



Vowel-Tone Interaction in Two Dialects of Galo Language of Arunachal Pradesh, India

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Abstract: The investigation begins with an in-depth and all-encompassing assessment of the interplay between vowels and tones within the various dialects of the Galo language, notably spoken in the culturally unique enclave of Arunachal Pradesh, India - Pugo Galo and Lare Galo. Our research aims to shed light on the numerous phonological nuances seen in these languages. We concentrate on a range of acoustic characteristics related to vowels. We investigate the fundamental frequency (F0) and formant frequencies (F1 and F2), which have a substantial impact on the various phonetic properties of spoken language. Our goal is to understand the fundamental variables that drive the interplay between vowels and tones while accounting for gender and dialect differences through meticulous data collection and rigorous statistical analysis. With its mosaic of dialects, the Galo language provides a stimulating linguistic field for investigation. Our research is motivated by a desire to uncover the subtle variations and trends that highlight the linguistic variety found in the Galo community. The focus of our analysis is on F1 and F2 values, fundamental frequency (F0), and vowel length. These acoustic factors are critical for understanding the phonetic differences between Pugo Galo and Lare Galo, as well as probable gender-related variants within these dialects. We provide an extensive analysis of the collected data using statistical approaches, allowing us to establish meaningful comparisons and highlight the different linguistic features that characterize these two Galo dialects. In essence, our findings not only contribute to the vast area of linguistics, but also provide essential insights into the protection and appreciation of linguistic variety within the Galo community.

Keywords: Fundamental frequency, Vowels Acoustic analysis, Tibeto-Burman language, endangered language documentation, Formant.

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1. Introduction

The Galo tribe, located in Arunachal Pradesh, India, is a tribute to the varied tapestry of cultural and linguistic variety that graces this fascinating corner of the subcontinent. The Galo tribe stands out in India's northeastern area, where indigenous people thrive, not only for its extraordinary rituals and way of life, but also for its particular language history [1, 2].

Arunachal Pradesh, sometimes known as the "Land of the Dawn-Lit Mountains," is a thriving melting pot of ethnicities. Each community's language, customs, and traditions are woven into the fabric of this spectacular territory. The Galo tribe has carved out a significant niche for itself among these lively communities, securely establishing its cultural roots over generations. Since the formal acknowledgment

of Scheduled Tribes in 1950, the Galo tribe has played an important part in Arunachal Pradesh's complicated social fabric [3, 4]. Its domains span Leparda, Lower Siang, West Siang, East Siang, Upper Siang, Siang, and Upper Subansiri Districts, describing its presence as vast and deeply embedded. However, inside the overarching Galo language, a linguistic landscape of astounding complexity emerges. Various dialects, each with its own phonetic and phonological characteristics, offer a vivid picture of linguistic variety within the Galo population [5, 6]. Our research focuses on two of these fascinating dialects, Pugo Galo and Lare Galo, which, although sharing a shared linguistic history, reveal minor yet fundamental differences in vowel-tone interaction. These languages, engraved with vestiges of tradition, invite us to explore their own phonetic landscapes [7, 8].

The Galo language, with its diverse dialects, offers a captivating terrain for linguistic exploration. This paper focuses on understanding the dynamics of tone-vowel interaction in Pugo Galo and Lare Galo, shedding light on the complex phonological nuances. We aim to highlight the role of tone in shaping the vowel systems of these dialects.

As we go further into this sonic adventure, we welcome you to join us in this exciting investigation of Pugo Galo and Lare Galo dialects—a journey that promises to expose the musical richness of the Galo linguistic legacy by unraveling the resonant secrets of vowel-tone interaction.

2. Methodology

In this section, we reveal the tedious method used to gather and analyze data, providing an in-depth look at the techniques used to capture the intricacies of vowel-tone interaction in the Pugo Galo and Lare Galo dialects. Our study technique is intended to assure precision, dependability, and depth in our investigation of the phonetic complexities of these dialects. To analyze tone-vowel interaction, we collected data on the fundamental frequency (F0) variations in connection with the specific vowels you've mentioned (Galo a, i, u, e, o, v and w). Our approach includes rigorous statistical analyses to explore how tone affects the pronunciation of these vowels.

2.1 Data Collection

To begin our phonetic adventure, we began a thorough data gathering procedure that included collaboration with native speakers fluent in both Pugo Galo and Lare Galo.

Our technique began with the careful selection of native speakers, a critical step in ensuring the thoroughness and validity of our data collecting procedure. Our strategy was rigorously planned in order to capture a varied cross-section of the Pugo Galo and Lare Galo-speaking communities. This variety was required to include a broad range of phonetic variants, taking into account characteristics such as age, gender, and geographical differences. We recognized the considerable variation within Galo-speaking cultures, understanding that phonetic traits might vary greatly between age groups, genders, and geographical locations. Our selection tried to portray this range by having speakers from a variety of backgrounds and ages ranging from the young to the elderly.

The precision and quality of our recordings were critical to the success of our data collecting method. To that aim, we invested in cutting-edge recording equipment that was critical in capturing the complex phonetic qualities of both the Pugo Galo and Lare Galo dialects. We recruited native speakers using precisely developed scripts to provide a consistent dataset and capture the entire range of vowel-tone interactions among the dialects. These scripts were designed to provide a wide range of words, phrases, and sentences, providing a thorough picture of the phonetic environment. Linguistic specialists carefully constructed the scripts, taking into account the phonetic complexities of both the Pugo Galo and Lare Galo dialects

2.2 Data Analysis

The research we conducted was built on a thorough assessment of acoustic parameters such as F1 and F2 values, fundamental frequency (F0), and duration. These factors served as the foundation for our

research on vowel-tone interaction in the Pugo Galo and Lare Galo dialects. Our analysis procedure is as follows:

Acoustic Analysis: The obtained speech samples were subjected to thorough acoustic analysis. To determine formant frequencies, we retrieved F1 and F2 values for each vowel in both languages. Furthermore, fundamental frequency (F0) and vowel duration measurements were taken.

Statistical procedures: To compare acoustic parameters across dialects and gender, statistical procedures such as t-tests and ANOVA were used. We were able to discover substantial differences and trends in vowel-tone interaction using these strategies.

Interpretation: Our findings were interpreted in the context of language phonology and vowel-tone interaction. We attempted to decipher the phonetic differences that distinguish Pugo Galo and Lare Galo, taking into account the probable effect of gender on these variations.

By meticulously executing our data collection and analysis methodology, we aimed to capture the essence of vowel-tone interaction within these dialects.

3. Speakers

The voices and language specifics of the native speakers skilled in the Pugo Galo and Lare Galo dialects contain the core of our study. In-depth profiles of the speakers who served as the study's main subjects are provided in this part, along with information on how important they were in helping to understand the subtleties of vowel-tone interaction.

3.1 Demographic Diversity

A carefully chosen group of native speakers representing a rich tapestry of demographic variety is the basis of our study. We took a cautious and considerate approach, including people of all ages—from the youngest to the most senior—and from all walks of life. This method of deliberate choice was developed to help us navigate the phonological landscapes between generations and recognize probable phonetic changes that could take place throughout time.

3.2 Age Diversity

In order to fully understand the phonological complexities of the Pugo Galo and Lare Galo dialects, it was essential to include people of all ages. Through it, we were able to record the changing phonetic subtleties that may have been influenced by linguistic development, societal shifts, and the fluidity of language itself. We were able to acquire unique insights into how these dialects have changed and evolved across generations by including both young people and older people as active participants in our study.

3.3 Gender Balance

Our selection procedure was driven by an explicit acknowledgment of the role of gender on phonetic features. To that aim, we rigorously verified that our dataset had a fair representation of both male and female speakers. The goal was twofold: first, to discover and comprehend gender-specific subtleties in the pronunciation of Pugo Galo and Lare Galo, and second, to add to the wider conversation on gender and phonetics in linguistic study. The symphony of male and female voices strengthened our investigation of vowel-tone interaction, providing new perspectives and insights.

3.4 Regional Variations

Arunachal Pradesh, an example of linguistic and cultural variety, reveals striking differences between regions. We recognized the complex interplay between location and language, as well as the possibility of regional differences in vowel-tone interaction. As a result, our selection of speakers crossed geographical borders, including people from various locations of the Galo-speaking community. We hoped to learn more about the intricacies that location may impose on phonetic traits by recording these people's voices.

3.5 Linguistic Proficiency

The assessment of each speaker's language competency in both Pugo Galo and Lare Galo dialects was a critical component of our data gathering method. Thus, our speakers, who were carefully chosen to represent a cross-section of age, gender, and geographical variety, were critical in our search to understand the complexities of vowel-tone interaction in the Pugo Galo and Lare Galo dialects. Their voices and linguistic skills served as the foundation for our research, improving our understanding of these dialects and contributing to the larger area of linguistic research.

4. Materials

This section delves into the materials and resources that served as the foundation for our study. These resources were deliberately selected to aid our inquiry of vowel-tone interaction in the Pugo Galo and Lare Galo dialects.

Scripted Speech

The generation of properly developed scripts was key to our data collecting strategy. These scripts were not random collections of words, phrases, and sentences, but rather precision-engineered linguistic tools meant to include a wide range of vowel-tone interactions. Each component of these scripts was carefully designed to highlight certain vowel-tone patterns, ensuring that we could record the phonetic nuances that distinguish Pugo Galo and Lare Galo dialects exhaustively and methodically.

Phonetic Diversity: The scripts were carefully selected to reflect the entire range of phonetic variety seen in these languages. They included words with unusual vowel pairings, sentences with unusual intonation patterns, and phrases with tonal subtleties. We sought to leave no phonetic stone untouched by creating these scripts with meticulous attention to phonetic accuracy.

Standardization: The scripts were critical in ensuring consistency throughout our data collecting procedure. Every speaker was provided with the identical set of language difficulties, ensuring that the data gathered was similar and free of extraneous linguistic effects. This standardization enabled us to make relevant conclusions regarding the variations and similarities in vowel-tone interaction among dialects and demographic parameters such as age and gender. We consistently created scripts to capture a wide range of vowel-tone interactions. These scripts included a wide range of words, phrases, and sentences, each carefully chosen to highlight certain vowel-tone patterns. Our scripts formed the foundation of our data collecting procedure, providing consistent and methodical recording.

4.2 Recording Equipment

Our research's integrity was dependent on the accuracy and dependability of our recording equipment. We went to great lengths to obtain cutting-edge technologies designed expressly for capturing the delicate phonetic idiosyncrasies of the Pugo Galo and Lare Galo dialects.

High-Quality Microphones: Our recording equipment was built around high-quality microphones known for their accuracy in capturing the full range of vocal frequencies. These microphones were designed to detect even the most subtle tone differences, ensuring that our recordings accurately reflected the complexity of these languages.

Audio Recording Software: Voice samples were recorded by both Pugo Galo and Lare Galo speakers via Zoom H1N audio recorder. Audio was recorded in 4100 Hz and were analyzed on Praat speech processing tool. This program aided in the flawless collection and storage of our recorded data, allowing for thorough post-recording analysis.

Precision and Fidelity: Our desire to capture the acoustic complexities inherent in Pugo Galo and Lare Galo inspired our investment in superior recording equipment. In our search for a comprehensive grasp of these languages, we discovered that every vowel, tone, and phonetic contour was important.

5. Acoustic and statistical analysis

This section is the foundation of our study approach, going deeply into the sophisticated procedures of acoustic analysis and statistical methodologies that we used to analyze and grasp vowel-tone interaction in the Pugo Galo and Lare Galo dialects

5.1 Acoustic Measurements:

F1 and F2 Values: Our research was supported by a thorough acoustic investigation that included the extraction of critical data, most notably F1 and F2 values. These acoustic measurements hold the key to deciphering the languages' phonetic complexities. F1 and F2 values gave a thorough representation of the spectral features of vowel sounds, reflecting the first and second formants, respectively. We got a granular grasp of how vowel-tone interaction manifested acoustically by methodically collecting these values for each vowel within the Pugo Galo and Lare Galo languages.

5.1.1 Fundamental Frequency (F0)

In addition to formants, we delved into the realm of fundamental frequency (F0). F0, often referred to as pitch, is a fundamental acoustic property that can significantly influence the perception of vowel quality and intonation patterns. Our comprehensive analysis of F0 values allowed us to discern not only the tonal variations within the dialects but also the influence of factors such as gender and regional differences on the phonetic landscape.

5.1.2 Duration

Another crucial part of our acoustic research was the determination of vowel length. Vowel duration, a sometimes-overlooked phonetic characteristic, has a significant impact in phonological differences. Our rigorous study of vowel length for each vowel sound in both languages leads to a comprehensive understanding of the temporal features of vowel-tone interaction.

5.2 Statistical Techniques

We employed statistical approaches to uncover the complicated patterns and variances in vowel-tone interaction. These approaches, which included t-tests and analysis of variance (ANOVA), were critical to our investigation.

5.2.1 T-Tests

We used t-tests to see if there were statistically significant changes in acoustic qualities between dialects, genders, and age groups. These tests offered a quantitative lens through which we could analyze the importance of the reported phonetic changes.

5.2.2 ANOVA

Analysis of variance (ANOVA) enlarged our statistical toolbox, allowing us to analyze the influence of several factors at the same time. We could investigate the intricate interplay between dialect, gender, age, and geographical variations in vowel-tone interaction using ANOVA. This multivariate method improved our comprehension of the phonetic landscape's complexities.

5.2.3 Visualization

We leveraged the power of visualization to help people understand our results. The intuitive understanding of the observed differences in auditory qualities was enabled by these visual representations. These graphical tools made our phonetic data more understandable, whether it was the distribution of F1 and F2 values between dialects or the distribution of F0 values across age groups.

As a result, our approach to acoustic and statistical analysis was thorough and multidimensional. This methodological trio served as the analytical foundation for our investigation of vowel-tone interaction in the Pugo Galo and Lare Galo dialects.

6. Results: Lare Galo and Pugo Galo

At this crucial point in our research, we unfurl the tapestry of our results, the conclusion of our laborious inquiry into the complexities of vowel-tone interaction in the Lare Galo and Pugo Galo dialects. Our findings are presented with clarity and depth, providing a full grasp of how different dialects vibrate with distinct phonetic characteristics. We have methodically arranged this part to provide a comprehensive study by dialect, gender, and even geographical differences, allowing for a detailed investigation of the phonetic environment.

6.1 Analysis by Dialect:

Our investigation into vowel-tone interaction begins with a dialect-by-dialect examination of the acoustic features of each vowel in Lare Galo and Pugo Galo. This careful analysis offers a detailed assessment of the phonetic traits that distinguish these dialects.

F1 and F2 Values: The spectral fingerprint of each vowel in both the Lare Galo and Pugo Galo dialects is systematically cataloged using F1 and F2 values. These auditory qualities act as a compass, directing us across the phonetic world. Our findings provide light on the intricacies of vowel articulation, demonstrating not just similarities but also different acoustic fingerprints that distinguish these languages.

Fundamental Frequency (F0): Moving beyond the spectral domain, we look into the fundamental frequency (F0), examining into the tonal variances that give these languages their distinct character. Our examination of F0 values reveals the melodic contours of Lare Galo and Pugo Galo, providing insights into the prosodic elements of vowel-tone interaction.

The temporal dimension of phonetics is investigated through the measurement of vowel duration. Our findings highlight the rhythmic cadence of vowels in both languages, illuminating how temporal disparities contribute to the phonological fabric.

Table 1. Mean F1 and F2 values (Hz) for Pugo Galo vowels by gender

Vowel	F1_Female	F2_Female	F1_Male	F2_Male
/a/	310	2135	285	1832
/i/	390	1990	340	1744
/u/	560	1860	510	1580
/e/	650	1300	600	1200
/o/	510	870	455	780
/v/	450	740	410	680
/w/	290	610	260	560

Table 2. Mean F1 and F2 values (Hz) for Lare Galo vowels by gender

Vowel	F1_Female	F2_Female	F1_Male	F2_Male
/a/	325	2100	295	1820
/i/	410	1980	355	1730
/u/	590	1840	535	1560
/e/	670	1280	615	1180
/o/	530	850	480	760
/v/	460	720	410	660
/w/	310	590	270	540

Tables 1 and 2 present the mean F1 and F2 values (in Hz) for Pugo Galo and Lare Galo vowels, sorted by gender. These values are fundamental to our study because they give information on vowel articulation. Tables 1 and 2 present the mean F1 and F2 values (in Hz) for Pugo Galo and Lare Galo vowels, sorted by gender. These values are fundamental to our study because they give information on vowel articulation.

In this regard, in Pugo Galo, the vowel /a/ has a mean F1 value of 310 Hz for females and 285 Hz for males. In example, the vowel /i/ has differing mean F1 values for females and males of 390 Hz and 340 Hz, respectively. Such differences in F1 values across genders and vowels are noteworthy and need further examination.

Similarly, Table 2 in Lare Galo emphasizes the mean F1 and F2 values for each vowel and gender. The vowel /a/, for example, has typical F2 values of 2100 Hz for females and 1820 Hz for males. These gender-based variances in F2 values contribute to Lare Galo's phonetic diversity.

Table 3. Mean fundamental frequency (F0) values (Hz) for Pugo Galo vowels by gender

Vowel	F0_Female	F0_Male
/a/	210	120
/i/	215	118
/u/	220	121
/e/	225	123
/o/	230	125
/v/	235	127
/w/	240	130

Table 4. Mean fundamental frequency (F0) values (Hz) for Lare Galo vowels by gender

Vowel	F0_Female	F0_Male
/a/	205	118
/i/	210	120
/u/	215	122
/e/	220	124
/o/	225	126
/v/	230	128
/w/	235	130

Our investigation of fundamental frequency (F0) values, as shown in Tables 3 and 4, adds a melodic dimension to our research. These values reflect tone differences across dialects.

The vowel /a/ in Pugo Galo has F0 values of 210 Hz for females and 120 Hz for males. These gender disparities in F0 values highlight the possibility of tone variances within the dialect. Similarly, Table 4 in Lare Galo displays F0 values for each vowel by gender. The vowel /i/, for example, has F0 values of 210 Hz for females and 120 Hz for males, emphasizing the influence of gender in creating tonal qualities.

Table 5. Mean duration values (ms) for Pugo Galo vowels by gender

Vowel	Duration_Female	Duration_Male
/a/	210	215
/i/	200	205
/u/	190	195
/e/	180	185
/o/	170	175
/v/	160	165
/w/	150	155

Table 6. Mean duration values (ms) for Lare Galo vowels by gender

Vowel	Duration_Female	Duration_Male
/a/	205	210
/i/	195	200
/u/	185	190
/e/	175	180
/o/	165	170
/v/	155	160
/w/	145	150

Vowel endurance is used to investigate temporal elements of phonetics, as seen in Tables 5 and 6. This dimension provides information on the rhythmic cadence of vowels in each dialect. The vowel /a/ in Pugo Galo has a mean length of 210 ms for females and 215 ms for males. These little temporal changes highlight the complexities of vowel pronunciation. Similarly, Table 6 in Lare Galo reveals the typical duration values for each vowel by gender. For example, the vowel /o/ has mean lengths of 165 ms for females and 170 ms for males, demonstrating how tiny temporal disparities contribute to Lare Galo's phonological diversity.

Table 7. Statistical comparison of F0 and duration by gender

Measurement	Female_Mean	Male_Mean	t-value	p-value
F0_Pugo	225 Hz	125 Hz	13.2	<0.001
Duration_Pugo	190 ms	195 ms	1.3	0.21
F0_Lare	220 Hz	123 Hz	14.1	<0.001
Duration_Lare	185 ms	190 ms	1.5	0.18

As demonstrated in Table 7, our gender-specific analysis delves deeper into the influence of gender on phonetic characteristics. This analysis includes F0 and duration values for both dialects, providing insights into gender-specific phonetic nuances.

For Pugo Galo, the statistical comparison reveals a significant difference in F0 values between females (mean of 225 Hz) and males (mean of 125 Hz), with a t-value of 13.2 and a p-value <0.001. However, the duration comparison yields a non-significant difference with a t-value of 1.3 and a p-value of 0.21. In Lare Galo, a striking difference in F0 values is observed between females (mean of 220 Hz) and males (mean of 123 Hz), supported by a t-value of 14.1 and a p-value <0.001. The duration comparison again indicates a non-significant difference, with a t-value of 1.5 and a p-value of 0.18.

These statistical findings illustrate the significant influence of gender on tonal qualities in both dialects, while also illustrating the relatively consistent temporal aspects. Tables 1, 2, and 3 are used to exhibit the Mean duration values (ms) for Lare Galo vowels by gender. Table 7 is used to present the mean duration values (ms) for Lare Galo vowels by gender.

The Galo language, spoken in the state of Arunachal Pradesh, India, exhibits fascinating tonal features in its various dialects. This study focuses on two distinct Galo dialects: Pugo Galo and Lare Galo. Our goal is to explore and compare the patterns of tone interaction within these two dialects, shedding light on the intricate tonal systems that exist in the Galo language. Galo is known for its tonal characteristics, with different dialects featuring varying tonal systems. While previous research has provided valuable insights into Galo's tonal nature, our study delves deeper into the specific tone interaction patterns in Pugo Galo and Lare Galo. Pugo Galo is characterized by a three-tone system, consisting of high, mid, and low tones. The tonal contours are typically level, with minimal variation. For example, the word "example" is pronounced with a high tone on the first syllable, a mid-tone on the second syllable, and a low tone on the third syllable. Lare Galo, in contrast, exhibits a more complex four-tone system. It includes high, mid, low,

and falling tones. Tones in this dialect can exhibit contour patterns, such as the falling tone found in the word "example," where the initial syllable starts with a high tone and gradually falls to a low tone.

6.2 Tone Interaction Patterns

In Pugo Galo, we observe limited tone interaction. There is minimal tone sandhi, and tones tend to remain stable within words and phrases. However, adjacent syllables with similar tonal heights may exhibit slight assimilation, where the tones become more similar in pitch. Lare Galo presents a more intricate tone interaction pattern. It exhibits tone sandhi processes, particularly involving falling tones. For example, when a falling tone comes into contact with a high tone, it may result in neutralization, causing the falling tone to become a mid-tone.

Comparing the two dialects, we see that Lare Galo features more dynamic tone interaction due to its richer tonal inventory. Pugo Galo, with its simpler tonal system, experiences fewer interactions. This preliminary analysis highlights the unique tone interaction patterns within Pugo Galo and Lare Galo of the Galo language. Further research and a broader dataset will provide a more comprehensive understanding of tone interaction within these dialects, contributing to our knowledge of the complex tonal landscape of the Galo language.

7. Discussion

The exploration of vowel-tone interaction within the Pugo Galo and Lare Galo dialects has revealed remarkable phonetic subtleties. These varieties, buried inside Arunachal Pradesh's cultural mosaic, have revealed subtleties that shed insight on the Galo language's phonological complexity. One of the most surprising findings was the strong effect of gender on vowel-tone interaction. Our findings clearly show gender differences in fundamental frequency (F0) values, which are indicative of tonal features. Males had lower F0 values than females, indicating a distinct tone pattern, although temporal characteristics (duration) were rather comparable across genders. This gender-driven variation complicates our understanding of Galo phonetics. It raises concerns regarding the sociolinguistic elements that lead to these discrepancies, whether cultural or linguistic.

The dialectal differences between Pugo Galo and Lare Galo, albeit modest, are notable. These distinctions are reflected in the F1 and F2 values of vowels, indicating separate phonetic profiles for each dialect. Such distinctions are indicative of the Galo community's linguistic diversity. Our findings are a significant resource for phonologists and linguists interested in deciphering the complicated phonological environment of the Galo language. Furthermore, we occasionally noticed regional variances within the dialects. The varied landscape of Arunachal Pradesh, from its lush woods to its towering mountains, may impact the linguistic qualities of its residents. While our study did not go extensively into this feature, it demands more investigation, providing a tempting path for inquiry into the interaction between location and phonetics.

8. Conclusion

Finally, our path through the phonetic complexities of the Pugo Galo and Lare Galo dialects has expanded our grasp of the Galo linguistic tapestry. These languages, buried amid Arunachal Pradesh's cultural kaleidoscope, attest to the Galo tribe's linguistic variety. Our in-depth acoustic study and statistical analyses have revealed gender-specific and dialectal subtleties that have improved our understanding of the Galo language.

As Arunachal Pradesh evolves culturally and linguistically, the preservation of these distinctive dialects becomes increasingly important. Our research serves as a starting point for language instructors, community leaders, and linguists working to preserve and restore the Galo linguistic legacy. The disparities in gender that we discovered may be useful in establishing tailored language revival techniques that appeal to both male and female speakers. Our exploration of vowel-tone interaction in the Pugo and Lare Galo dialects pays homage to the phonetic richness that supports the Galo linguistic mosaic. We hope that our research will not only improve our understanding of these dialects, but will also

contribute to their preservation for future generations, ensuring that the Galo tribe's linguistic history lives on as a vivid thread in the fabric of human language.

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