	ankle	[t] 2,3yrs
	/ikpát/	[mepa]	[ikpan]	[ikpan]	[ikpan]	[ikpát]	foot	[t] 2-5yrs
	/nnonukot/	[inuouk]	[nnonukot]	[nnonukot]	[nnonuko]	[nnonukot]	Toe	[t] 2,5yrs
	/esit/	[esa]	[esit]	[esit]	[esi]	[esit]	chest	[t] 2,5yrs
	/dɔt/	[dɔt]	[dɔt]	[dɔ]	[da]	[dɔd]	draw	[t] 4,5yrs
	/kút/	[kú]	[kút]	[kút]	[kút]	[kút]	grow	[t] 2yrs
	/kóót/	[ko]	[kóód]	[kon]	[kóó]	[kóó]	read	[t] 2,4,5,6yrs
	/wàt/	[ja]	[wa]	[wa]	[wà]	[wà]	drive	[t] 2-6yrs
ICD	/twá/	[ra]	[twá]	[twá]	[twá]	[twá]	Hit	[t] 2yrs
FCD	/etonɲwed/	[eton]	[etonwa]	[etonwe]	[etonɲwe]	[etonɲwed]	pencil	[d] 2-5yrs
	/ided/	[ide]	[ide]	[ide]	[ida]	[ided]	hair	[d] 2-5yrs
	/úkɔd/	[uko]	[ukɔt]	[ukɔ]	[úkɔd]	[ukɔt]	Leg	[d] 2,4yrs
	/nwed/	[nwu]	[nwed]	[nwed]	[nwe]	[nwed]	book	[d] 2,5yrs
	/iwuod/	[iwuo]	[iwu]	[iwuo]	[iwo]	[iwuo]	head	[d] 2-6yrs
	/béd/	[ba]	[bé]	[bét]	[béd]	[ba]	wait	[d]

							2,3,6yrs
	/sád/	[hat]	[sád]	[sád]	[sá]	[sá]	select [d] 5,6yrs
	/wád/	[wa]	[wád]	[wá]	[wád]	[wád]	ride [d] 2,4yrs
ICD	/ndito/	[mito]	[nito]	[ndito]	[nito]	[ndito]	children [d] 3,4yrs
MCD	/ikpa idem/	[ikpaim]	[ikpa idem/]	[ikpa idem/]	[ikpa idem/]	[ikpa idem/]	skin [d] 2yrs

From table 9, the Ibibio speaking children shows final consonant deletion of the voiceless alveolar plosive /t/ sound occurs when a word ending in /t/ sound in the Target Ibibio words is deleted as in /ébot/ “goat” to [ebo], [ebu], [ebo], [ebu], [ebo], as in /édèt/ “tooth” to [ede], in 2, 3years, as in /itɔ̀jukot/ “ankle” to [itɔ̀uko] in 2,3years, as in /ikpát/ “foot” to [mepa] 2years, [ikpan] 3,4,5years, as in /nnonukot/ “toe” to [inuouk] 2years and [nnonuko] years, as in /esit/ “chest” to [esa] 2years and [esi] 5years, as in /dɔ̀t/ “draw” to [dɔ̀] 4years and [da] 5years, as in /kút/ “grow” to [kú] 2years, as in /kóót/ “read” to [ko] 2years, [kon]4years, [kóó] 5,6years, as in /wát/ “drive” to [ja] 2years, [wa] 3,4,5 and 6years, then Initial consonant deletion as in /twá/ “hit” to [ra] in 2years subject. Final consonant deletion of the voiced alveolar plosive /d/ sound occurs when the Ibibio speaking children leaves off the final /d/ sound from the target words such as /etonɔ̀wed/ “pencil” to [eton] in 2years, [etonwa] 3years, [etonwe] 4years, [etonɔ̀we] 5years, as in /ided/ “hair” to [ide] 2,3,4years and [ida] 5years, as in /úkɔ̀d/ “leg” to [uko] 2years and [ukɔ̀] 4years, as in /nwed/ “book” to [nwu] 2years and [nwe] 5years, as in /iwuod/ “head” to [iwuo] 2, 6year, as in /béd/ “wet” to [ba] 2, 6years and [bé] 3years, as in /sád/ “select” to [sá] 5, 6years, as in /wád/ “ride” to [wá] in 2,4years. Initial consonant deletion as in /ndito/ “children” to [nito] in 2,4years, and medial consonant deletion of voiced alveolar plosive /d/ in 2years as in /ikpaidem/ “skin” to [ikpaim].

**Table 10: Consonant deletion of bilabial sound in 2-6year old Ibibio speaking children**

Type	Adult	Subject output					Gloss	Deletion sound
	output	2yrs	3yrs	4yrs	5yrs	6yrs		
FCD	/dep/	[dá]	[dep]	[dep]	[dep]	[dep]	Buy	[p] 2yrs
	/kòp/	[kò]	[kòp]	[kòp]	[kok]	[kòp]	Read	[p] 2yrs
	/bɔ̀p/	[bɔ̀]	[bɔ̀]	[bɔ̀p]	[bɔ̀p]	[bɔ̀p]	Build	[p] 2yrs
	/tóp/	[tó]	[tóp]	[tóp]	[tóp]	[tóp]	Throw	[p] 2yrs
	/étòp/	[atom]	[eton]	[étò]	[étò]	[étòp]	message	[p]4, 5yrs

Table 10 shows final consonant deletion in 2, 4 and 5years ibibio speaking children, the voiceless bilabial sound /p/ was deleted at the end of the Target Ibibio words such as /dep/

“buy”, /kòp/ “read”, /bòp/ “build”, /tóp/ “throw” to [dá], [kò], [bò], [tó] in 2years, and /étòp/ “message” to [étò] in 4 and 5years.

**Table 11: Consonant deletion of nasal sound in 2-6year old Ibibio speaking children**

Type	Adult	Subject output					Gloss	Deletion sound	
	Output	2yrs	3yrs	4yrs	5yrs	6yrs			
FCD	/dóm/	[dú]	[dò]	[dóm]	[dob]	[dóm]	Bite	[m] 2,3yrs	
	/nam/	[na]	[nam]	[nam]	[nam]	[nam]	Do	[m] 2yrs	
	/nàm/	[na]	[nàm]	[nàm]	[nàm]	[nàm]	make	[m] 2yrs	
	/tèm/	[tá]	[tèm]	[tèm]	[tèm]	[tèm]	cook	[m] 2yrs	
	/úbòm/	[uró]	[úbòm]	[úbò]	[úbòm]	[úbò]	boat	[m] 2,4,6yrs	
	/ìdèm/	[ide]	[ìdèm]	[ìdèm]	[ìdèm]	[ìdèm]	body	[m] 2,3 4yrs	
FCD	/kòn/	[kwe]	[kòn]	[kòn]	[kò]	[kòn]	hang	[n] 2,5yrs	
	/inuen/	[inue]	[inuen]	[inuen]	[inuen]	[inuen]	Bird	[n] 2yrs	
	/ànwán/	[ànwá]	[ànwán]	[ànwán]	[ànwán]	[ànwán]	Cat	[n] 2yrs	
	/usan/	[ucha]	[usan ]	[usan]	[usa]	[usa]	plate	[n]2,5,6yrs	
ICD	/njàm/	[jàm]	[jàm]	[jàm]	[njàm]	[njàm]	Sell	[n] 2,3,4yrs	
ICD	/nkániká/	[kalika]	[nkániká]	[nkániká]	[nkániká]	[nkániká]	clock	[n] 2yrs	
FCD	/údòṅ/	[uwo]	[údò]	[údò]	[údò]	[údò]	Urge	[ŋ] 2-6yrs	
	/kpàṅ/	[pan]	[kpa]	[kpan]	[kpá]	[kpàṅ]	Fold	[ŋ] 2,3,5yrs	
	/táṅ/	[tán]	[tán]	[táṅ]	[tá]	[táṅ]	speak	[ŋ] 5yrs	
	/wáṅ/	[won]	[wán]	[wáṅ]	[wán]	[wá]	wrap	[ŋ] 6yrs	
	/utòṅ/	[uton]	[uton]	[uton]	[uto]	[utòṅ]	Ear	[ŋ] 5yrs	
	/ítaṅ/	[ita]	[ita]	[itan]	[itam]	[itam]	Hat	[ŋ] 2,3yrs	
	/itòṅ/	[ito]	[ita]	[itò]	[itòṅ]	[itòṅ]	neck	[ŋ] 2,3,4yrs	
	/édòṅ/	[édo]	[édon]	[édòṅ]	[édò]	[édòṅ]	knee	[ŋ] 2,5yrs	
	/ìkpàṅ/	[ìkpam]	[ìkpa]	[ìkpan]	[ìkpa]	[ìkpàṅ]	spoon	[ŋ] 3,5yrs	
	/usàṅ/	[uso]	[usnn]	[usàṅ]	[usàṅ]	[usà]	door	[ŋ] 2,6yrs	
	/nwàṅ/	[inwá]	[nwá]	[nwá]	[nwá]	[nwá]	feather	[ŋ] 2-6yrs	
	ICD	/itòṅukot/	[utouko]	[itòuk]	[itòukot]	[ituuk]	[itòṅukot]	ankle	[ŋ] 2,3,4,5yrs
	FCD	/òbòṅ/	[òbò]	[òbò]	[òbò]	[òbò]	[òbò]	King	[ng] 2-6yrs

/iwang/ [iwon] [iwai] [iwang] [iwang] [iwá] Farm [ng] 2,3,6yrs

From table 11, the Ibibio speaking children shows final consonant deletion of the bilabial nasal sound /m/ occurs when a word ending in /m/ sound in the Target Ibibio words is deleted as in /dóm/ “bite” to [dú] in 2years, and [dó] 3years, as in /nam/ “do” to [na], in 2years, as in /nàm/ “make” to [na] 2years, as in /tèm/ “cook” to [tá] 2years, as in /úbòm/ “boat” to [uro] 2years and [úbò] in 4, 6years. Final consonant deletion of the nasal sound /n/ as in /kòn/ “hang” to [kwe] 2years and [kɔ] 5years, as in /inuen/ “bird” to [ineu] 2years, as in /ànwán/ “cat” to [ànwá] 2years, as in /usan/ “plate” to [ucha] 2years, [usa] 5 and 6years. Initial consonant deletion of the nasal sound /n/ as in /njàm/ “sell” to [jàm] 2, 3, and 4years, as in /nkániká/ “clock” to [kalika] in 2years subject. Final consonant deletion of the velar nasal /ŋ/ sound occurs when the Ibibio speaking children leaves off the final /ŋ/ sound from the Target words such as /údɔŋ/ “urge” to [uwo] in 2years and [údɔ] 3,4,5 and 6years, as in /kpâŋ/ “fold” to [pan] 2years and [kpá] 3,5years, as in /táŋ/ “speak” to [tá] 5years, as in /wáŋ/ “wrap” to [wá] 6years, as in /utɔŋ/ “ear” to [uto] 5year, as in /itaŋ/ “hat” to [ita] 2, 3years, as in /itɔŋ/ “neck” to [ito] 2years, [ita] 3years and [itɔ] 4years, as in /édɔŋ/ “knee” to [édo] in 2years and [étɔ] 5years, as in /ikpaŋ/ “spoon” to [ikpa] 3,5years, as in /usAŋ/ “door” to [uso] 2years and [usa] 6years, as in /nwaŋ/ “feather” to [inwa] 2years and [nwa] 3,4,5,6 years subject. Initial consonant deletion of velar nasal /ŋ/ as in /itɔŋukot/ “ankle” to [utonko], [itɔukot], [itɔukot], [tuuk] in 2,3,4,5years subject. Final consonant deletion sound voiced labio dental /ng/ as in /ɔbɔŋ/ “king” to [ɔbɔ] 2,3,4,5, and 6years, as in /iwang/ “farm” to [iwon], [iwai]. and [iwa] in 2,3 and 6years subject.

**Table 12: Consonant deletion of velar sound in 2-6years old Ibibio speaking children**

Type	Adult	Subject output					Gloss	Deletion sound	
	Output	2yrs	3yrs	4yrs	5yrs	6yrs			
FCD	/dɔk/	[dɔ]	[dɔ]	[dɔ]	[dɔ]	[dɔ]	dig	[k]	2-6yrs
	/wák/	[wá]	[wá]	[wá]	[wá]	[wál]	tear	[k]	2-5yrs
	/túúk/	[tá]	[túú]	[túú]	[túú]	[túú]	touch	[k]	2-6yrs
	/úbók/	[úbó]	[úbó]	[úbó]	[úbók]	[úbók]	hand	[k]	2-4yrs
	/ekomubək/	[ekomuwo]	[ekomubɔ]	[ekomubək]	[ekomuwo]	[ekomubək]	elbow	[k]	2,3 5yrs

	/nnuen ubək/	[nnue]	[nnuen ubək]	[nnuen ubək]	[nnuen ubək]	[nneubə]	finger	[k]	2,6yrs
	/efuk/	[efu]	[efut]	[efu]	[efut]	[efu]	buttock	[k]	2,4,6yrs
	/úfək/	[úfə]	[úfə]	[úfə]	[úfə]	[úfək]	house	[k]	2-5yrs
MCD	/itəŋukot/	[itəuko]	[itəuk]	[itəukot]	[ituuk]	[itəŋukot]	ankle	[ŋ]	2-5yrs

From table 12, the Ibibio speaking children shows final consonant deletion of the voiceless velar plosive sound /k/ occurs when a word ending in /k/ sound in the Target Ibibio words is deleted as in /dək/ “dig” to [də] in 2 to 6years, as in /wák/ “tear” to [wá] in 2 to 5years, as in /túúk/ “touch” to [tá] 2years and [túú] in 3 to 6years, as in /úbók/ “hand” to [úbó], in 2 to 4years, as in /ekomubək/ “elbow” to [ekomuwo] 2,5years and [ekomubə] 4years, as in /nnuen ubək/ “finger” to [nnue] 2years and [nnuen ubə] 6years, as in /efuk/ “buttock” to [efu] 2,4,6years, as in /úfək/ “house” to [úfə] in 2 to 5years subject. Media consonant deletion of nasal velar /ŋ/ at the middle such as /itəŋukot/ “ankle” to [itəuko], [itəuk], [itəukot] and [ituuk] in 2 to 5years subject.

### Findings

This study demonstrates that consonant substitution and deletion in the speech of Ibibio-speaking children aged two to six years are systematic, developmentally motivated phonological processes rather than random errors. The findings reveal clear age-related patterns, with younger children (2–4 years) exhibiting higher frequencies and a wider range of processes, while older children (5–6 years) show substantial reduction and increased accuracy. This developmental trajectory aligns with cross-linguistic accounts of typical phonological acquisition and supports the usage-based theory, which views phonological competence as emerging gradually through repeated exposure and communicative use.

Consonant substitution processes are more dominant than deletion across all age groups, indicating that children tend to preserve syllable structure by replacing difficult sounds with articulatorily simpler ones. Fronting emerges as the most frequent substitution process, particularly involving velar plosives and nasals. This reflects a universal preference for anterior places of articulation in early speech. In Ibibio, the prominence of velar nasal fronting is especially notable given the functional load of /ŋ/ in the language, suggesting an

interaction between universal developmental tendencies and language-specific phonemic inventories.

Liquid fronting and gliding also occur frequently, with liquids replaced by stops or glides. These processes persist longer than many others, occasionally appearing even in older children, indicating that liquids constitute a relatively late-acquired class in Ibibio phonology. Voicing substitutions, especially final devoicing, are attested across age groups, reflecting ongoing development of laryngeal control and reduced perceptual salience of word-final consonants.

A key language-specific finding is the simplification of labiovelar stops (/kp/), which are typically reduced to labial consonants in younger children. This highlights articulatory complexity as a major factor in phonological substitution and distinguishes Ibibio child phonology from that of languages lacking labiovelar consonants. Backing and denasalization are rare and limited in distribution, supporting claims that these processes are marked and not central to typical phonological development.

Consonant deletion, particularly final consonant deletion, is common among younger children and reflects a strong preference for open syllable (CV) structures. Initial and medial consonant deletion occur less frequently and are largely restricted to early developmental stages, with most children acquiring full syllable structures by age five.

Overall, the findings confirm that phonological development in Ibibio follows broadly universal patterns while exhibiting language-specific characteristics shaped by the Ibibio sound system. The study provides baseline data for typical phonological development in Ibibio and has important implications for linguistic description and clinical assessment. Persistent substitution or deletion processes beyond the expected age range may indicate phonological delay, underscoring the need for language-specific norms in speech-language pathology within Nigerian and multilingual African contexts.

### **Summary**

This study examined consonant substitution and deletion in Ibibio speaking children aged two to six years and found that these phonological processes are systematic and age-dependent. Younger children show higher rates of simplification through substitution and deletion, while older children demonstrate gradual mastery of adult-like consonant patterns. The findings

reveal both universal developmental tendencies and Ibibio specific features, particularly in the treatment of velar nasals and labiovelar consonants, thereby contributing baseline data on typical phonological development in Ibibio.

### **Recommendations**

It is recommended that language educators and speech-language clinicians use these findings as normative benchmarks for Ibibio speaking children, while further research should expand the sample size and explore longitudinal patterns to support early identification and intervention for phonological delays.

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