Prenasalised Consonants in Liangmai

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ABSTRACT

This paper discusses the prenasalized consonants found in Liangmai (ISO 639-3), a Tibeto-Burman language with 49,800 speakers located in Manipur and Nagaland in Northeast India. The occurrence of prenasalized consonants is prevalent in Liangmai, appearing with every consonantal phoneme within the language. This study provides an acoustic analysis of the phonetic realization of two consonants in Liangmai, which are orthographically represented as nthiu 'boil', nkan 'jungle', and nphia 'broom', among others. These consonants are always articulatorily homorganic with the oral period and are often notably brief, creating the impression of a single segment.

The paper aims to revisit the topic of prenasals, which has sparked controversy due to the presence of two opposing perspectives. One perspective posits that prenasals constitute a single phoneme, while the other argues that they function as a single syllable. It is important to note that the Handbook of the International Phonetic Association does not mention any prenasalized consonants.

Keywords: Word Initial Prenasalized, Liangmai

INTRODUCTION

Liangmai (ISO 639-3 njn), belongs to the Tibeto-Burman language family under the Western-Naga group[1] (Post & Burling, 2017). It is mainly spoken in Manipur and Nagaland. In Manipur, Liangmais are mainly found in Tamenglong, Kangpokpi, Senapati and Imphal west districts. In Nagaland, they are mainly settled in Tening Subdivision including Jalukie of Peren district with a substantial number also living in the commercial capital Dimapur, as well as the political capital Kohima. According to the 2011 Ethnologue, there are approximately 49,800 Liangmai speakers in India (including Manipur and Nagaland. The government of Nagaland documents, Liangmai and Zeme are collectively referred as Zeliang whereas in Manipur, these tribes are recognised separately as Zeme and Liangmai[2]. And it must be mentioned that the Constitution order Amendment Act, 2011 of the Parliament of India officially recognized Liangmai as a separate tribe.

In this paper, I present argue that prenasal in Liangmai is actually single unit, though there are others which are not. There seems to be a clear distinction between prenasalized stops and nasal + stop sequences. This could be what has caused much controversy; the failure to clearly distinguish between the two types of prenasals. I then make recommendations on their adoption as unitary sounds by the International Phonetic Association and how they should be included in the IPA chart. It is surprising that the *Handbook of the International Phonetic Association* does not mention them at all; it suggests symbols for incorporation into the IPA.

There are two views regarding prenasalization: one view is that the prenasals form a single phoneme like mb, mp, and the second view is that they function as a single syllable. In this paper, I present a meticulous account of prenasalization and their functions in Liangmai spoken in Manipur.

[1] Word initial prenalization is a common feature of Zeme Naga group namely- Zeme, Liangmai, Rongmei, Inpui, Marama Tibeto-Burman languages spoken in Senapati, Noney and Tamenglong district of Manipur.

[3]Liangmai is made up of two words *LIANG* and *MAI***.** The word *LIANG* means "Support" or "grouped as one". *MAI* means people. Thus, "Liangmai" mean the people who have grouped themselves in support of each other to live together as one community or tribe.

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The paper presents an acoustic study of the phonetic realization of two consonants in Liangmai a Tibeto-Burman, orthographically represented as **mb** and **np**. Liangmai is unique in that the prenasalized [m,n] can occur before any consonants except approximant. The study of Liangmai prenasalized is based on a list of 300 words taken from both the Northern and Eastern dialects, in which there are 130 occurrences of the prenasalized in the words initially and medially. This paper seeks to describe more precisely the phonetic correlates of [^{n}b] and [^{n}p]. For the sake of simplicity, I will refer to these two phonemes as mb and np, following orthographic convention. An acoustic analysis of prenasalized [**m, n & ŋ**] in the following illustration below:

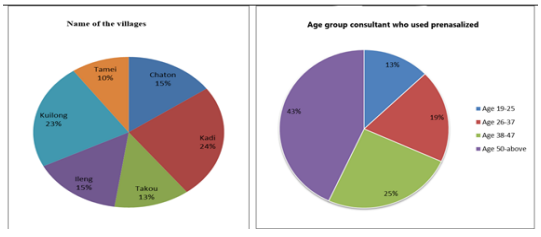
METHODOLOGY

Liangmai is one of the understudied Naga languages. At present, a few scholars from Manipur are working on this language. Rev. William Pettigrew is the first man to introduce Christianity and spread the gospel among the Liangmai people way back in 1919 A.D. Subsequently, the Christian missionaries took initiative to translate the religious Hymns in Liangmai. Of late, modern gospels and rock songs are digitized and the audio-visual are available in Manipur and Nagaland. Most recently *"A Learner's Book of Liangmai"* (Widinibou, 2017) was published from Tezpur University, Tezpur, Assam, India and a large number of copies have been distributed among the Liangmai community members of Nagaland. Thus, the present paper is a first step towards more in-depth research into Liangmai, beginning with a prenasalized analysis of the language. Fieldwork was carried out on three successive trips in six villages located in the Northern part of Tamei, Tamenglong district, Manipur. During these trips we collected 300-word lists from Liangmai speakers. Our field notes showed inconsistency in the articulation of where **m, n** and **ŋ** occur in the initial and medial positions as they were articulated as prenasalized. I was not able to get exactly the same set of words from each Village because there were dialectal differences. Liangmai-speaking adults between 19 and 65 years participated in the study. There were 10 speakers from each village of which 5 male and 5 female. The data shows that older generation used more nasal sound than the younger generation. For recording, the researcher used recorder: A high-quality portable audio recorder Olympus Multi Track PCM LS-100 handy audio recorder and Samsung Galaxy J7 smartphone were used for recording the data.

I selected six villages for this research study. They are listed in Table 1, along with a short description of each.

Table 1: Survey was conducted in 6 villages

Village	**Area**
Tamei	North-central (The political and commercial centre of Liangmai)
Ileng	Eastern-central
Chaton	Northern
Kadi	Eastern
Kuilong	Northern
Takou	Northern



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The study shows older generation used more prenasalised than young people

The data was collected from only six villages even though there are more than 60 villages where people speak the Liangmai language. However, difficulty of travel in the Liangmai area is one of the reasons why the researcher chose only these places to get the data. There is no public or local transportation to travel from village to village. It is possible to travel by Jeep and Sumo Tata to some places in summer season but most of the time people have to travel on foot.

Genetic Classification

A number of genetic classifications of Tibeto-Burman languages have been proposed since the study of this language family began in the nineteenth century. Grierson (1903) made the first attempt to classify the Naga languages. He placed Liangmai under the Kuki Naga group in relation to the Tibeto-Burman family. In Shafer (1955, 1974), Benedict (1972) and Bradley (1997) Grierson's classifications are accepted. However, with the partial exception of Marrison's (1967) typologically-oriented classification (which also incorporated lexical correspondences), genetic sub-groupings of the languages of Northeast India remain based on lexical comparisons and geographic proximity. Marrison (1967), in his comprehensive survey of the languages of Northeast India, puts Liangmai under the Konyak group along with Tangsa, Konyak, Phom, Chang, Tangkhul, Khoirao, Zeme, Puiron, and Nruanghei.[3]

Burling (2017), on the other hand, proposes a new genetic classification of the Tibeto-Burman languages of North-East India. He placed Liangmai under the Western Naga group. He pointed out, Zeme, Mzieme, and Liangmai are particularly close and Nruanghmei (Rongmei, Kabui), Inpui, Khoirao, Thangal and Maram are a bit more divergent (Figure 1).

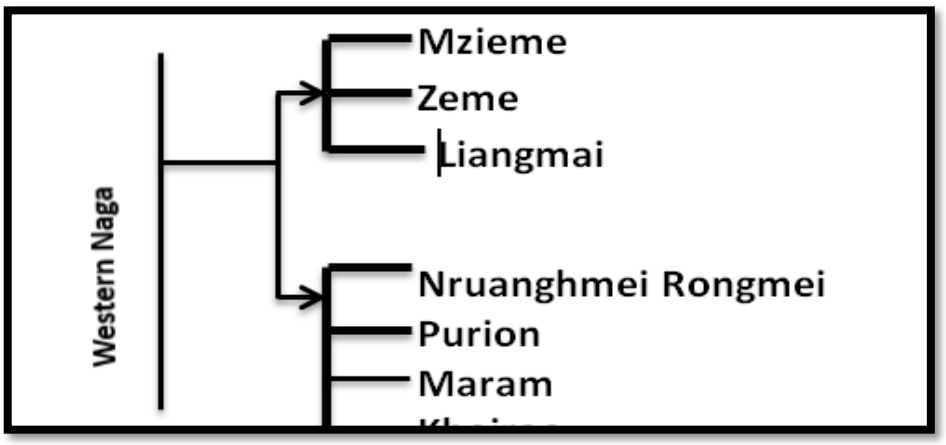

Figure 1: Post & Burling (2017), Genetic Classification of Naga languages

Prenasalization

This paper pursues further the issue of the status of the prenasals in Liangmai language. The term 'prenasals' is used in this paper to refer to a consonant cluster which consists of a sequence that begins with a nasal articulation and ends with an oral articulation or even in a nasal articulation in some cases. This definition will be given a more specific target later on in the paper. For a number of years now a debate has been raging as to whether the prenasals are phonemic or not. Evidence has been adduced by Liangmais to either support the phonemic status or to disclaim it. For example, it has traditionally been assumed that the prenasalized consonants which are not morphologically complex are unitary segments because (1) the two components are homorganic (2) they evidence surface length as 'simple' consonants, and (3) they function within a single syllable. Equally strong views have been expressed to show that prenasals are single unit sounds. Liangmai

[3]Marrison (1976)'s classification is based on a comparison between: i) initial consonants; ii) final consonants; iii) noun prefixes; iv) agentive noun suffixes; v) classificatory verbal prefixes; vi) 5 lexical items (i.e.*fire, fish, house, road, stone*) and the position of the negative particles in the syntax; and vii) usage of interrogative particles.

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language has units consisting of a nasal followed by a homorganic oral consonant in word-initial positions (i.e., either mpi or nniu).

Zeme, Rongmei and Liangmai languages have close similarities in case of phonology, morphology and syntactical levels. Linguistically very little work has been done on these languages. The prenasalized onset is very common in these sister languages which occur in every consonantal phoneme. These prenasalized consonants are analyzed as unitary segments that can occur word-initially and intervocalically. This is illustrated in (1-a-c) the nasal+ plosives.

1. (a). [mb, nd, ng]

(b). [mp, nt, nk]

(c). [mp^h, nt^h, nk^h]

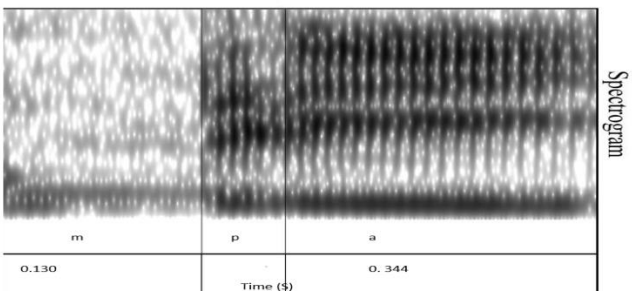
Prenasalized consonants are widely used in the Zeme-Naga languages of the Tibeto-Burman family, such as Zeme, Liangmai and Rongmei. The following table (2 a-h) illustrates the nasal+ plosives cluster prenasalized consonants. The symbols in §1 have been used in literature to represent the sounds described but have not been officially recognized by the IPA.

Table 2 Prenasalized Plosives in Liangmai

	Liangmai	**IPA**	**Meaning**		**Liangmai**	**IPA**	**Meaning**
2(a)	*nbu*	[^{n}bu]	'short'	2(b)	*ndiu*	[^{n}diu]	'swamp'
2(c)	*mpa*	[^{m}pa][4]	'cottage'	2(d)	*nga*	[^{n}ga]	'steal'
2(e)	*ntuang*	[$^{n}tuaŋ$]	'shoulder'	2(f)	*nki*	[^{n}ki]	'roam'
2(g)	*nkham*	[$^{n}k^{h}am$]	'door'	2(h)	*nthiu*	[$^{n}t^{h}iu$]	'boil'

In the following figure 1, there was a burst but periodicity did not begin for a time after the burst. This interval was 20-30 ms long and looked like it could be a partially articulated tap (also generally 20-30 ms long). An example of this is in Figure 1 below. There is an obvious burst of the stop, followed by 27 ms of irregular noise, and then periodicity of the following vowel.

Figure 1. A section of **mpa** 'cottage', showing labial voiced release



Prenasalized has a shorter nasal segment and a longer preceding vowel

The bilabial consonant **mb** in initial position is always realized as a plain stop. Initial **nd** is also usually realized as a plain stop in Liangmai. In medial position there is fairly even distribution of the various

[4] A prenasalized consonant [^{m}b] in Liangmai has a shorter nasal segment and a longer preceding vowel

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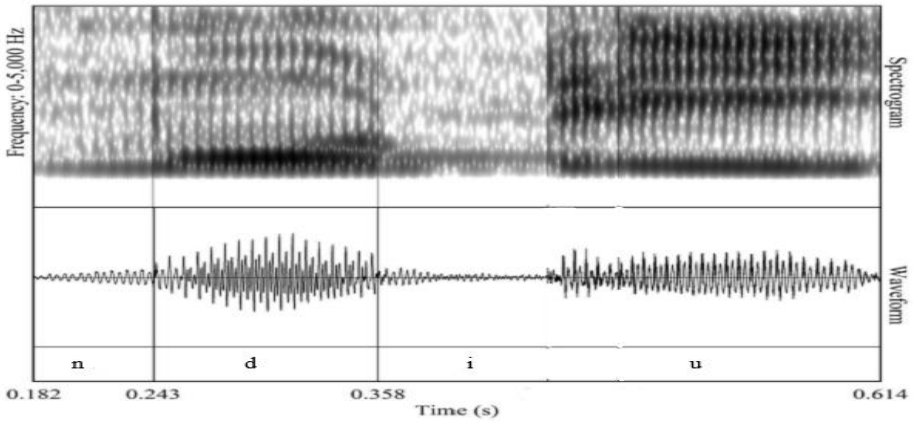
realizations. In terms of dialectal variation, there are a few tendencies. There are no medial trilled releases in Liangmai several in each of the other locations. All locations have a few instances of medial fricative release and all but have several medial plain stops. With the available data it is not possible to distinguish between dialectal variation and individual speaker variation, since we only have data from one speaker in each location. The tendencies could possibly correlate with either one.

Figure 2 Spectrograms and acoustic waveforms of /ndiu/ 'swamp' recorded in isolation, showing the prenasalized [nd]. Prenasalized [n] and alveolar unaspirated voiced stop [d] release as initial prenasalized consonants in Liangmai



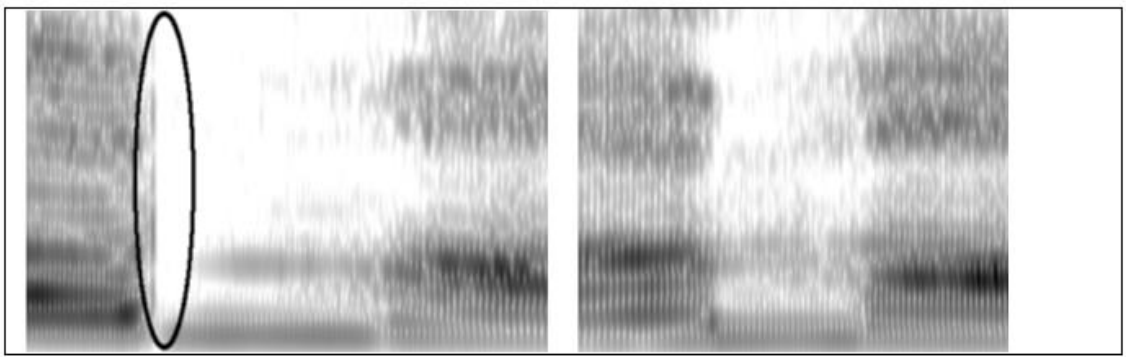
Prenasalized has a shorter nasal segment and a longer preceding vowel

Prenasalized stops (NCs): complex segments composed of a nasal closure followed by a homorganic oral release (Anderson 1976, Herbert 1986).

Table 3 Prenasalized (NC) inventory in Liangmai

	Bilabial	**Alveolar**	**Velar**
Voiceless	p p^h	t t^h	k k^h
Voiced	b	d	g
Prenasalized	[^{m}p, ^{m}p^h ^{m}b] [^{n}p, ^{n}p^h ^{n}b]	[^{m}t, ^{n}t^h, ^{n}d, ^{n}d]	[^{n}k, ^{n}k^h, ^{n}g]
Nasal	m	n	ŋ
Prenasalized	[mm]	[nn]	[ŋŋ]

Figure 3 presence of NC's short oral closure and release burst (here, Δ burst).L



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L: /mbe/

Present: anywhere where NCs are released.

m-ba

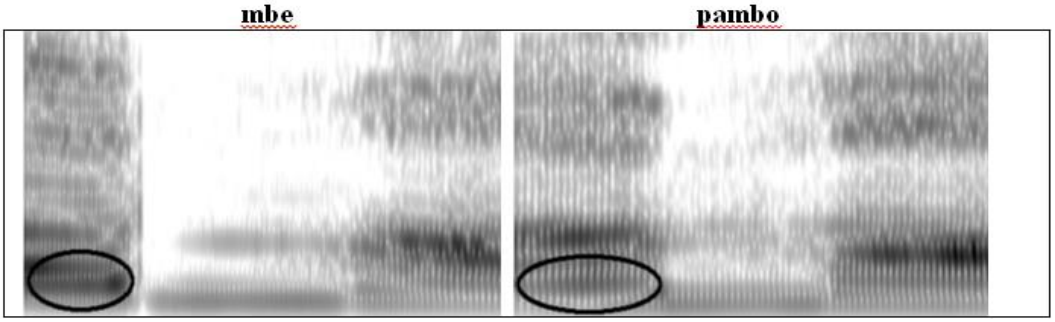
n-da

R:/pambo/

Absent: anywhere where NCs are not released.

pan-penbo

Figure 4 minimally, difference in nasal vs oral CV transitions, where Ns are followed by nasal transitions and NCs are followed by oral transitions (Δ CV transitions).



[mbe] NC release initial prenasalized but not [pambo] in the right side

Table 4 Results for initial prenasalized

Bilabial	**Alveolar**	**Velar**
p[np&mp]✓ ph[np^{h}&mp^{h}]✓	t[nt]✓ th[nt^{h}]✓ d[nd]✓	k[nk]✓ k^{h}[nk^{h}]
b[nb&mb]✓, [nm&mm] ✓	n[nn]✓ ts[nts]✓ s[ns]✓	g[ng]✓ ŋ[ŋŋ]✓
w[w]*****	z[nz]✓ l[nl]✓ r[nr]✓	

Table 5 Results for intervocalic prenasalized

Bilabial	**Alveolar**	**Velar**
p[np&mp]***** ph[np^{h}&mp^{h}]✓	t[nt]✓ th[nt^{h}]✓ d[nd]✓	k[nk]***** k^{h}[nk^{h}]✓
b[mb]✓, [nm&mm]*****	n[nn]***** ts[nts]***** s[ns]*****	g[ng]***** ŋ[ŋŋ]*****
w[w]*****	z[nz]✓ l[nl]✓ r[nr]*****	

Liangmai has a full series of initial prenasalized with affricate and fricatives at every place of articulation. The example are illustrated in (3-a-f) below

Table 6 Prenasalized with affricate and fricative

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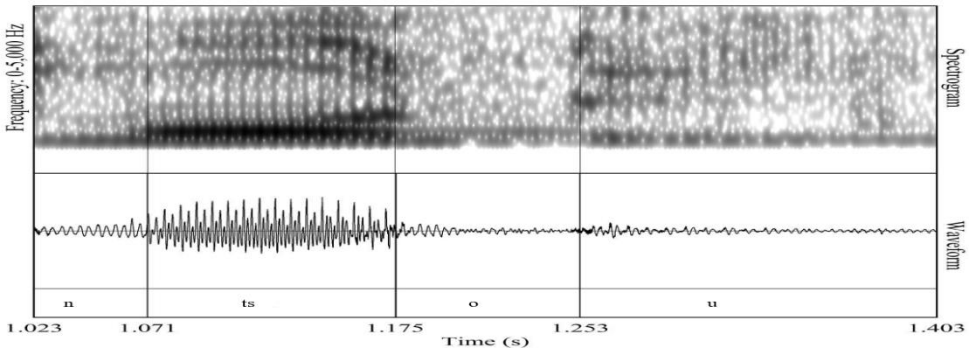
	Liangmai	**IPA**	**Gloss**
3(a)	*ntsou*	[^{n}*tsou*]	'elbow'
3(b)	*ntsi*	[*ntsi*]	'sister'
3(c)	*nzan*	[^{n}*zan*]	'divide'
3(d)	*nzabo*	[^{n}*zabo*]	'things mix with hand'
3(e)	*nsan*	[^{n}*san*]	'forehead'
3(f)	*nsing*	[^{n}*siŋ*]	'kind of rack to dry things above the kitchen'

Figure 5 presents an example of an initial **nts** realized as a prenasalized



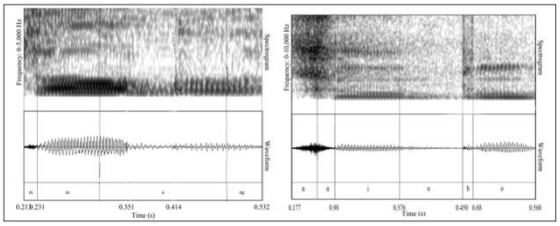
We look at each of the acoustic realization of **nts**, **nz**, **ns** it turns as prenasalized alveolar affricate and fricative release. The **nts**, **nz**, **ns** are realized as prenasalized based on the data.

Word with prenasalized and nasals of two consonants in Liangmai

Table 7 Prenasalized with nasal

	Liangmai	**IPA**	**Gloss**
4(a)	*mmang*	^{m}*maŋ*	'hearth'
4(b)	*nniubo*	^{n}*niubo*	'taboo'
4(c)	*ngngang*	^{ŋ}*ŋaŋ*	'look up'
4(d)	*ngngen*	^{ŋ}*ŋen*	'yawning'
4(e)	*ngngan*	^{ŋ}*ŋan*	'snoring'

Figure 6 Spectrograms and acoustic waveforms of /mmang/ 'hearth' and /nniubo/ were recorded in isolation, showing the positive prenasalized for [mm [and [nn] respectively.



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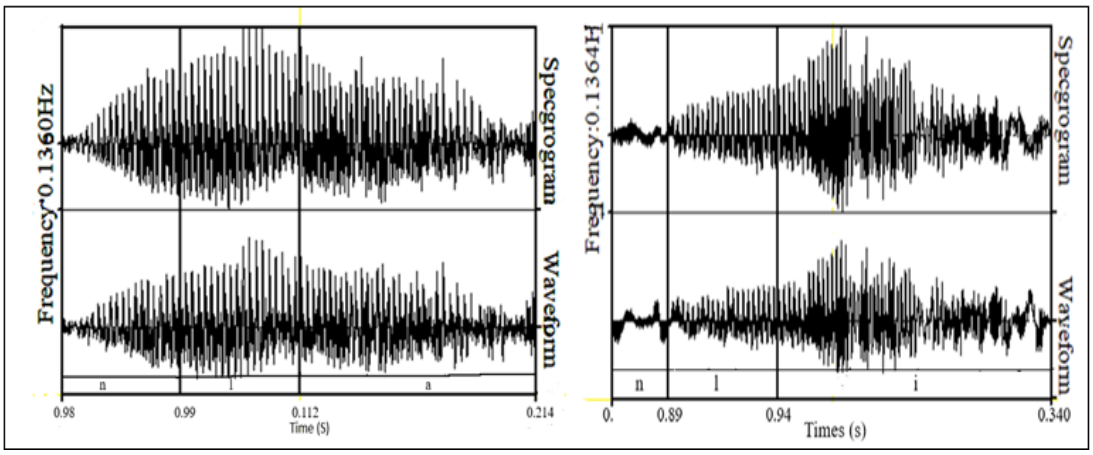
Word with prenasalized lateral and flap of two consonants cluster initially in Liangmai

Table 8 prenasalized with lateral and flap

	Liangmai	**IPA**	**Gloss**
5(a)	*nla*	[^{n}*la*]	'navel'
5(b)	*nli*	[^{n}*li*]	'tongue'
5(c)	*nrou*	[^{n}*rou*]	'comb'
5(d)	*nrang*	[^{n}*raŋ*]	'high pitch sound'

Figure 7 Spectrograms and acoustic waveforms of /nla/ 'navel' and /nli/ 'tongue' were recorded in isolation, showing prenasalized of [nl]



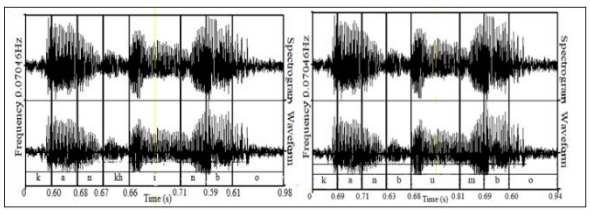
Syllabicity and Timing

The fact that the units making up the prenasals usually find themselves in one syllable has been taken as proof that the consecutive consonants in a prenasal form a unit segment or one sound. Here are examples of syllabification of words in Liangmai.

Table 9 Words with intervocalic prenasalized

	Liangmai	**IPA**	**Gloss**
6(a)	*ka.nkhinbo*	*ka^{n}k^{h}inbo*	'move backward'
6(b)	*ka.nbumbo*	*ka^{n}bumbo*	'to lay egg'
6(c)	*a.mpui*	*a^{m}pui*	'stomach'

Fig 8 Spectrograms and acoustic waveforms of /ka.nkhinbo/ 'move backward' and /ka.nbumbo/ 'to lay egg' were recorded in isolation, showing an intervocalic prenasalized



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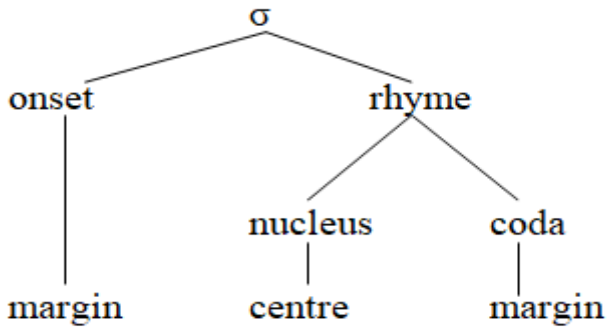
Prenasalized consonants occur in intervocalic positions stems, and thus seems to be part of medial prenasalized consonants in the language.

The internal structure of the syllable generally follows the sonority hierarchy. In the normal syllable the centre of the syllable is the most prominent and the margins least prominent



Looking at any of the prenasals, one notices that the sonority hierarchy theory of syllable structure predicts that a syllable-initial prenasalized stop is unexpected (Ewen 1982). In a syllable like /mb/ the sonority of the initial nasal is greater than that of the following stop. This fact, that order of components in a prenasalized consonant is contrary to the sonority hierarchy, is an important piece of evidence traditionally cited as pointing to the unitary status of prenasalized. There would therefore be no syllable which begins with a prenasalized stop as this violates the general principles of syllable structure. Furthermore, the canonical Liangmai syllable is of a CV form and therefore the prenasalized consonants are analysed as simple consonant units.

Evidence for Cluster Analysis

Though in the previous section we argued that the prenasal is a single unit, there is evidence to the contrary. We now go through that evidence with the assistance of examples.

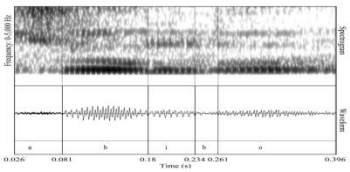
Syllables and Timing

Phonetically, a syllable is a unit of timing in a language. While in the previous section, examples of words in which the prenasals occupied a syllable were shown, the contrary happens here.

Table 10 word initial nasal can be syllabic.

	Liangmai	**IPA**	**Meaning**		**Liangmai**	**IPA**	**Meaning**
7(a).	*nbibo*	[^{n}bibo]	‘fart’	7(b).	*ndah*	[^{n}*dah*]	‘olden day’
7(c).	*mpe*	[^{m}pe]	‘moss’	7(d).	*nga*	[^{n}*ga*]	‘your chest’
7(e).	*ntu*	[^{n}tu]	‘name of village’	7(f).	*nkan*	[^{n}*kan*]	‘jungle’
7(g).	*nkha*	[$^{n\ h}$*k a*]	‘basket’	7(h).	*nthibo*	[$^{n}t^{h}$*ibo*]	‘wrestling’

Figure 9 Spectrograms and acoustic waveforms of /nbibo/ ‘fart’ recorded in isolation, showing the initial prenasalized



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Meinhf's law

Some evidence in support of the cluster analysis comes from a phonological rule in Luganda called Meinhof's Law. In Liangmai language, there is evidence of this law that /ng/ match the prenasalized to /ng/, which is phonetically [ŋg], /m/ match the prenasalized /m/ and /n/ match the prenasalized /n/ which is phonetically [^{n}n], along with the fact that this series is restricted to voiced prenasalized consonants, makes their interpretation as a series of unit phonemes attractive. The symbols in §8 have been used in literature to represent the sounds described but have not been officially recognized by the IPA.

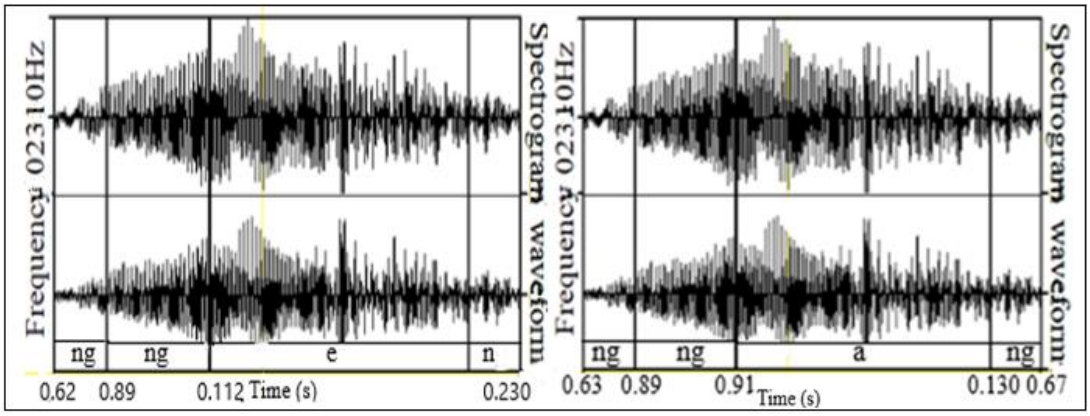
$$\begin{bmatrix} C \\ +voice \\ -cont \end{bmatrix} \longrightarrow [+nasal] + n / v$$

Table 11 prenasalized with nasals

	Liangmai	**IPA**	**Gloss**
8(a)	*mmang*	^{m}*maŋ*	'hearth'
8(b)	*nniubo*	^{n}*niubo*	'taboo'
8(c)	*ngngang*	^{ŋ}*ŋaŋ*	'look up'
8(d)	*ngngen*	^{ŋ}*ŋen*	'yawning'
8(e)	*ngngan*	^{ŋ}*ŋan*	'snoring'

Although the affected segments (highlighted above) might be termed as prenasalized consonants, the output of the rule is clearly a long (geminate) nasal consonant or nasal plus obstruent which are derived. Thus, we are dealing with two distinct segments.

Spectrograms and acoustic waveforms of /ngngen/ 'yawning' and /ngngang/ 'look up' were recorded in isolation, showing prenasalized of [ng]



In this language, word initial nasal sound /ng+ng/ forms a cluster, which is phonetically [ŋŋ] along with the fact that this series is restricted to voiced prenasalized consonants, makes their interpretation as a series of unit syllable.

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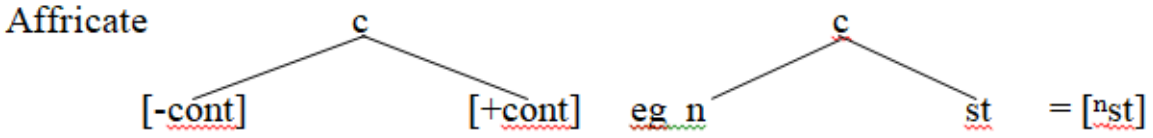
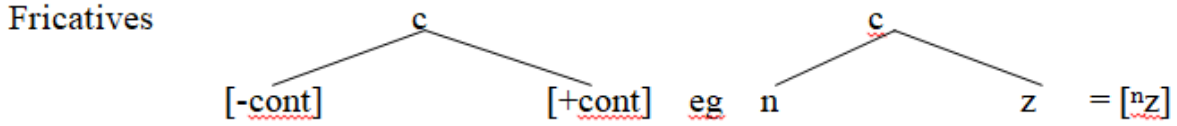
Affricates and fricative

One type of evidence that has been given with respect to the 'one or two segment' issue has revolved around the status of the affricates (Ewen 1982); which at least phonetically appear to involve two distinct phases – a closure and some kind of friction phase. Phonetically, all the examples of sound sequences given above are comparable to the combination of sounds found in affricates or dental affricative [ts] and fricatives [s, z]. Many languages have prenasalized consonants which show sequential organization of features at the subsegmental level. Affricates show the simultaneous association of a single C slot with two segmental distinctive feature matrices. Affricates like [ts] are described using the feature [+ delayed release] in SPE (Herbert 1975). They can be represented this way:



A similar argument can be used for the prenasals to show that they are just one sound



Prenasalized consonants phonetically involve a change from velic opening to velic closure in the course of the production of the two sounds in what appears to be normal segment length.

Suggestions:

1. The issue arises regarding whether initial prenasalized sounds should be considered as distinct features when discussing the Tibeto-Burman languages within the Southeast Asian linguistic context.

2. Liangmai ought to integrate this prenasalized element into its writing system to enhance the distinctiveness of the language.

3. The languages of Zeme, Liangmai, and Rongmei are notably different among the Naga, possessing the nasalization features n- and m; however, it seems that this sound is gradually fading over time.

4. The language lacks a structured grammar and rules; therefore, the addition or omission of these nasal sounds does not result in a significant impact, as there is no prescriptive grammar in place.

5. The Liangmai should regard this prenasalization as an important linguistic feature, and it should be incorporated into the orthography to enrich the language.

CONCLUSION

Currently, the evidence provided in this paper presents a dual perspective: prenasals are either single unit sounds or composed of distinct sounds. To substantiate the claim that the prenasals in Liangmai are single segments, I have utilized the following evidence: (a) they exhibit similarities to affricates in their internal structure, (b) they are homorganic, and (c) they operate within a single syllable. Conversely, the evidence supporting the notion that prenasals consist of separate sounds includes: (a) their occurrence in different syllables and (b) Meinhof's Law.Word initial prenasalizations are widely used in Liangmai language.

1. Further acoustic study will be helpful for a better understanding of the nature of prenasalization in the language and need to be addressed in future research.

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2. As an extension from this study, it will also be valuable to do a revision of the existing orthography.

3. Studies in prenasalization in other dialects of Liangmai, like Liangmai in Nagaland, and also Zeme and Rongmei can be taken up for further studies.

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