Phonological Processes of Stuttering in a Bilingual Hausa/English Speaking Nigerian Child

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Abstract
This study examines the phonological processes of stuttering in a bilingual Hausa-English speaking Nigerian child of age four from Keffi Town, Nasarawa State, Nigeria. The research investigates the phonological processes of stuttering in a Hausa-English bilingual child. The research is grounded on Lado's Contrastive Analysis theory. The researcher employed a descriptive, qualitative research design using Naturalistic observation of home-based speech interaction to identify stuttering patterns in both Hausa-English. Data were collected in a bilingual setting, with speech samples recorded during meals, play and informal family conversations and formal school environment of the child. These recordings were transcribed and analysed to compare stuttering manifestations against the phonological structures of both languages. Findings revealed that the most frequent disfluencies occurred in Hausa. This is due to the fact that most Hausa words are difficult to pronounce for the child despite the fact that Hausa is the dominant language being used around him especially at home; the child still couldn't articulate or pronounce most of the words correctly. He mostly deleted, inserted and repeated most of the sounds/words or not articulating them at all. On the other hand, the study shows that the English Consonant sounds were more familiar and easy to articulate for the child under study. This is traceable to the child's interactions with schoolmates, teachers and siblings. Also, the findings shown that stuttering is shaped by the interplay of two active phonological systems where Hausa syllable and English structures create predictable sites of disruption also contributing to higher rates of Elongation, and reduction. The study concludes that for Hausa-English bilingual child to improve in phonology, stuttering must address both languages specific phonological challenges and cross-linguistic influences which can be achieved through parental training in home-based fluency support.

Key words: Phonology, Stuttering, Bilingualism, Communication, Language Disorder.

Introduction

Social communication by way of speech is one of the characteristics unique to humankind. Differences exist among mankind in the way in which they speak, where most people speak in a normal way, and a few speak in an extraordinary way. The latter group of language users displays either superior or defective language behaviour.

Language users who manifest defective language behaviour are known by different names that include speech impairment, abnormal, handicapped, disabled, and deviants. Language abnormality can be due to varying causes. These causes may be before, during, or after birth, otherwise referred to as pre and post natal periods respectively. Where the abnormality occurs in the chromosomal formation or due to the condition of the expectant mother then it is before birth, on the other hand, accidents may be encountered either in the course of delivery or thereafter, resulting in language abnormality.

The motivation for this study is that stuttering is part of a continuum of development in children, caregivers and parents should not consider stuttering to be a lifelong defect on the child stutterer. The statement of the problem posits that, this area of investigation has not received scholarly attention before and it is a gap the researcher is trying to fill. Also, little has been done to examine the phonological effects of bilingualism or stuttering in a Hausa-speaking child.

The research objectives are; to determine/investigate the phonological elements of stuttering in the child's language. The study also discuss how the Contrastive Analysis theory can be used to analyze the phonological elements in the child's bilingual language The third objective of the study is to identify and describe the phonological disruptions in Hausa-English bilingual stuttering (elongation, reduction, insertion, repetition). The significance of the study is that the research will contribute to linguistic speech language pathology and bilingual education by providing a culturally and phonologically relevant framework for intervention.

Brief History of the Child under Study

Hamdan Zain Sulieman was born in 2021 in Nasarawa Local Government Area ,Nasarawa State. He was born through normal delivery. Though, before his birth, the mother had an accident during the early first trimester which was around 10 weeks, the mother was on bed rest, the incidence led the pregnancy gesticulation period to 6 weeks thereby losing weeks of maturation age. After the incidence the pregnant mother did not face or suffer any inconveniences until delivery which was normal and problem free. The child came on Friday, June 25th 2021.

The languages spoken around the child are English & Hausa both at home, school and his immediate environment. In the house where the child lives, English is the dominant language spoken around him, while Hausa is spoken randomly. The parents & siblings first choice of language spoken at home is English. On rare occasions the child uses Hausa as a means of communication. Nonetheless, he speaks Hausa vividly.

The parents of the child are Mr & Mrs Suleiman. The mother of the child is Mrs Fatima Binta Suleiman, a civil servant who lectures at Federal Polytechnic Nasarawa. She was born and raised in Lagos, speaks Hausa & English fluently. The mother's paternal & maternal families do not have any history of language disorder or impairment or any speech difficulty but the mother stutter's a little when overwhelmed, or frustrated or her speech is sometime flawed.

The father, Mr Suleiman Haruna Mohammed from keffi local government is a Gwandara by tribe. He is a car dealer and he speaks Hausa, Yoruba, Tiv, Eggon, English, Afo fluently. He does not stutter, but one family member stutters. No history of speech disorder in their paternal and maternal family.

Review of Related Literature

Phonology

Phonology describes the way sounds function within a given language or across language to encode meaning. The term "phonology" which typically describes linguistic analysis of the

structure beneath the word, is viewed as a subfield of linguistics that deals with the sound system of a language. Howe (68) posits that phonology is the study of sound patterns (which can also be referred to as the sound system or pronunciation of particular languages) where sound refers to the auditory effects of articulations made by the vocal apparatus during speech and patterns, to abstract structure that correlate to mince. In Howe's definition, emphasis is placed on spoken language rather than sign language.

Furthermore, Cohn maintains that what constitute the study of phonology is the knowledge about sound structure. That is, which sounds occur? What are their distributions? How can they be combined and how they might be realised differently in different positions in a word or phrase (139).

Phonological Process

Phonological processes are the articulatory activities that occur during the production of speech. According to Oyebade (56) phonological processes come about so as to maintain the musical quality of the utterance or make its production smooth and easy to release the articulatory contact in the production of one sound and to initiate a different articulatory contact for a contagious sound. This effort is considerably reduced if both contagious sounds require the same articulatory mechanism to produce them**.** Phonological processes are found as exemplified in deletion, insertion, metathesis etc.

Deletion/Reduction

This is a common phonological process in language. It involves the removal or loss of a segment or deletion of sound segments in normal speech under some language specially imposed conditions and where the loss or deleted segment is a vowel, it is preferable called anelison (vowel elision). Vowels as well as consonants undergo this process in language. Roach (157), similarly asserts that elision or deletion is described technically as an instance where a phoneme in certain circumstance may be realised as zero which is typical or in rapid casual speech.

Vowel Deletion

Vowels are usually deleted when two or more vowels occur across morpheme boundary when such an occurrence is introduced by morphological processes, the language may choose to drop the first or the second of the contiguous vowels.

Consonant Deletion

Some languages do not tolerate consonant clusters. When such occur as a result of morphological or syntactic collocation, the offending cluster is rectified. Sometimes the

condition for consonant deletion may be that the language prefers that the final syllables should be open. If a closed syllable occurs in final position, the process of consonant deletion is introduced to obliterate the arresting consonant and hence to open the syllable.

Insertion
Insertion which is also known as epenthesis is a phonological process where an extra sound (vowel or consonant) is added to a word during articulation or speech production. This is usually done phonologically to make difficult sound combination easier to produce and to help create smoother transmission between sounds.

Methathesis
This refers to a process in which two contiguous segments interchange positions at the phonetic level. It reorders a sequence of segments. It often results in a sequence of phones that is easier to articulate. It is not particularly a common or productive process in language but account for some unusual pronunciation.

Language Disorder
Language disorders or language impairments which some scholars also refer to as language handicap refer to "any systematic deficiency in the way people speak, listen, read, write, or sign that interferes with their ability to communicate with their peers" (David 122). From this definition, language disorder can be seen as the various difficulties that language users encountered in communication process with other people. Stephen (90), view language disorder as any impairment of communication, be it through signs, speech or writing. It then means that language disorder is any difficulty in language proficiency which affects all language skills of speaking, listening, writing, and reading even including signs. According to David (122) language disorder is some language aspect can also be seen as articulation disorder. Hence, to him, articulation disorder is communication disorder that is characterised by the misarticulation to be categorised as articulation disorder, the misarticulation must be frequent and unintelligible or it must involve one more speech sounds in the phonemic system of the person's language. In this form of definition, articulation disorder can be viewed as phonological disorder. That is, language disorder that affects only the language speaking skill.

Stuttering
One of the common speech disorders that disrupt the fluency of speech is stuttering. It often involves repetitions of sounds, syllables or words, prolonged sounds, and involuntary pauses or blocks. These disorders can vary significantly in severity, with some individuals experiencing only mild interruptions while others face significant communications

challenges. According to the National Institutes of Health (2020), the tremor sometimes develops around the lips while breathing may become accents or whispering individuals with such a disorder may withdraw and avoid social situations where he may be asked to speak. Most stutterers suffer from anxiety, fear, hostility, depression, frustration, feelings of inadequacy and helplessness.

Stuttering is thought to result from a genetic predisposition, neurophysiological differences and environmental influences (Chang 2013). Stuttering is often first noticed in early childhood, with approximately 5% of children displaying some form of stuttering before the age of six, although the condition typically diminishes as the child matures ASHA (2020).

Communication

Communication is the process of sending and receiving messages that serve to transmit information between persons and groups (Crystal, 1988). Communication refers to the transmission and reception of information, a message between sender and receiver using a signaling system. In communication, the speaker's ideas or feelings, the speaker must encode them into words sequence to convey them. In linguistic context, sender and receiver are interpreted in human terms, the system involved a language, and the notion of response to (or acknowledge the message) becomes crucially important in theory, communication is said to have taken place if the information received is the same as that sent, in practice, one has to allow for all kinds of interfering factors or noise which reduces the efficiency of the transmission. Socio-linguistic and behavioural scientists have attempted to analyze the nature of effective communication. Similarly, researchers such as Dore (1986), Skinner (1985), Hymes (1972) etc., have proposed that speakers talk, making sounds, saying words or producing grammatical sentence does not make a competent communicator because human communication requires a speaker, content and listeners communicative competence occurs only when speakers effectively influence their listeners. This occurs through using language forms, meaning and functions appropriate to competent speakers status, communication must satisfy two things; speakers behaviour must have a practical effect on the listeners behaviour as effective communicators, and our language behaviour must be accepted and understood.

Bilingualism

Bilingualism is a technical and difficult term to define on the notion that there is no clear cut definition of the concept among scholars due to the fact that many factors such as age of the L2 learner and his or her exposure to language; his or her competence and skills in both languages and condition or the exposure in which the languages are learnt and acquired etc need to be considered for a given definition of the concept. Hence, bilingualism is usually looked at from different levels of proficiency of the bilingual speakers who may have good

oral skill in one language and be deficient in the reading or writing skill of the other language. Bilingualism is therefore a psychological condition of a person who is exposed to more than one language as a means of interaction and communication. According to Harmers (1981), the degree of access will vary along a number of dimensions such as: psychological, cognitive, sociocultural, psycholinguistics, sociological, sociolinguistics and linguistic. Bloomfield (1935), defines bilingualism as a native like control of two languages while Adeoye (2016), argues that bilingualism is simply having knowledge of two languages. Most of these definitions post serious theoretical and methodological issues. Nonetheless, one can see bilingualism as an act or process of using two languages in communication.

Empirical Review

Sale Maikanti Shu'aibu Abdulwaheed (2026:1) carried out a study titled "Analysis of Hausa Plosive Sounds Pronounced in Disyllabic Hausa Words by Igbo and Yorùbá Speakers". The study examined how the phonetic challenges faced by second language learners in acquiring the phonetic features of a new language have implications for language teaching and learning in general. This paper discussed the phonetic characteristics of plosive sounds in Hausa, specifically how they are pronounced in disyllabic Hausa words by Igbo and Yorùbá speakers learning Hausa as an additional language other than their mother tongue. Using a mixed mode (quantitative and qualitative approaches), ten (10) participants (5 from each group) who were 18 years and above (males and females), and willing to participate voluntarily in the study, were selected based on a random sampling technique. Extracted wordlist from Bargery's (1934) English Hausa Dictionary and a structured questionnaire were used as research instruments. The data were analysed using supra-segmental phonology and explained within the framework of Flege and Bohn's (2020) 'Revised Speech Learning Model'. The results show that, though some of the participants could accurately produce some Hausa plosives, yet, issues related to substitution of sounds, aspiration distinction, and phonetic transfer were identified. Both Igbo and Yorùbá speakers' learners of Hausa have specific difficulties in their pronunciations, especially due to cross-linguistic influences impacting their pronunciations. Thus, the paper also reveals the importance of cultural and linguistic backgrounds in the production of speech sounds, as well as the significance of the study in general. This study though from the same level of linguistic analysis of phonology with the current study but it is different from the current study for the fact the focus of the current study centers on stutterin (language development on infant) while the former examine language variation on adult second language speaker.

In another research, Alani, Ebenezer Akinyele and Obeya, Nora Alewo (2026:) did a study on "Morphological Study of Compounding Process of Culinary Terms of Selected Restaurants

in Suleja Local Government, Niger State, Nigeria". This research aims at a Morphological Study of Compounding Processes of Culinary Terms in Selected Restaurants in Suleja Local Government of Niger State, Nigeria. This has been achieved through the identification of the different types of compounding employ in the culinary terms of the restaurants understudy. The data for the study were collected from 4 restaurants: Iya Ayo restaurant, Chicken Republic, Madam Edo restaurant, and Lace restaurant through writing and audio-recording, the conversation and interactions of the interlocutors involved. The sampling technique used to select the data analysed is purposive sampling technique. The method of data analysis employed by the study is qualitative method. The Items and arrangement Theory of Morphology serves as the theoretical frame work for the study. Following the analysis, the study revealed that the different elements and features of compounds are employed in the culinary terms of the restaurants understudy. These features include: the stress, head and modifier and recursivity while the different types include: attributive, subordinative, endocentric, exocentric. In addition, the morphological formation of the compound culinary term of the restaurants understudy follows combination of different word class such as Noun + Noun, Adj + noun, Verb + Noun etc. This study part ways from the present study because they are not from the same level of linguistic analysis.

Theoretical Framework (Contrastive Analysis Theory)

This study adopts Lado's (1975) Contrastive Analysis theory as it's principal theoretical lens Contrastive Analysis (CA) theory is a linguistic approach that compares two languages to identify their similarities and differences, aiming to predict and explain potential learning difficulties in second language acquisition (SLA). This theory suggests that areas where languages divergence is likely to cause challenges for learners, while shared structures are expected to be easier to acquire.

Contrastive Analysis (CA) involves a systematic, comparison of a learner's native Language (L1) and the target Language (L2) Applying this to a Hausa-English bilingual child under study, Lado's theory helps explain why certain stuttering patterns are more prominent in one language than the other, Hassan (186) Hausa's phonotactic rules favoring open syllables (CV) and discourages consonant cluster differs sharply from English, where closed syllables and consonant clusters are frequent. Consequently, transitions between phonologically simple and complex structure may increase speech planning load and trigger disfluences.

In this study, Lado's Contrastive Analysis investigates:

i. Phonological features of Hausa and English;
ii. Identify phonological mismatches contributing to stuttering behaviours ;

iii. Analyse the specific disfluences, elongation, repetition, reduction, and insertion in terms of language specific and cross linguistic influence.

This theoretical grounding ensures that analysis moves beyond mere description of disfluencies to a systematic explanation rooted in phonological contrasts.

Methodology

The study employed a qualitative and descriptive design, focusing on naturalistic observation and phonological analysis of a Hausa-English bilingual child who exhibits stuttering behaviours. The design was chosen because it allows for the detailed capture of speech patterns in a real-life context, thereby preserving the authenticity of communicative interactions. The researcher used one bilingual child by name; Hamdan Zain Suleiman aged 4 from Keffi town. To collect data, the researcher employed diary sessions and phone recorder. The recorded speeches were transcribed and thereafter put in a tabular form. The researcher used Lado's (1975) Contrastive Analysis as technique for data analysis to investigate the data collected which are represented in a tabular form.

Data Presentation and Analysis

The goal here is to apply the theoretical model of Lado's Contrastive Analysis to the data gotten from the child under study. Afterwards, the researcher discusses the findings from the data analysis given below:

Table 1.1: Analysis of Elongation Sounds in the in Hausa Words Produced by the Child

S/N	Elongated sound/ words by the child	Actual words in Hausa	Gloss	Phonological processes	CA Analysis
1	sāāābo	sā'abo	new	Elongation	The child elongated the sound /a/
2	ri ii iga	Riigāa	shirt	Elongation	Elongation of the/i/ sond
3	ruuuuwa	Rūwā	water	Elongation	Elongation of the /u/ sound
4	kiiiida	Kidā	music	Elongation	Elongation of the /i/ sound
5	ta a'aafi	Tafi	clap	Elongation	Elongation of the /a/ sound

Table 1.2: Analysis of Elongation Sounds in the in English Words Produced by the Child

S/N	English word	Elongated words	Transcription	Phonological Processes	CA Analysis
1	book	bboook	bu:k	Elongation	The child elongated the /u/ sound
2	milk	miiilk	mil:k	Elongation	The child elongated the /i/ sound
3	okay	oookay	aʊkei	Elongation	The child elongated the /ʊ/ sound
4	fan	fffaan	fæn	Elongation	The child elongated the /f/ sound
5	yes	yesss	jɛs:	Elongation	The child elongated the /s/ sound

Discussion

In the table above, the words with two syllables (CV/CV or CVV/CV) is in standard Hausa language form, while the words the child produced (stuttered words) has addition of vowels in the first syllable which changed the word structure i.e. CVV/CV. The involuntary lengthening or elongation of long vowel sounds or short vowel sounds sometimes refer to prolongation of an articulatory position, as when the child stops completely and holds his mouth in the position to say 'kida'-kiiiida, this usually happens when the pause is accompanied by increases in the loudness or pitch. V-(V:), V:-(Vii) extra long. However, elongation in English was most prominent when the child encountered vowel consonant transitions which ordinarily is absent in Hausa but common in English when producing English cluster. For example, booook (bu:k), the vowel elongation before a final consonant . Also, in words like miiilk (mi:lk) elongated vowel preceding consonant cluster is absent in Hausa. What this means is that elongation often functions as a stalling strategy to gain time for the motor planning in difficult phonological words especially when transitioning between phonemes unfamiliar in L1.

Table 1.3: Analysis of Sound Reduction in the Hausa Words Produced by the Child

S/N	Standard hausa word	Stuttered/sounds/words	Gloss	Phonological Process	Analysis
1	tsoohuwa	Toohuwa	Old woman	Reduction/deletion	The child deleted the /ts/ sound
2	tsuutsa	Tuutaa	Worm	Reduction/deletion	The child deleted the /ts/ sound
3	tsamiya	Tamiya	Tamarind	Reduction/deletion	The child deleted the /s/ sound
4	Dzaa	Daa	Red	Reduction/deletion	The child deleted the /j/ sound
5	surki	Tuki	Warm	Reduction/deletion	The child deleted the /s/ sound

Table 1.4: Analysis of Sound Reduction in the English Words Produced by the Child

S/N	English words	reduced words	Transcription	Phonological Process	Analysis
1	mirror	Miyor	mi:rou/mirəu	Reduction/deletion	The child deleted the /r/ sound
2	banana	Bayaya	bə'na:nə	Reduction/deletion	The child deleted the /n/ sound
3	rice	Rice	Rais	Reduction/deletion	The child deleted the /r/ sound
4	room	Yoom	ru:m	Reduction/deletion	The child deleted the /y/ sound
5	kindness	Kainess	kaindnəs	Reduction/deletion	The child deleted the

					/d/ sound

Discussion

Two Hausa/English phonological processes are patterns of sound substitution. The child reduces words to simplify his speech. The predictable patterns of which reduction occurs typically by the child stutterer in Hausa words production as he tries to talk is of major concern here. Just as the table indicated reducing /dz/ for /d/ voiced alveolar stop/plosive as in tsoohuwaa, toohu was, tsûutsa for tûutâa. On the other hand, reduction in English often coincide with moments of high linguistic load suggesting simplification strategy to navigate difficult phonological structures as in words like spoon for poon (pu:n). Cluster reduction school for kuul (ku:l) initial consonant deletion. Rice (rais) yice/wice, room/yoom, the child stutterer hear the speech sounds of the language being used announce them but are unable to produce all of them yet. This is because they do not possess the ability to coordinate the tongue, lips, teeth, palate, and jaw for clear speech, hence, the simplification of complex words.

Table 1.5: Analysis of Sound insertion in the Hausa Words Produced by the Child

S/N	Standard hausa word	Inserted/sounds/ words	Gloss	Phonological Process	Analysis
1	kusurwa	Sukurwa	Corner	Insertion	The child inserted the sounds /s/
2	bookiti	Bootiki	Bucket	Insertion	The child inserted the sounds /t/
3	fitila	Tifila	Lamp	Insertion	The child inserted the sounds /f/
4	almakashi	Alkamashi	Scissors	Insertion	The child inserted the sounds /k/
5	hudu	Fudu	Four (4)	Insertion	The child inserted the sounds /f/

Table 1.5: Analysis of Sound insertion in the English Words Produced by the Child

S/N	English words	Inserted sounds	Transcription	Phonological Process	Analysis
1	black	Byak	bla:ck	Insertion	The child inserted the sounds /y/
2	light	Yiat	lait	Insertion	The child inserted the sounds /y/
3	remote	Wimote	rimɔ̃ut	Insertion	The child inserted the sounds /w/
4	open	Opoon	ɔ̃upɔ̃n	Insertion	The child inserted the sounds /o/
5	umbrella	Umbyella	ʌm'brela	Insertion	The child inserted the sounds /y/

Discussion

The analysis in the above table shows that the child switches or inserts sounds in some word. This is common in children who stutter, for example, words like 'kusurwa', 'bookit', 'bookiti', the child stutterers and switches the positions of 'k' and 's' in one word. In the table above, insertion in English occurs when the child adds extra vowels (epenthesis) or consonants especially in English clusters, to make them more similar to Hausa syllable pattern e.g. remote-wimote-black-byak, light-yiat.

Discussion of Findings

The findings revealed that disfluency patterns aligned with phonological contrast between Hausa and English. The most frequent disfluencies occurred in Hausa. This is due to the fact that most Hausa words are difficult to pronounce for the child despite the fact that Hausa is the dominant language being used around him especially at home, the child still could not articulate or pronounce most of the words correctly. He mostly deleted, inserted and repeated most of the sounds/words or not articulating them at all. On the other hand, the study shows that the English Consonant sounds were more familiar and easy to articulate for the child under study. This is traceable to the child's interactions with schoolmates, teachers and siblings. The Hausa sounds represent high complexity articulations. The Hausa's avoidance of initial clusters encourages insertion of vowels to break up marked onsets, producing a pattern more consistent with L2 phonology.

Conclusion

The study explored the phonological effects of stuttering in a Hausa bilingual Nigerian child using Lado's Contrastive Analysis theory. The study focuses majorly on sound elongation,

sound reduction and sound insertion. The analysis has shown the differences in phonological structure between Hausa and English shaped the manifestation of stuttering. The analysis confirms that Hausa's simper syllable structure and phonemic vowel length affect the types of elongation and repetition observed while English's complex consonant clusters and stress-timed rhythm increase insertion and influence reductions. The study concludes base on the findings that this phenomenon (stuttering in phonological process) happens in both languages of Hausa and English, the intervention for which Hausa-English bilingual children must address language specific phonological challenges.

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