

Complimentary Distribution of Spirants by Igala Speakers of English

Oladimeji Olaniyi
Department of English and Literary Studies,
Kogi State University, Kabba

Abstract

This study investigates the complementary distribution of spirants by Igala speakers of English, focusing on the influence of the Igala phonological system on the production of English fricatives. The study examines the pronunciation patterns of educated and uneducated Igala speakers to determine whether substitutions of English spirants are systematic and predictable. Guided by Articulatory Phonology, Second Language Phonology, and Contrastive Analysis Theory, the research adopts a qualitative descriptive design using phonetic transcription and comparative analysis of selected words and sentences. The study finds that spirants absent from the Igala phonemic inventory, particularly /θ/, /ð/, /ʃ/, /ʒ/, and /v/, are consistently replaced with articulatorily similar sounds such as /t/, /d/, /s/, /z/, and /f/. These substitutions reflect first-language phonological interference rather than random pronunciation errors and demonstrate identifiable complementary distribution patterns. The study concludes that Igala-accented English exhibits systematic spirant realisations and recommends explicit pronunciation instruction and increased phonetic awareness to improve intelligibility among Igala learners of English.

Keywords: complementary distribution, spirants, fricatives, Igala speakers, Nigerian English, phonological interference.

Introduction

Igala, an indigenous Nigerian language spoken predominantly by the Igala people in Kogi State, has a unique phonemic inventory that does not fully correspond with that of English. Unlike English, when examined perceptually, Igala lacks some of the fricative sounds present in English, such as /θ/ and /ð/, which are commonly found in words like “think” and “this” (see Omachonu 2000). Studies in second-language phonology suggest that when L2 learners encounter unfamiliar sounds absent from their L1, they often adopt strategies such as “substitution” or

"simplification," replacing the target L2 sound with the closest L1 equivalent. For instance, Igala speakers might substitute /θ/ with /t/ or /s/, and /ð/ with /d/ or /z/, resulting in deviations from standard English pronunciation (Omachonu, 2001). Such phonological interference is a natural phenomenon in bilingual or multilingual contexts, but it may lead to reduced intelligibility and communication breakdowns in certain situations.

The production of English fricatives is particularly challenging because these sounds involve continuous airflow and precise articulatory positioning, which are absent or differently patterned in Igala (cf. Are and Akinola, 2005). Are & Akinola (2005) in an article about the substitution of the voiceless post-alveolar affricate among Igala speakers of English investigates the realisation of the English /tʃ/ sound by Igala speakers and explains the substitutions in terms of first language phonology. It is general phonological knowledge that fricatives in English include both voiceless sounds, such as /f/, /θ/, /s/, /ʃ/, /h/, and their voiced counterparts /v/, /ð/, /z/, /ʒ/, each requiring distinct tongue, lip, and vocal fold coordination. For Igala speakers, mastering these sounds necessitates not only the acquisition of new articulatory gestures but also the perceptual ability to distinguish between minimal pairs like fan and van, or seal and zeal. Previous research on Nigerian ESL learners has highlighted that L1 influence on fricatives is a persistent source of pronunciation errors, affecting both oral fluency and listening comprehension.

Although some linguistic studies have addressed phonological constraints and sound system interactions in Nigerian languages more broadly, (see Jowitt 1991; Awonusi, 2004/2007; Omachonu, 2008; Gut, 2008/2025; Ugorji, 2010; Olaniyi, 2011; Opara 2021; Udofot, 2022; Otuyemi& Akinmusayo, 2025, among others), there is a noticeable gap in research focusing specifically on English fricatives as produced by Igala speakers. Most existing studies tend to generalise across multiple Nigerian language groups, thereby overlooking the unique phonetic challenges faced by the Igala-speaking population in Kogi State. Without a detailed, language-specific investigation, instructional strategies for teaching English pronunciation to Igala ESL learners remain broad and non-targeted. Understanding the precise patterns of fricative substitution and the factors influencing these errors is therefore essential for developing effective pedagogical interventions. Such insights would

enable language instructors to address the specific pronunciation difficulties of Igala speakers, ultimately improving their spoken English proficiency and communicative competence.

The primary aim of this research is to investigate the phonological patterns of English spirants, also known as fricatives, as pronounced by Igala people in Nigeria, and to understand how these patterns are influenced by their native language. The specific objective is to view spirants as complimentary distributions and not divergencies of the non-native Igala speakers of the English language. Spirants, in this context are considered as substitutions or modifications used by Igala speakers when producing the English fricatives.

Spirants, also known as fricatives in contemporary phonetic literature, constitute a major class of consonants in English characterised by turbulent airflow generated through a narrow constriction in the vocal tract (Crystal, 2008). This constriction produces continuous frictional noise, distinguishing spirants from stops, nasals and approximants (cf. Ladefoged 1975, 2001, 2001, 2015). English spirants are classified according to their place of articulation, including labiodental, dental, alveolar, postalveolar and glottal, and by voicing, resulting in phonemic pairs such as /f/ and /v/ and /θ/ and /ð/ (Ladefoged & Johnson, 2014). These consonants perform important segmental and prosodic functions by contributing to lexical contrast, syllable structure and phonotactic organisation, thereby playing a significant role in maintaining intelligibility in spoken English.

Literature Review

Existing literature highlights the articulatory and acoustic properties of English spirants (see Crystal 2008). Their production requires accurate coordination of the speech organs to create a narrow constriction through which air escapes continuously, producing audible friction. Because of this complex articulatory mechanism, spirants are particularly susceptible to variation arising from coarticulation, speech rate and prosodic environment (Roach, 2009). Acoustic investigations have demonstrated that parameters such as centre of gravity, spectral peak, intensity and duration are essential for distinguishing both voiced and voiceless spirants as well as differences in place of articulation (Ladefoged & Johnson, 2014). While distinctive feature theory accounts for these contrasts at the phonological level, instrumental phonetic evidence shows

that spirants exhibit gradient acoustic variation, illustrating the close relationship between abstract phonological representation and actual speech production.

Distinctive Features of Phonemes

Distinctive Feature Theory remains one of the most influential frameworks in phonological analysis because it explains speech sounds as bundles of binary articulatory and acoustic properties rather than isolated phonemes. Developed by Jakobson, Fant and Halle (1952) and refined by Chomsky and Halle (1968), the theory holds that phonological contrasts are established through the presence or absence of distinctive features. This framework is particularly useful for analysing spirants (fricatives) because it identifies both their shared phonetic properties and the features that distinguish one spirant from another. Chomsky and Halle (1968) argue that distinctive features constitute the basic units of phonological representation, while Omachonu (2001) notes that they simplify phonological description by grouping sounds into natural classes.

The defining feature of spirants is [+continuant], indicating uninterrupted airflow through a narrow constriction in the vocal tract (Ladefoged & Johnson, 2015). This distinguishes them from plosives, which are [-continuant] because they involve complete oral closure (Roach, 2009). Another important feature is [±voice], which separates voiceless spirants (/f, θ, s, ʃ, h/) from voiced spirants (/v, ð, z, ʒ/). According to Chomsky and Halle (1968), voicing is one of the most productive phonological features, while Yule (2023) identifies it as fundamental to intelligible speech.

Spirants are further classified by place features such as [±anterior] and [±coronal]. Labiodental and dental spirants are [+anterior], whereas postalveolar spirants are [-anterior]. Similarly, /θ, ð, s, z, ʃ/ and /ʒ/ are [+coronal], while /f/ and /v/ are [-coronal] because they are articulated with the lips rather than the tongue (Chomsky & Halle, 1968). Omachonu (2011) explains that these features account for the grouping of consonants with similar articulatory properties. The feature [±strident] further distinguishes spirants according to the intensity of frication noise: /s, z, ʃ/ and /ʒ/ are [+strident], while /f, v, θ/ and /ð/ are [-strident] (Ladefoged & Johnson, 2015; Roach, 2009). The glottal spirant /h/ is exceptional because it is produced at the glottis rather than in the

oral cavity, although it remains [+continuant] and [-voice] (Chomsky & Halle, 1968).

Distinctive Feature Theory also explains phonological processes involving spirants. Assimilation, for instance, involves changes in feature values such as voicing or place of articulation rather than the substitution of entire phonemes (Chomsky & Halle, 1968). Roach (2009) and Omachonu (2011) observe that feature-based analysis provides an economical explanation for connected speech processes such as voicing assimilation. In second-language phonology, learners frequently substitute unfamiliar spirants with sounds that share similar feature specifications (Yule, 2023). This is evident in Nigerian English, where the dental spirants /θ/ and /ð/ are often replaced by alveolar stops or labiodental fricatives because many indigenous Nigerian languages lack these sounds (Omachonu, 2011). Such substitutions are systematic phonological adaptations rather than random pronunciation errors.

The acquisition of English spirants has attracted considerable attention in second-language phonology. Learners whose native languages lack dental spirants often replace them with articulatorily similar sounds, reducing intelligibility (Best & Tyler, 2007). Effective pronunciation instruction therefore combines articulatory explanation, auditory discrimination and communicative practice. Spirants also undergo phonological processes such as assimilation and devoicing in connected speech, as illustrated by the pronunciation of *have to* as [hɑ:ftə] (Roach, 2009). These patterns demonstrate the close relationship between phonetics and phonology and underscore the continued relevance of Distinctive Feature Theory in analysing spirants across theoretical, sociophonetic and second-language contexts.

Complimentary Distribution

Complementary distribution is a fundamental principle in phonology that describes the relationship between phonetically similar sounds occurring in mutually exclusive environments and therefore not distinguishing meaning. Such sounds are regarded as allophones of a single phoneme because their occurrence is governed by predictable phonological rules rather than lexical contrast (Bloomfield, 1933; Trubetzkoy, 1939). Trubetzkoy (1939) argues that sounds which never occur in the same phonetic environment are contextual variants of one phoneme, while Bloomfield (1933) views them as conditioned realisations of a single

phonological unit. Chomsky and Halle (1968) further explain that allophones are derived from underlying phonemic representations through phonological rules operating on distinctive features.

English provides several examples of complementary distribution. The aspirated allophone [p^h] occurs at the beginning of stressed syllables (pin), whereas the unaspirated [p] follows /s/ (spin), making both allophones of the phoneme /p/ (Roach, 2009; Ladefoged & Johnson, 2015). Similarly, the clear lateral [l] occurs before vowels, while the dark lateral [ɫ] appears in syllable-final position, as in leaf and full. The phoneme /t/ also has context-dependent variants such as [t^h], [ɾ], [ɫ] and [ʔ], none of which creates lexical contrasts (Yule, 2023). According to Omachonu (2011), recognising complementary distribution is essential in phonological analysis, second-language acquisition and sociophonetics because it distinguishes predictable allophonic variation from true phonemic contrast.

Generative Theory

The analysis of spirants, also known as fricatives, has benefited significantly from Generative Phonology, which explains how phonological rules derive surface pronunciations from underlying representations. Developed from Chomsky's (1965) generative grammar and extended by Chomsky and Halle (1968), the theory represents spirants as bundles of distinctive features such as [+continuant], [±voice], [±anterior], [±coronal] and [±strident]. These features enable phonological rules to operate on natural classes rather than individual sounds, explaining processes such as voicing assimilation, spirantisation and feature spreading as systematic feature modifications. By distinguishing underlying from surface forms, Generative Phonology provides an effective framework for analysing both phonological regularities and contextual variation in spirant production.

Autosegmental Phonology broadens this perspective by representing phonological features on separate tiers rather than in a linear sequence (Goldsmith, 1976). This framework effectively explains feature spreading and long-distance assimilation involving spirants, particularly voicing and continuancy, while preserving underlying segmental identities. Archangeli and Pulleyblank (1994) argue that tiered representations account more transparently for assimilation, deletion and feature spreading than linear rule-based models. Although more complex

in representation, the theory strengthens the relationship between abstract phonological structures and observable speech patterns.

Natural Phonology provides a complementary explanation by viewing spirant behaviour as the outcome of universal, psychologically motivated phonological processes (Stampe, 1979). It explains why learners frequently replace marked spirants such as /θ/ and /ð/ with less complex sounds available in their native languages, treating these substitutions as natural developmental processes rather than random errors. Hayes (2009) notes that assimilation, deletion and substitution occur predictably across languages because they reflect common articulatory and cognitive constraints. Although Natural Phonology is less concerned with underlying representations than Generative Phonology, its emphasis on articulatory ease and phonological development complements both generative and autosegmental approaches, providing a comprehensive account of spirant production and variation.

Empirical Studies

Numerous research works abound on Nigerian English Phonology. Particular attention is given to Omachonu's research efforts on the Igala people and their articulatory features. However, Igboanusi (2006) is a comparative study of the pronunciation features of Igbo English and Yoruba English speakers of Nigeria. Jibril (1982) is a doctoral research on Phonological variations in Nigerian English at the University of Lancaster. Kujore, (1985) studies English word stress and rhythm in Nigerian English while Omachonu, (2011) investigates word stress assignment in Educated Nigerian English.

Some recent research efforts into Nigerian English include those of Idowu, (2020) that investigates international intelligibility of Nigerian English which is published in a European Scientific Journal. The study examines how vowel length affects the intelligibility of Nigerian English among international listeners. Otuyemi & Akinmusayo (2025) is a Phonological Description of the Spoken English Forms of Educated Ikale and Ondo Speakers of Nigerian English. The study investigates phonological features among educated speakers from minority Yoruba-speaking communities. Oladipupo (2023) focuses on the acoustic properties of educated Nigerian English vowels. Oladipupo (2024) also

examines speech rhythm in Nigerian English published in an *African Linguistics Review*.

Oladipupo and Akinola (2022) also investigates phonetic variation in Nigerian English published in the *Journal of African Languages*. Oluranti (2025) investigates prosodic features of West African Englishes in the *World Englishes*, while Umar (2024) carries out a phonological analysis of Nigerian English with selected speakers from the three major Nigerian languages and published in *Jalingo Journal of Linguistics and Literary Studies*. His research analyses segmental and suprasegmental features across Hausa, Igbo and Yoruba speakers. Finally, among others Amoniyani and Melefa (2026) look at variation in the formant dynamics of Southeastern Nigerian English Diphthongs. The study explores gender and regional influences on the realisation of Nigerian English diphthongs. See also Okpala, Chukwu & Udoh (2026) who investigate phonetic variation in Nigerian Spoken English from a corpus-informed framework for teaching pronunciation and published in *Awka Journal of English Language and Literary Studies*.

Akinola, Oladipupo, and Oyebola (2024) investigate the patterns of triphthong realisation in Educated Nigerian English using the spoken component of the International Corpus of English–Nigeria (ICE-Nig). Adopting a corpus-based quantitative approach grounded in Natural Phonology, the study analysed the pronunciation of lexical items containing English triphthongs and found that Nigerian speakers consistently employed phonological processes such as syllabification, diphthongisation, and monophthongisation to simplify these complex vowel sequences. The findings demonstrate that these pronunciation patterns are systematic rather than random, reflecting the distinctive phonological identity of Nigerian English and reinforcing the need for its codification and standardisation.

Similarly, Gut, Unuabonah, Daniel, Gerfer, Oladipupo, and Oyebola (2024) examine the realisation of the speech act of offers in Educated Nigerian English through a variational pragmatics framework. Using discourse completion tasks administered to 325 respondents, the study revealed that contextual variables, including social status, social distance, and formality, significantly influence the linguistic strategies employed in making offers. Although the latter study focuses on pragmatics rather than phonology, both investigations highlight the systematic nature of Nigerian English and provide empirical evidence

that its linguistic features, whether phonological or pragmatic, are governed by identifiable patterns shaped by the Nigerian sociolinguistic environment rather than by deviation from native English norms.

Omachonu's scholarship on the English spoken by Igala speakers represents one of the earliest systematic attempts to explain the phonological characteristics of this variety of Nigerian English from a theoretical perspective. In his study, *Comparative Optimality Theory Analysis of Primary Stress Assignment in Standard British and Nigerian English* (2008), Omachonu investigated how educated Igala speakers assign primary stress in English lexical items. Adopting Optimality Theory as the analytical framework, he compared stress patterns in Standard British English with those produced by Nigerian English speakers whose first language is Igala. The study found that many deviations from Standard British English stress placement are not arbitrary errors but are motivated by the interaction of phonological constraints transferred from the Igala language. Omachonu argues that the restructuring of English stress patterns reflects the influence of the speakers' first language phonological system, thereby providing empirical support for the role of language transfer in second language phonology (Omachonu, 2008).

Earlier, in his master's thesis, *Igala Phonetics and Phonology: An Overview* (2001), Omachonu provided a comprehensive description of the sound system of Igala, including its vowel inventory, consonantal structure, syllable organisation and tonal characteristics. Although the study focuses primarily on the indigenous language, its findings have significant implications for understanding the English pronunciation of Igala speakers. By documenting the phonological properties of Igala, the study establishes the linguistic basis for explaining segmental and suprasegmental interference observed in the English spoken by native Igala speakers. The research demonstrates that the absence or restricted occurrence of certain English phonemes and prosodic features in Igala often results in predictable pronunciation patterns when speakers use English as a second language. Consequently, the study serves as an important descriptive foundation for subsequent investigations into Igala English.

Similarly, *Fundamentals of Phonology and the Study of Igala Language* (2000/2001) further consolidates Omachonu's contribution to the phonological description of Igala. The book introduces the

fundamental principles of phonological analysis while applying them to the structure of the Igala language. Through detailed discussions of phonemic contrasts, syllable patterns and phonological processes, the work provides essential background for explaining the pronunciation habits of Igala speakers of English. Collectively, Omachonu's studies demonstrate that many phonological features of Igala English are systematic outcomes of first language influence rather than random deviations from native English norms. His work has therefore become a major reference point for later empirical studies on Nigerian English varieties, particularly those examining segmental substitution, stress assignment, and cross linguistic phonological transfer among Igala speakers.

Methodology

This study adopted a qualitative phonetic approach to investigate the production of English spirants by Igala speakers of English. The population comprised Igala-English bilinguals aged between 18 and 35 years who had received formal education in English. Using purposive sampling, thirty participants with demonstrated proficiency in both Igala and English were selected, with attention to gender balance. Data were elicited through a carefully designed word list containing the English spirants /f/, /v/, /θ/, /ð/, /s/, /z/, /ʃ/ and /ʒ/ in initial, medial and final word positions, sentence reading tasks and spontaneous speech samples, all of which were digitally recorded. The recordings were transcribed using the International Phonetic Alphabet (IPA) and analysed to identify patterns of spirant production, including substitution, omission, devoicing and distortion, with particular attention to positional variation and the influence of the Igala phonological system. The findings were interpreted in relation to phonological transfer and second language acquisition theories to explain the observed pronunciation patterns and their pedagogical implications. Ethical standards were observed throughout the study by obtaining informed consent from all participants and ensuring anonymity and confidentiality through the use of coded identities.

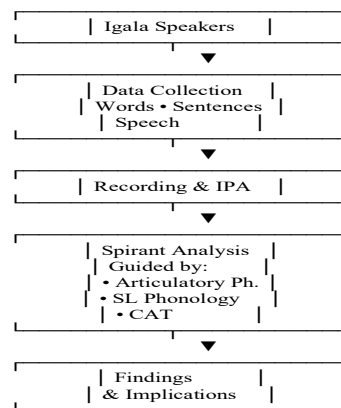
Theoretical Framework

This study is anchored in Articulatory Phonology, Second Language Phonology, and Contrastive Analysis Theory (CAT), which together

provide a comprehensive framework for explaining the production and complementary distribution of spirants by Igala speakers of English. Articulatory Phonology, proposed by Browman and Goldstein (1986, 1992), conceptualises speech as a sequence of coordinated articulatory gestures rather than isolated phonemes, explaining that the production of spirants depends on the precise coordination of the tongue, lips, velum, and glottis to create the narrow constrictions necessary for turbulent airflow. This perspective accounts for variations in spirant production arising from differences in articulatory coordination.

Complementing this view, Second Language Phonology maintains that second-language learners perceive and produce unfamiliar sounds through the influence of their first-language phonological system, often resulting in sound substitution, approximation and phonological restructuring when equivalent sounds are absent in the native language (Flege, 1995; Best & Tyler, 2007). Contrastive Analysis Theory (Lado, 1957) further explains that systematic differences between the phonological systems of the first and second languages predict areas of pronunciation difficulty and negative transfer, a position reinforced by Gass and Selinker (2008). In the context of this study, the absence or restricted distribution of several English spirants in Igala leads speakers to substitute them with the closest native consonants, producing predictable complementary distribution patterns. Collectively, these three theories provide an integrated explanation of the articulatory mechanisms, second-language acquisition processes and cross-linguistic influences that shape the production and distribution of English spirants among Igala speakers.

Figure 1. Pictorial Framework for the Analysis of English Spirants among Igala Speakers of English.



At the centre is the analysis of English spirants, which constitutes the primary focus of the study. This analysis is guided by Articulatory Phonology, which explains the articulatory gestures involved in spirant production, Second Language Phonology, which accounts for the influence of second language learning on pronunciation, and Contrastive Analysis Theory (CAT), which facilitates the comparison of the Igala and English phonological systems to identify areas of phonological transfer.

These theoretical perspectives inform the analysis of speech data obtained from Igala speakers of English and provide the basis for interpreting the observed production patterns and their pedagogical implications. The interrelationship among these components is presented in the pictorial framework below.

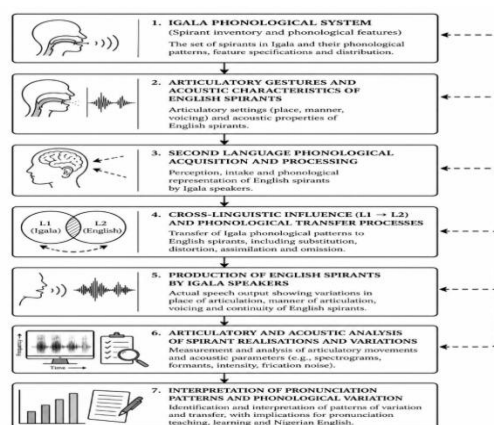


Figure 2. Pictorial Representation of the triangulated theoretical framework

The pictorial framework presents the sequence of processes involved in the investigation of English spirant production among Igala speakers, beginning with the Igala phonological system and progressing through the articulatory and acoustic properties of English spirants. It further illustrates how second language phonological acquisition and cross linguistic transfer influence the production of English spirants by Igala speakers, resulting in variations such as substitution, distortion, assimilation and omission. The framework also incorporates articulatory and acoustic analyses to provide objective measurements of spirant realisations and identify patterns of pronunciation variation. Ultimately, it demonstrates how the integration of Articulatory Phonology, Second Language Phonology and Contrastive Analysis Theory facilitates the interpretation of the findings and their implications for pronunciation teaching, language learning and Nigerian English phonology.

Data Analysis (Perceptual)

This section presents the data collected for the study and analyses them in line with the research objectives. The participants' pronunciations of selected English spirants are examined by comparing their productions with the corresponding Standard British English pronunciations in order to identify areas of phonological variation. The results are presented in

tables and discussed with reference to relevant literature on Nigerian English phonology and first-language interference.

Word / Sentence	SBE Control Version	Educated Igala Speakers' Version	Uneducated Igala Version	Fricative Divergences (SBE / Igala)	Comments on Discrepancies
Three	/θri:/	/θri:/	/tri:/	/θ/ → /t/	Less exposure in uneducated speakers → dental fricative replaced by alveolar stop
Faith	/feɪθ/	/feɪθ/	/feit/	/θ/ → /t/	/θ/ substitution common in uneducated speakers
Fate	/feit/	/feit/	/feit/	–	No divergence; SBE and Igala pronunciation align
Tree	/tri:/	/tri:/	/tri:/	–	No divergence
Truth	/tru:θ/	/tru:θ/	/tru:t/	/θ/ → /t/	Uneducated speakers replace dental fricative
Shop	/ʃɒp/	/ʃɒp/	/ʃɒp/	–	No divergence
Tight	/taɪt/	/taɪt/	/taɪt/	–	No divergence
Decorative	/ˈdek.ər.ə.tɪv/	/ˈdek.ər.ə.tɪv/	/ˈdek.ər.ə.tɪv/	/v/ preserved	Minimal divergence; fricative /v/ usually maintained in educated speakers
Chop	/ʃɒp/	/ʃɒp/	/ʃɒp/	–	No divergence
Tithe	/taɪð/	/taɪð/	/taɪd/	/ð/ → /d/	Uneducated speakers replace dental fricative with alveolar stop
Sympathetic	/ˌsɪm.pəˈθet.ɪk/	/ˌsɪm.pəˈθet.ɪk/	/ˌsɪm.pəˈtet.ɪk/	/θ/ → /t/	Common substitution in less-exposed speakers
Exhaust	/ɪgˈzɔːst/	/ɪgˈzɔːst/	/ɪgˈzɔːst/	–	/z/ and /s/ preserved
Leisure	/ˈliːʒər/	/ˈliːʒər/	/ˈliːʃər/	/ʒ/ → /ʃ/	Uneducated speakers replace postalveolar fricative /ʒ/ with /ʃ/
Important	/ɪmˈpɔː.tənt/	/ɪmˈpɔː.tənt/	/ɪmˈpɔː.tənt/	–	No divergence
Exult	/ɪgˈzʌlt/	/ɪgˈzʌlt/	/ɪgˈzʌlt/	–	No divergence
Authentic	/ɔːˈθen.tɪk/	/ɔːˈθen.tɪk/	/ɔːˈten.tɪk/	/θ/ → /t/	Uneducated speakers replace /θ/
Breathe	/briːð/	/briːð/	/briːd/	/ð/ → /d/	Common dental fricative substitution
Breath	/breθ/	/breθ/	/bret/	/θ/ → /t/	Similar pattern as above
Feather	/ˈfeð.ər/	/ˈfeð.ər/	/ˈfed.ər/	/ð/ → /d/	Uneducated speakers substitute dental fricatives
Root	/ru:t/	/ru:t/	/ru:t/	–	No divergence
Ruth	/ru:θ/	/ru:θ/	/ru:t/	/θ/ → /t/	Dental fricative replaced
Taught	/tɔ:t/	/tɔ:t/	/tɔ:t/	–	No divergence
Thought	/θɔ:t/	/θɔ:t/	/tɔ:t/	/θ/ → /t/	Substitution in uneducated speakers
Nervous	/ˈnɜː.vəs/	/ˈnɜː.vəs/	/ˈnɜː.bəs/	/v/ → /b/	Voiced labiodental fricative often realized as /b/

The comparison of phonemic transcriptions of English words and sentences produced by Standard British English (SBE), educated Igala speakers, and uneducated Igala speakers reveals systematic variation in the production of spirants, reflecting the influence of the Igala phonological system on English pronunciation. The dental spirants /θ/ and /ð/, which are absent from Igala, present the greatest difficulty.

Uneducated speakers consistently replace them with the alveolar stops /t/ and /d/, producing forms such as /tri:/, /feit/, /tru:t/, /bri:d/, and /taid/ for "three," "faith," "truth," "breathe," and "tithe," respectively. These substitutions demonstrate predictable first-language transfer, whereas educated speakers generally preserve the target spirants due to greater exposure to formal education and phonetic instruction, although occasional substitutions still occur in rapid speech. The findings indicate that educational background significantly enhances the acquisition of English spirants by reducing reliance on native-language articulatory patterns.

A similar trend is evident in the production of the postalveolar spirant /ʒ/, which uneducated speakers frequently replace with /ʃ/, as in "leisure" (/ˈli:ʃə/), while educated speakers typically maintain the target pronunciation. Sentence-level data further confirm that educated speakers preserve voiced–voiceless spirant contrasts more consistently in connected speech, whereas uneducated speakers continue to substitute unfamiliar spirants with stops or more familiar fricatives. These recurrent patterns highlight the effects of phonological transfer, articulatory economy, and the absence of corresponding spirants in the Igala sound system. Overall, educated Igala speakers approximate Standard British English more closely, while uneducated speakers exhibit systematic substitution patterns that reflect enduring first-language interference.

Contrastive Hypothesis Analysis (CHA) of Selected English Fricatives among Igala Speakers

Contrastive Analysis Hypothesis (CAH) proposes that areas of difficulty in second-language pronunciation can be predicted through a systematic comparison of the sound systems of the first language (L1) and the second language (L2). In the present study, the comparison focuses on the Igala phonological system and the English spirants (fricatives). The analysis reveals that Igala lacks several English spirants, particularly the dental spirants /θ/ and /ð/, and exhibits limited phonemic contrast between certain voiced and voiceless fricatives. Consequently, Igala speakers are expected to substitute unfamiliar English spirants with the closest consonantal equivalents available in their native phonological inventory. The word list and sentence data provide empirical evidence for predicting and explaining these substitution patterns, thereby confirming

the explanatory relevance of the Contrastive Analysis Hypothesis in accounting for the production of English spirants by Igala speakers.

Data Analysis (Acoustics)

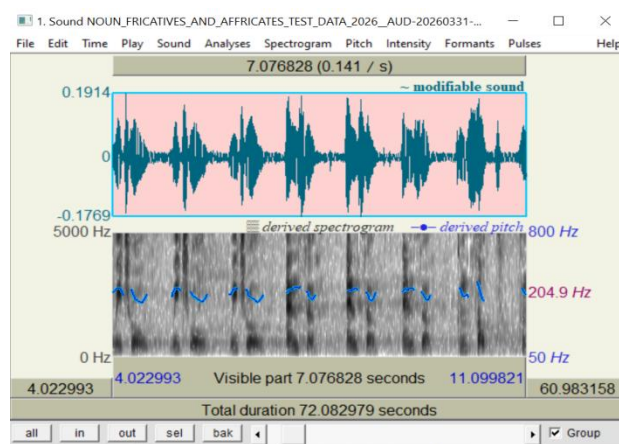


Figure 3. Acoustic Analysis of /tʃ/ and /s/ in “ritual” and “single” respectively.

The screenshot shows a Praat display with waveform, spectrogram, and pitch track for repeated productions of fricatives and affricates. From an acoustic-phonetic perspective, /ch/ (the voiceless postalveolar affricate /tʃ/) and /s/ (the voiceless alveolar fricative) can be clearly distinguished in both the waveform and the spectrogram. Below is a structured acoustic narration of how each sound appears.

Acoustic structure of /tʃ/ (“ch”)

Affricates are characterised by a two-part articulatory structure consisting of an initial stop followed immediately by frication. Acoustically, this sequence is represented in the waveform by a brief closure interval with little or no amplitude, a sudden release burst, and a subsequent period of aperiodic frication noise. Similarly, the spectrogram displays a short low-energy region corresponding to the stop closure, a distinct vertical burst marking the release, and dense high-frequency energy produced during the fricative phase. For the postalveolar affricate /tʃ/, the frication energy

is typically concentrated within the mid-to-high frequency range (approximately 2000–4000 Hz), appearing broader and more diffuse than that of the alveolar fricative /s/. This acoustic characteristic results from the longer front cavity created by the postalveolar place of articulation, which lowers the dominant resonance frequencies. In addition, the frication portion of /tʃ/ is generally shorter than that of /s/ because part of the segment's duration is occupied by the initial stop closure, making the affricate a temporally distinct consonantal category.

Acoustic structure of /s/

The alveolar fricative /s/ is characterised by continuous frication without an initial stop phase, distinguishing it acoustically from the affricate /tʃ/. Unlike /tʃ/, /s/ has neither a closure interval nor a release burst but begins immediately with sustained aperiodic frication noise. In the waveform, this appears as a continuous noisy signal with no preceding silence, while the spectrogram displays uninterrupted high-frequency aperiodic energy from the onset, without a blank interval or burst spike. Acoustically, /s/ exhibits intense spectral energy in the high-frequency range, typically above 4000 Hz and often extending towards 8000 Hz, producing dark, sharply defined bands that give the sound its characteristic hissing quality. This concentration of high-frequency energy results from the alveolar place of articulation, where the relatively short front cavity raises the dominant resonance frequencies. Furthermore, because the entire duration of the segment consists of frication, /s/ generally has a longer frication duration than the affricate /tʃ/, whose total duration is shared between the stop closure and the fricative release.

Affricates are characterised by a two-part articulatory structure consisting of an initial stop followed immediately by frication. Acoustically, this sequence is represented in the waveform by a brief closure interval with little or no amplitude, a sudden release burst, and a subsequent period of aperiodic frication noise. Similarly, the spectrogram displays a short low-energy region corresponding to the stop closure, a distinct vertical burst marking the release, and dense high-frequency energy produced during the fricative phase. For the postalveolar affricate /tʃ/, the frication energy is typically concentrated within the mid-to-high frequency range (approximately 2000–4000 Hz), appearing broader and more diffuse than that of the alveolar fricative /s/. This acoustic characteristic results from the longer front cavity created by the

postalveolar place of articulation, which lowers the dominant resonance frequencies. In addition, the frication portion of /tʃ/ is generally shorter than that of /s/ because part of the segment's duration is occupied by the initial stop closure, making the affricate a temporally distinct consonantal category.

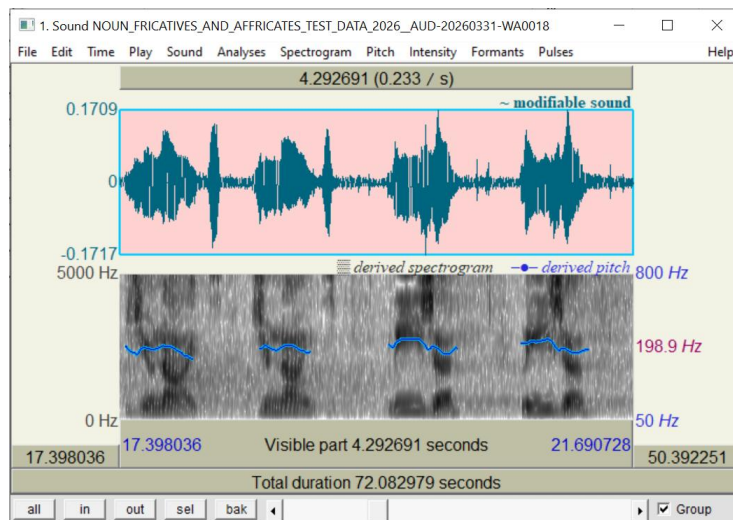


Figure 4. Acoustic Analysis of /tʃ/ and /dʒ/ in “church” and “judge” respectively

This second Praat display shows clearer token separation and allows a more precise narration of how /tʃ/ and /dʒ/ are being realised by Igala speakers of Nigerian English. The waveform–spectrogram relationship here is especially useful for diagnosing L1 transfer from the Igala language into English fricative–affricate production.

In native English, the acoustic distinction between the fricative /s/ and the affricate /tʃ/ is marked by a sharp spectral contrast: /s/ is characterised by sustained, intense high-frequency frication without an initial closure, whereas /tʃ/ exhibits a brief stop closure followed by a release burst and shorter mid-to-high frequency frication. However, the Praat image of the Igala speaker reveals a reduced contrast between these consonants. The /s/ tokens display weaker, more diffuse frication, with spectral energy spreading into the mid frequencies rather than being concentrated in the upper frequency range, indicating reduced sibilance

and a shorter frication duration. Similarly, the /tʃ/ tokens show a pronounced closure and release burst, but the frication that follows is relatively weak and brief, making the segment resemble a sequence of [t] plus a weak [ʃ] rather than a single integrated affricate. As a result, both consonants exhibit similar frication patterns in the spectrogram, with the principal acoustic distinction becoming the presence or absence of the stop burst rather than differences in spectral energy distribution. This pattern reflects first-language transfer from Igala phonology, which places greater articulatory emphasis on plosives than on sustained sibilant frication, thereby reducing the acoustic contrast between English spirants and affricates in the speakers' Nigerian English.

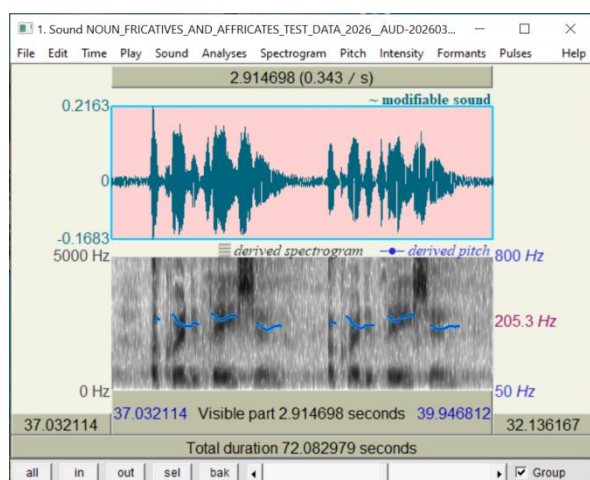


Figure 5. Acoustic Analysis of /f/ in “Accreditation”

Figure 5 illustrates the distribution and frequency of spirant (fricative) pronunciation errors produced by Igala speakers of English across different word positions. The figure shows that the highest concentration of errors occurs with the dental spirants /θ/ and /ð/, followed by the postalveolar spirants /ʃ/ and /ʒ/, which are consistently substituted with alveolar stops or other fricatives, reflecting the influence of the Igala phonemic inventory on English pronunciation. The chart further reveals that these spirant errors occur most frequently in word-initial and word-final positions, where speakers tend to replace unfamiliar English

spirants with more familiar alveolar or bilabial consonants, while medial positions exhibit comparatively fewer substitutions, suggesting improved production within more complex word structures. In addition, the figure indicates frequent devoicing of /z/ and substitution of /v/, highlighting the limited voicing contrast for certain fricatives in Igala phonology. On the whole, the distribution of these spirant production patterns provides empirical support for the Contrastive Analysis Hypothesis, demonstrating that the observed pronunciation difficulties are systematic and predictable consequences of phonological differences between Igala and English, while also identifying the English spirants that require targeted pedagogical attention for more effective second-language acquisition.

The Igala phonological system shapes the articulation of English fricatives, leading to reduced target-like pronunciation and occasional intelligibility issues. The chapter concludes by linking these observed patterns to the theoretical framework and research questions, establishing a foundation for the pedagogical recommendations discussed in the subsequent chapter.

Implication of Omachonu's Findings on the study of spirants in Igala speakers of English

The findings of Omachonu's studies have direct implications for this current investigation of English spirants (fricatives) among Igala speakers (cf. Omachonu 2001). Since his research establishes that the phonological structure of Igala significantly influences the production of English sounds through first language transfer, it is reasonable to expect that the articulation of English fricatives will also reflect similar transfer effects. Where English fricative phonemes are absent, restricted or function differently in the Igala sound system, speakers may substitute them with the nearest available native phonemes, modify their manner or place of articulation, or simplify consonant clusters involving fricatives. Consequently, a study of spirants among Igala speakers can build on Omachonu's findings by extending the analysis from stress and general phonological transfer to the segmental level, specifically examining the production, substitution and distribution of English fricatives. Such a study would contribute to a more comprehensive understanding of the phonetic and phonological characteristics of the Igala variety of Nigerian English while providing empirical evidence for pronunciation teaching and second language phonology.

Discussion of Findings

The findings of this study demonstrate that the production of English spirants (fricatives) by Igala speakers is systematically influenced by the phonological structure of the Igala language, with the degree of influence varying according to speakers' educational background. Educated Igala speakers generally approximate Standard British English (SBE) pronunciation more closely, whereas uneducated speakers exhibit consistent substitution patterns that reflect first-language phonological transfer. The most prominent deviations involve the dental spirants /θ/ and /ð/, which are regularly replaced with the alveolar stops /t/ and /d/, as observed in pronunciations such as /tri:/ for "three," /fet/ for "faith," /tru:t/ for "truth," /bri:d/ for "breathe," and /taid/ for "tithe."

Similarly, the voiced labiodental spirant /v/ is frequently realised as the bilabial stop /b/, while the voiced postalveolar spirant /ʒ/ is commonly devoiced to /ʃ/, particularly in words such as "leisure." These substitution patterns are consistent with the predictions of the Contrastive Analysis Hypothesis, which holds that phonological differences between the first and second languages are a major source of pronunciation difficulty. From the perspective of Distinctive Feature Theory, these substitutions involve changes in manner of articulation, especially from the feature [+continuant] associated with spirants to the feature [-continuant] characteristic of stops, while often preserving the original place of articulation. The relatively accurate production of the spirants /f/ and /s/ by both educated and uneducated speakers further suggests that pronunciation difficulty is concentrated on English spirants that are absent from, or insufficiently contrasted within, the Igala phonological system.

The findings further reveal that these spirant substitution patterns extend beyond isolated lexical items to connected speech, indicating that they are systematic phonological processes rather than isolated performance errors. Function words such as "the" are consistently realised as /də/, while words containing dental spirants, such as "thought," are frequently pronounced as /tɔ:t/, confirming the persistence of first-language transfer in spontaneous speech. The acoustic evidence presented in figures 3-5 also shows that Igala speakers produce reduced

spectral intensity for certain spirants and, in some cases, overemphasise stop components preceding affricates, thereby diminishing the acoustic contrast expected in Standard British English. These observations support broader principles of second-language phonology, which predict that learners interpret unfamiliar sounds through the framework of their native phonological system until sufficient exposure and articulatory training facilitate target-like production. Consequently, the study affirms the explanatory relevance of the Contrastive Analysis Hypothesis and Distinctive Feature Theory in accounting for the production of English spirants by Igala speakers. Pedagogically, the findings underscore the importance of targeted pronunciation instruction focusing on the dental spirants /θ/ and /ð/, the labiodental spirant /v/, and the postalveolar spirant /ʒ/, using articulatory practice, auditory discrimination, and minimal-pair exercises to reduce first-language interference and promote greater conformity with Standard British English pronunciation.

Summary of Findings

The study found that the production of English spirants (fricatives) by Igala speakers is systematically influenced by differences between the Igala and English phonemic inventories. The greatest difficulty was observed with the dental spirants /θ/ and /ð/, which were frequently substituted with the alveolar stops /t/ and /d/, particularly by uneducated speakers, owing to the absence of these spirants in the Igala sound system. Similar first-language transfer was evident in the replacement of the voiced labiodental spirant /v/ with the bilabial stop /b/ and the devoicing of the postalveolar spirant /ʒ/ to /ʃ/ in words such as "nervous" and "leisure," respectively. In contrast, the voiceless spirants /f/ and /s/ were generally produced accurately by both educated and uneducated speakers, suggesting that these sounds pose little articulatory difficulty. These spirant substitution patterns occurred consistently in both isolated words and connected speech, indicating that they are systematic phonological processes rather than incidental pronunciation errors.

Furthermore, educated Igala speakers approximated Standard British English pronunciation more closely than their uneducated counterparts, highlighting the positive influence of formal instruction and linguistic exposure. The findings therefore provide strong support for the Contrastive Analysis Hypothesis by demonstrating that phonological differences between the first and second languages account for

predictable pronunciation challenges, while also showing that focused instruction on problematic English spirants can significantly enhance pronunciation accuracy and overall intelligibility among Igala speakers of English.

Conclusion

The study concludes that the pronunciation difficulties experienced by Igala speakers of English arise primarily from first-language phonological transfer, particularly in the production of English spirants (fricatives) that are absent or non-contrastive in the Igala sound system. The most affected sounds are the dental spirants /θ/ and /ð/, the labiodental spirant /v/, and the postalveolar spirant /ʒ/, which are consistently replaced with articulatorily similar but phonologically simpler consonants available in the speakers' native language. These substitution patterns occur systematically in both isolated words and connected speech, demonstrating that they are not random pronunciation errors but stable phonological processes rooted in the Igala phonemic inventory. The findings therefore provide strong empirical support for the Contrastive Analysis Hypothesis and are further explained by Distinctive Feature Theory and principles of Second Language Phonology, all of which predict that learners substitute unfamiliar target-language spirants with the closest equivalents from their first language.

The study further concludes that educational background and sustained exposure to English pronunciation significantly enhance the accurate production of English spirants. Educated Igala speakers consistently approximated Standard British English pronunciation more closely than uneducated speakers, exhibiting fewer spirant substitutions and greater control of articulatory distinctions absent in Igala. This demonstrates that first-language interference is not permanent but can be substantially reduced through systematic pronunciation instruction, increased exposure to native or standard pronunciation models, and regular articulatory practice. Consequently, the study affirms that focused pedagogical intervention targeting problematic English spirants can improve pronunciation accuracy, reduce phonological transfer, and enhance the intelligibility of English spoken by Igala speakers.

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