

MÀDA TONE SYSTEM: A PRELIMINARY INVESTIGATION

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Abstract

This paper is a preliminary report on an ongoing research on M̀àda, a Platoid language spoken predominantly in Nasarawa State and few adjoining states; Kaduna and Plateau states, Nigeria. This paper discusses the phonological feature of tone and its relevance in the phonology of M̀àda. It examines the structure of tone bearing unit with a view to revealing the possible sequence of tone placement, types and patterns as well as the functions of tone in M̀àda. The motivation for this study stems from the fact that tone is contrastive and plays a significant role in determining the pitch-related suprasegmental pattern in the language. The expectation of this paper, however, is to describe tone and tone groups in M̀àda, hence no appeal is made to a specific theoretical model as this attempt is only a descriptive study. Data for this study was sourced through monolingual, direct elicitation and participant observation methods. The findings show that M̀àda attests three level tones with the high tone unmarked and two-tone glides - high-low/˨/ and low-high /˩/ respectively. It further shows that tone in M̀àda is morphophonemic and highly productive such that pitch variation is capable of initiating contrast in the meaning of lexical items (morphotonemics). Syntactically, this study posits that, tonal contrast has a high functional load in the grammar of M̀àda. For instance, tone changes a

simple declarative sentence to interrogative sentence type, makes a distinction between singular and plural, and changes infinitives to verbal nouns. Therefore, this paper, among other things, document and decipher M̀àda tone system. We recommend that minority languages be studied and documented to forestall language endangerment.

Keywords: M̀àda, tone, tone bearing unit (syllable), tone marking.

1. Introduction

M̀àda refers to a group of people and their language. M̀àda is spoken in four states in Nigeria; -in Nasarawa state by a large population, in Kaduna state predominately in Jema' a and Sanga Local Government Areas, in Plateau and Niger states respectively. It is one of the major languages spoken in Nasarawa State, Nigeria. It belongs to the Platoid branch of the Plateau Western cluster of the Benue-Congo subfamily (Greenberg 1963; Williamson 1971; Hansford et al 1976; Gerhardt 1989 2011; Crozier and Blench 1992; Blench, 2005). The majority of its speakers are found in the north senatorial zone of Nasarawa state with Akwanga (extending into towns, districts and villages) as its ancestral home. M̀àda is a conglomeration of clans, now chiefdoms joined together by totem (Price 1989; Blench 2010; Gbugyar 2013). In other words; it has a large dialect network. The classification of the dialects of M̀àda is based on clannish antecedent with majority of the dialects named after the geographical settlements, and the level of variation differs from village to village (Blench 2010; Samuel 2016). However, many researchers and language enthusiasts (see Price 1989; Ridan 1990; The New Testament Bible Project 1991; Blench 2006, 2010; Sabo 2010; Samuel 2012, 2016; Gbugyar 2013) recognize *Rijā* as the standard form for any academic or conventional writing or readership.

Màda, in spite of being one of the major languages spoken in Nasarawa state, is poorly documented and received very little attention over the years. This is not to say that there are no attempts in the study of the language, rather a few studies have been carried out in the language (Price 1989; Blench 2006, 2010; Samuel 2012, 2016, 2017, 2018). However, to the best of our knowledge no study has been devoted to the systematic description of tone in Màda. Therefore, this paper strives to explicate the patterns, distributions and functions of tone in Màda. The attempt in this study is geared toward examining the sacrosanct importance of tone in communication being a major function of any natural language which aims at naturalness in speaking.

In this study, we rely on two methods of data collection: direct elicitation and participant observation. Also, the researchers being native speakers of the language use their intuition and linguistic training in collecting and collating data for this study.

2. Some Basic Concepts

Tone is one of the most widely researched phonological features of African and Asian languages, and of course, in phonological analysis (autosegmental phonology was originally designed to describe tone and its diverse peculiarities in African and Asian languages). In the literature, it has been argued that majority of the world's languages are tone languages which is about 60-70% and, lexical tone is, nevertheless, a popular option (see Hyman 2011b; Maddieson 2013). Yip (2002) and Anyanwu (2008) reported that the Sub-African region is the home of the largest concentration of tone languages though one cannot dispense the rich tone system of Mandarin Chinese when talking about tone in general. Other major tone languages include Burmese, Vietnamese, Thai, Punjabi, Lahanda, and Lithuanian among others. It is against these postulations that this study attempts to investigate Màda tone system, to established

whether Māda is a tone language or not, and to show the importance of tone in ensuring naturalness in communication. The theme of this paper is tone, what then is tone?

Ladefoged (2006) describes tone as pitch variation that affects the meaning of a word. In the same vein, Omachonu (2011) considers tone to be the use of variation in pitch of the voice to signal meaning contrast or distribution at both lexical and sentential meaning. Tone refers to change of pitch in a word that may signal a change in meaning. Similarly, Odden (2014) says tone is primarily the contrastive use of pitch in grammar and lexicon to bring about change in meaning. Tone has a semantic rather than pragmatic function inherent in a word. Pike (1947) further says a tone language is one having significant and contrastive, but related pitch on each syllable. Welmers (1959) reports a tone language to be a language in which both pitch phonemes and segmental phonemes enter into the composition of at least some morphemes. In other words, a tone language is one in which an indication of pitch enters into the lexical realization of at least some morphemes (Yip 2002).

From our definitions of tone, pitch level is quite important because different pitch levels determine the meaning of words. Matthews (2007) defines pitch as a property of sounds perceived by a hearer that corresponds to the physical property of frequency. The pitch of the voice can make a difference in the meaning of a word. Tone is mostly seen as a feature of the syllable (vowels and syllabic nasals) thus, plays a succinct role in a language. This explains why tone marking is not done haphazardly because if tone is not properly marked over the vowel, the meaning is gravely affected. To buttress further, Trask (1996) reports that words of different meanings which consist of consonants and vowels are distinguished merely by contrast of pitch. Thus, the degree in which tone is important in a language is that its functional load varies; it determines the meaning of lexical

categories which have the same spelling orthographically (homonyms and homographs), and even the meaning of sentences is differentiated in terms of tense, for instance, past tense from present tense

3. Overview of M̀ada Syllable Structure

The basic tone bearing unit is the syllable (vowels or syllabic nasals). Burquest (1993) describes the syllable as the phonological level immediately above the level of the segment; it is a structural unit in which segmental phonemes are distributed on the basis of sonority and prominence. That is, the syllable is a unit at a higher level than that of the phoneme and segment, yet distinct from that of the word or morpheme. As a concept, it mirrors the notion of rhythmic wave, usually with an **onset**, **peak** and **coda** and commonly discussed in terms of consonant-vowel pattern (Pike 1967). Consider the diagram below:

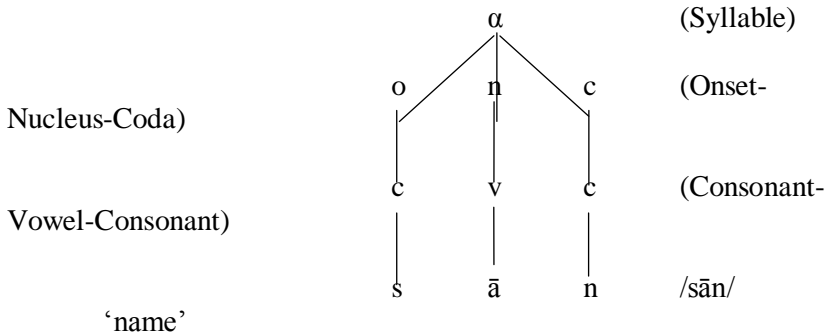


Fig.1.

From the foregoing, we defined the syllable as a tone bearing linguistic unit. As could be observed in fig.1, the vowel /a/ bears a mid-tone and not the consonants /s/ or /n/ as the case may be. Also, the phonemes are arranged into a larger phonological unit known as the syllable.

3.1. Inventory of Syllable Structure and Type in M̀ada

The general and most common pattern of the occurrence of segmental phonemes within a syllable is the unambiguous CV and CVC syllable types.

In M̀ada, the syllable structure falls into the following forms in (1):

a. N (Syllabic Nasal)

| M̀ada Lexemes | Gloss |
|---------------|----------|
| [ndu] | work |
| [nt̀ant̀on] | ashes |
| [n-ʃanʃũn] | story |
| [m-l̩] | laughter |
| [m-fə] | hunger |
| [n-dʒun] | penis |

b. V (Vowel)

| M̀ada Lexemes | Gloss |
|---------------|---------|
| [ə] | at |
| [ə-nt̀ù] | on/atop |
| [ə-nr̀ìn] | because |
| [a-nr̀ìn] | before |

c. CV (Consonant-Vowel)

| M̀ada Lexemes | Gloss |
|---------------|----------|
| [mɛ] | to build |
| [sɛ] | year |
| [zə] | leg |

| | |
|-------|------|
| [gbǎ] | cock |
| [gyɔ] | call |

d. **CVC** (Consonant-Vowel-Consonant)

Màda Lexeme Gloss

| | |
|--------|------------|
| [nān] | meat |
| [hwān] | bush |
| [ʃīn] | to carve |
| [zɔn] | divination |
| [vɛn] | child/son |

The syllable structure(s) (see examples above) is not limited to the various forms exemplified here, rather, the structure varies depending on the morphology of the word. Thus, the major form includes: syllabic nasal (N), vowel segment, CV, CVC and CVCV respectively. Consider, for example, the types of syllable in Màda below:

2. i. **One Syllable**

| | | |
|-----|--------|---------------------------|
| V | [ə] | ‘at’ |
| CV | [kú] | ‘to follow’ |
| CVC | [ʃɛn] | ‘to wake’ |
| N | [mkpì] | ‘bundle of guinea-corn |

ii. **Two Syllables**

| | | |
|--------|---------|-------------|
| CV.CV | [kúkú] | ‘bone’ |
| CV.CVC | [məsər] | ‘water’ |
| CVC.CV | [tərki] | ‘tree’ |
| CV.CV | [tsəkì] | ‘knowledge’ |
| CVC.CV | [bɛntə] | ‘beniseed’ |

iii. **Three Syllables**

| | | |
|------------|-------------|-------------------|
| CV.CV.CV | [kūcící] | ‘to lead’ |
| CV.CV.CV | [kùkúkī] | ‘stick’ |
| CV.CV.CV | [māsārā] | ‘White person’ |
| CV.CV.CV | [tətəlà] | ‘lantern’ |
| CV.CVC.CVC | [bəbrɛgyùn] | ‘mushroom’ |

iv. **Four Syllables**

| | | |
|-------------|------------|----------------|
| CV.CV.CV.CV | [beləbəlà] | ‘cattle egret’ |
| V.CV.CV.CV | [āyírírí] | ‘ululation’ |

4. M̀̀da Tone System

A number of studies has been carried out on African languages, in particular Nigerian languages by tone phonologists to describe tone languages. This concerted effort saw the description of many Nigerian languages as tone languages base on the fact that they display pitch variation capable of initiating contrast in the meaning of lexical items in a language. Languages such as, to mention a few, *Igbo* (Emananjo 1978; Clark 1990), *Yoruba* (Akinlabi 1985), *Urhobo* (Aziza 1997), *Igala* and *Jukun* (Welmers 1973), etc. were described as tone languages with tone sequence of high [á]; mid [[ā] and low [à]. Basically, a tone language is described as one with tone sequence either belonging to what Welmers (1973) described as register or contour tone language group. A language may belong to one or even both depending on the nature of perceptual or acoustic clues (Katamba 1989). For instance, in *Igbo*, the pitch contrast is captured in pairs as in words (homophones) like *áká* (hand), *àkà* (tick) and *ákà* (beads) with tone sequence - high-high, low-low and, high-low. In essence, level tones are pure and rarely going up and down during production. We observed that the derivation of the meaning of the lexical items in *Igbo* is linked to the function of tone on homophones. That is, tone sequence, as shown from the *Igbo* data, reflects what Welmers

described as *register tone language*. Gliding tone is attested in some languages, which perhaps is pitch-based or lexically driven. In Hausa, as in other related languages, rising-falling or falling-rising tone sequence is highly productive. Admittedly, words like *māi* (oil), *zōbbà* (rings), *mānjà* (palmoil) and *mūtum* (man) bear compound or contour tone. As could be observed from the Hausa data, tone glide is pitch-based and lexically driven because in their production, pitch heights either rise or fall simultaneously or the tone pattern is not level in their production but rather rise, fall, or rise and fall in pitch. This pattern is what Pike termed *contour tone*. In contour tone languages, the level tones are not regular, but involve glide movement in the production of two-level tones (Welmers 1973; Fox 2000). Durand (1990) explains contour tone pattern as the movements from time rather than sequences, say for instance, H and L. Such movements show a case of fluctuating pitches as in Hausa and Mandarin Chinese. In other words, the combination of two pitches result in either a falling (High + Low) or rising (Low + High) as demonstrated from the Hausa data.

This opposing pattern presents a template from which we can establish the tone system of M̀àda, whether to classify it as a registered tone or contour tone language, or even both depending on the pitch sequence or pitch height in the production of lexical items in the language. In so doing, attempt is made to examine some of the characteristics of M̀àda tone system using perceptual clues and auditory clues to authenticate our claims base on the speech (spoken) form produced by speakers of the language.

4.1. Noticeable Evidence of Contrastive Pitch in M̀àda

From the presentation of data in subsection 3, it is glaring that M̀àda is a tone language, however, it has not been established whether or not M̀àda is a registered tone language, contour tone, or even both. To establish concrete evidence, the speech forms of the speakers of M̀àda are closely examined and described base on perceptual and

auditory clues. Consider, for instance, the minimal pair test in (3) below:

| | | | |
|------|--------|----|--------------------------------------|
| i. | [zú] | H | ‘to soak’ |
| | [zù] | L | ‘to knot’ |
| | [zǔ] | R | ‘vibration’ |
| ii. | [kúkú] | HH | ‘bone’ |
| | [kùkù] | LL | ‘reed grass’ |
| | [kūkū] | MM | ‘old’ |
| | [kúkù] | HL | ‘dry’ |
| iii. | [kùkú] | LH | ‘to forget to deliver a message’ |
| | [kplá] | H | ‘bachelor’ |
| | [kplà] | L | ‘to beat the floor’ |
| iv. | [kplā] | M | ‘haste’ |
| | [gbá] | H | ‘only’ |
| | [gbà] | L | ‘to crawl’ |
| | [gbā] | M | ‘if (used in negative construction)’ |
| v. | [gbǎ] | | ‘cock’ |
| | [gblá] | H | ‘tribal mark’ |
| | [gblà] | L | ‘to announce death’ |
| | [gblā] | M | ‘to weed’ |
| | [gblǎ] | R | ‘weeding’ |

On the basis of the discussion of tone and its basic function in Màda, we have seen that the minimal pair test (pairwise test) of homophones provides a scintillating background from which this present study is focused. The rendition of data in (3) provides the following observation: (1) Màda exhibits three contrastive level tones and they are very productive in initiating meaning contrast in the language, (2) the pitch pattern accommodates tone glide as shown in some examples above- *gbǎ* (cock) and *gblǎ* (weeding); (3) the interpretation of data from the minimal pair test suggests that the high tone is relatively

higher both in audition and perception compared to other pitches - low and mid respectively. From our observation, it is suggested that high tone pattern is relatively higher in audition and perception thus, for convenience and economy, high pitch (the most common) tone be unmarked over the vowel in any syllable. Our suggestion agrees with Williamson (1984) Tone Economy Principle.

Another inviolable observation from the minimal pair test is the evidence of tone glide as noticed in some words (see observation 2). This feature is quite productive in M̀ada such that the choice of tone glide affects the seminal meaning of a word, usually by extending (intensity) of meaning or change the class words (verbal noun). Consider, for example, the instance in (4):

- | | | | |
|-----|-------|-------------|-----|
| i. | [b́ú] | ‘to open’ | (V) |
| | [bǔ] | ‘openness’ | (N) |
| ii. | [l̄ā] | ‘to be mad’ | (V) |
| | [lǎ] | ‘madness’ | (N) |

As seen in (4), the choice of tone glide is linked to the function of tone which perhaps, affects the class of words. This is, however, a case of emphasis (i.e. to add significance to what has been said) against the seminal meaning of the words where tone is sacrosanct in maintaining markedness (explicitness and clarity) in communication. Although this observation is classified in example (4) especially, verbs (not in all instances as ample data is required to authenticate this assumption) hence, communication is ensued if tone (glide tone) is veritably used concomitantly.

In summary, tone in M̀ada can be grouped into three broad groups: monotones, diatones and polytones. Examples can be seen in (5) below:

- i. Monotones

| | | | |
|------|----------------|------|----------------|
| | <i>rí</i> | H | ‘God’ |
| | <i>rá</i> | H | ‘to lick’ |
| | <i>shàr</i> | L | ‘to invite’ |
| | <i>tàr</i> | L | ‘three’ |
| | <i>gbà</i> | L | ‘to crawl’ |
| ii. | Diatones | | |
| | <i>búbú</i> | HH | ‘pot’ |
| | <i>gbàrkì</i> | LL | ‘flower’ |
| | <i>kpàkì</i> | LL | ‘stick’ |
| | <i>bùbù</i> | FL | ‘basket’ |
| | <i>gùgwǎ</i> | LR | ‘to tickle’ |
| | <i>bùbwə</i> | LL | ‘petition’ |
| iii. | Polytones | | |
| | <i>gwàricì</i> | HLM | ‘house snake’ |
| | <i>rìshàmā</i> | LLM | ‘God exist’ |
| | <i>bánrèkì</i> | HLH | ‘trader’ |
| | <i>kūcìcì</i> | MHH | ‘to lead’ |
| | <i>āyírírí</i> | MHHH | ‘ululation’ |
| | <i>məsārā</i> | HMM | ‘white person’ |
| | <i>mfūrūrū</i> | LMM | ‘cotton wool’ |

In (5), pitch (mi-re-do) is distributed evenly in the syllable sequence. A major observation is the presence of mid tone. In some words, pitch is perceived to be slightly higher than the low pitch but lower than the high pitch. This tone pattern is described as an intermediate pitch. The mid-level tone (pitch) is seen (6):

| | | |
|------|----------------|----------------------------|
| i. | <i>tārtār</i> | ‘to chase closely’ |
| ii. | <i>tīyār</i> | ‘nine (number)’ |
| iii. | <i>mūmūn</i> | ‘maggot found in cow dung’ |
| iv. | <i>mkpīlɔn</i> | ‘deaf person’ |
| v. | <i>kyōnē</i> | ‘to gather people’ |
| vi. | <i>gūgū</i> | ‘mother-in-law’ |

- vii. *nkūr* 'crocodile'
viii. *būbū* 'darkness'

Perceptually, the production of mid-level tone is heard, usually above the low-level tone but with a lower density or mora in pitch compared to the high-level tone. In most cases, the auditory impression of this tone pattern is heard closely to the high-level tone though with a lower audition compared to the high tone. Above all, mid-level tone, also known as intermediate pitch, completes the tone paradigm of Māda as a register tone language.

5. Functions of Tone

The explanation of data shows the significant role of tone in communication. However, it is sacrosanct to allude the fact that tone is a salient feature of every natural language. That is, a good understanding of tone, its implication and naturalness in communication helps speakers of a language to be aware of the basic intricacies surrounding the complexity and correct use of their language. Thus, this section is dedicated to the functions of tone in Māda. Tone in Māda performs two distinct functions: lexical and grammatical functions.

5.1. Lexical Function

The lexical function of tone is the most obvious and significant function in that pitch differences are used contrastively to signal lexical difference in meaning. In other words, pitch variation is capable of initiating meaning contrast in Māda. This is illustrated in (7) below:

- i. *búbú* 'exact pot'
bùbù 'appetite'
būbū 'early morning'
būbù 'large basket'
- ii. *kpár* 'abusive word'
kpàr 'open space'

| | | |
|------|-------------|------------|
| | <i>kpār</i> | ‘openly’ |
| | <i>kpār</i> | ‘snail’ |
| iii. | <i>bú</i> | ‘to open’ |
| | <i>bǔ</i> | ‘openness’ |
| | <i>bù</i> | ‘to grind’ |
| | <i>bū</i> | ‘night’ |
| iv. | <i>kwár</i> | ‘hook’ |
| | <i>kwàr</i> | ‘to pet’ |
| | <i>kwār</i> | ‘voice’ |

Again, the description of the lexical function of tone, by means of examples, shows the contrastive feature of tone in initiating meaning difference. As shown in (7), distinction is made between homophones with the help of tone. When the pitch is relatively high, the lexical item bears a meaning different from when it is low or mid. In all, it is germane to state that the lexical function of tone in M̀àda is a major determiner in effective communication hence, cannot be dispensed when talking about the tone in general.

5.2. Grammatical Function of Tone

The grammatical function of tone in M̀àda is sacrosanct in encoding different syntactic information. In other words, the choice of tone either shows clarity, explicitness or change the tense form of a word in a sentence. Tone in M̀àda is quite productive and salient in enhancing effective communication. The grammatical function of tone in M̀àda is summarized as follows;

(A). Tone in M̀àda performs inflectional functions. That is, it indicates different grammatical forms of a word such as singular versus plural and infinitive versus verbal noun.

i. Singular versus Plural Formation

Tone plays a distinctive function in determining a change in grammatical function pertaining number. Instance of inflection for number is seen in (8) below:

| Singular | Plural | Gloss |
|---------------|---------------|------------------|
| <i>gbrú</i> | <i>gbrú</i> | “vulture” |
| <i>gbùr</i> | <i>gbúr</i> | “banana” |
| <i>kpàkì</i> | <i>kpākì</i> | “stick” |
| <i>mkpànē</i> | <i>mkpânē</i> | “elderly person” |
| <i>gwǎ</i> | <i>gwá</i> | “snake” |
| <i>gyǎn</i> | <i>gyín</i> | “shade” |

As shown in (8), tone in M̀àda performs basic inflectional function of singular and plural distinction. A look at some grammatical constructions in M̀àda reveals scintillating preamble in explicating the grammatical function of tone as illustrated in (8). See examples in (9) below:

- i. nggə sē m̀kpànē
 M M L M
 1SG be old person
 ‘I am (an) elderly person’.
- ii. nē bān sē m̀kpânē
 M M M R M
 3PL. Dem. be old person
 ‘Those people are elderly (persons)’.
- iii. B̀ùb̀wə bān kpàkì ə mb̀rɛcə
 L L M L LL L M
 3SG. take-PAST stick at morning
 ‘B̀ùb̀wə took a stick in the morning’.
- iv. B̀ùb̀wə bān kpākì ə mb̀rɛcə
 L L M M LL L M
 3SG. take-PAST sticks at morning
 ‘B̀ùb̀wə took some sticks in the morning’.

In (9), it is pertinent to state categorically that tone in M̀ada functions to convey grammatical information. We have seen that the choice of tone brings about difference in the meaning of lexical category and/or sentence wherein the interaction of tone and the expression of plurality adds to the meaning of an utterance devoid of ambiguity, and enhance naturalness in communication.

ii. **Infinitive versus Verbal Noun**

Another major function of tone in this category is the use of pitch to differentiate infinitive from verbal nouns (nouns formed from verbs). This can be instantiated in (10):

- | | | |
|------|-------------|-----------------|
| i. | <i>là</i> | ‘to be mad’ [V] |
| | <i>lǎ</i> | ‘madness’ [N] |
| ii. | <i>bú</i> | ‘to open’ [V] |
| | <i>bǔ</i> | ‘openness’ [N] |
| iii. | <i>gbré</i> | ‘to shiver’ [V] |
| | <i>gbrē</i> | ‘shivering’ [N] |

(B). Tone in M̀ada changes an affirmative sentence to a question statement. This is exemplified in (11):

- | | |
|-----|---------------------------------------|
| i. | Bubwə rɛ mato (Affirmative statement) |
| | L L M M L |
| | 3SG. buy-PST car |
| | ‘Bubwə bought a car’. |
| ib. | Bubwə rɛ mato (Interrogative reading) |
| | L L H H L |
| | 3SG. buy car |
| | ‘Did Bubwə buy a car?’ |

communication. This study is entirely descriptive without bias to any theoretical model of analysis, therefore we do not claim an exhaustive treatment of tone in Māda. Our study is limited to perceptual and auditory clues without acoustic (Praat analysis) analysis of tone. However, this area (acoustic analysis) deserves further studies.

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