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FOOT STRUCTURE AND PROSODIC EVIDENCE IN ÌDỌMÀ: AN OPTIMALITY THEORY ACCOUNT

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Abstract
This study analysed foot structure in Ìdọmà, a West Benue-Congo language spoken in Benue State, Nigeria, as a result of the fact that previous studies have paid little attention to it. The paper provided evidence for binarity, headedness and iambic patterns as properties of prosodic foot structure in the language. The data were gathered through oral interview of five native speakers. The elicitation process included data size of one-hundred words and one-hundred and twenty short phrases extracted from Ibadan Wordlist and the questionnaire for West African Linguistic Society, respectively. The data were drawn from the Òtùkpó dialect since it is intelligible to other dialects of the language, though dialectal variations exist. The data were transcribed using standardized International Phonetic Alphabet (IPA) transcription conventions. Optimality Theory was employed as the theoretical framework. The study revealed that foot structure is headed and binary footed in Ìdọmà as evidence from reduplication and truncation. The language also exhibits iambic foot structure with a light-heavy syllable. The study suggests more investigation on footing in Ìdọmà and other African languages to enrich documentation and provide more evidence to show that foot properties are universal but not limited to metrical systems.

Keywords: Binary foot, Foot structure, Optimality theory, Iambic foot, Ìdọmà

Ikpẹla
Ọ̀kpá ǹya che ọ̀wọ̀ kú ọ̀kẹla òokà kú Ìdọmà, noò wẹ̀ ìpú ùche kú Ùbẹnue-Congo, nee kà ìpú àjẹ̀ kú Ùbẹnue, Unaigeriya, òhí gwu kà àǫ́kpá noò tátaàjẹ̀ tẹ̀tẹ̀ a lẹ̀lá wò ń. Ọ̀kpá a chabọ màfú koo kwẹpà, ẹ̀yí mlà ikpẹla obáẹ̀pà kú ìpú ùche ǹya. Ọda kú ìjáàlí a wa mná lọ ọka òodà mlaà achẹ̀ òkà ùche ǹya ẹ̀họ. Ọka òodà jè ikpo ọ̀kẹla òfùẹ̀họ mlà òfùẹ̀họ chè ẹ̀pà mná ikpọkẹla kú Ibadan mlà ọka òodà kú Ọ́wá Ùche Afrika. Ọka òodà ǹya yá òkónù kú Òtùkpó baabọ nó lè tálàhá oopó lù òkónù kú Ìdọmà ọ̀há a. Ikpo ọ̀kẹla ǹya tá mlà Alfabẹti kú Ùfonetiki Kẹ́ẹ̀chẹ̀. Ọ̀kpá ǹya tá mlà òoyá kú Optimaliti. Ọ̀kpá a màfú kà ọ̀kẹla òokà lẹ̀ ẹ̀yí mlà òbẹ́pà lù Ìdọmà mná òkachọ̀há mlà òchetu. Ùche a màfú ikpẹla obáẹ̀pà mlà òfékée kú òwù oofù. Ọ̀kpá a kà ku ọ̀kwú oobù kú ọ̀kẹla òokà kú Ìdọmà mlà ùche kú Afrika kooyọ fíḗ ìpú otátajẹ̀ ko màfú ọ̀kẹla òokà òdúdú kú ẹ̀chẹ̀ nó yọ́ kó wẹ̀ uche nọkẹla kúwa gee gìcho gàjẹ̀a foofu nu ń.

Ikpokọ́òkẹla: ikpẹla obáẹ̀pà, ọ̀kẹla òokà, òoyá kú Optimaliti, obáẹ̀pà ku òkẹla, Ìdọmà

1. Introduction

This study investigates foot structure and prosodic evidence in Ìdọmà, a West Benue-Congo language spoken in Benue State, Nigeria. The foot structure is a prosodic constituent which serves as the organising node for the groupings of moras and syllables (Ọla, 1995). This productive aspect of prosodic phonology in Ìdọmà has received little treatment in previous literature. Consequently, it is yet to draw the full attention of researchers. Therefore, the goal of this paper, which is driven by inadequate documentation of the subject, is to explore the patterns of foot structure in the language from the productive domains of reduplication and truncation.

Previous publications on Ìdọmà include tones and lexical contrast (Ameh, 2002; Umaru, 2016), morphophonology of the Ìdọmà language (Apeh, 2015), a collection of Ìdọmà words and their classification into word classes (Dakat & Jonathan, 2016), a contrastive analysis of lexical and phonological variations in Ènọnẹ and Ènọchi varieties of Ìdọmà (Ogra, 2017), floating nasality as negative marker in Ìdomà-Òtùkpó (Ibikunle, 2017), negative marker in Ìdọmà (Sanusi & Oyewole, 2019) and tone differentiation in Àgàtú dialect of Ìdọmà (Ocheje & Ngbede, 2019). None of these studies consider foot structure and prosodic evidence in Ìdọmà.

Flowing from above, this paper observes that documentations on prosodic foot structure are not readily available in Ìdọmà, so research in this area is still emerging and this paper is an effort to address this gap in the language. Furthermore, the paper considers binary foot and headedness (Ọla, 1995) as properties of foot structure in the language. The notion of binary foot requires that a prosodic foot structure must contain two syllables (bi-syllabic) or

two moras (bi-moraic) while the notion of headedness requires that the foot constituent be made of a strong member (heavy syllable or the head) and weak member (light syllable or the non-head) (Kager, 2007). In all, this study argues that the notion of binary foot and headedness is motivated by reduplication and truncation in Ìdọmà as established in the data analysis.

2. The Ìdọmà language

Ìdọmà is a West Benue-Congo language (Williamson & Blench, 2000), a sub-group of Niger-Congo languages which is predominantly spoken in Benue State, in the North Central part of Nigeria where majority of the speakers are found. Ìdọmà is used to refer to both the language and the speakers. There are other Ìdọmà speakers in Nassarawa State in places like Dòmà, Àwé, and Kèáná Local Government Areas and Cross-River State in Ìyàlà, Íkọ́m and Òbúbrà Local Government Areas (Amali, Yusuf & Jekayinfa, 2012). The language is also spoken in Kogi State, for example, Òlámábòró and Ánkpá Local Government Areas. A variety of Ìdọmà, known as Ètè (Ameh, 2002), is also spoken in Enugu State.

Ìdọmà consists of different dialects which include Òtùkpó, Òtúkpá, Àgàtú, Àkwéyà, and Ìgùmále which are mutually intelligible (Armstrong, 1970). The data in this paper were collected from the Òtùkpó dialect which is learned only at primary schools and it is not examinable by West African Examination Council (WAEC) due to lack of trained teachers, textbooks, registration procedures with the examining body and disagreement over standardization among the language policy makers and opinion leaders. With regards to documentation, the Bible has been translated in the Òtùkpó dialect. There are also story books, booklets, lecture notes and seminar papers written in the language. The literacy level of the language has improved significantly in recent years as researchers have begun to pay more attention to it, nevertheless more research is required, especially in documentation and translation using digital tools like audio Bible and dictionary.

3. Methodology

The study employed qualitative data drawn from the Òtùkpó dialect since it is intelligible to other dialects of Ìdọmà, though dialectal variations exist which are not accounted for in this study. The procedure for data collection involved the use of oral interview of five adult native speakers of Ìdọmà. The research instruments used for data collection include audio recorder, Ibadan Wordlist and questionnaire for West African Linguistic Society. A total of one-hundred words which cut across nouns, pronouns and verbs were extracted from the Ibadan Wordlist while a total of one-hundred and twenty simple phrases were drawn from the questionnaire for West African Linguistic Society. The data included majorly consonant-vowel (CV) words, vowel-consonant-vowel (VCV) words and short phrases composed of associative construction of (VCV) plus (VCV) patterns. The data were transcribed using standardized International Phonetic Alphabet (IPA) transcription conventions. The results provided the motivation for this study. The data collected were also presented using descriptive analysis of the observed evidence for prosodic foot structure in Ìdọmà.

4. Theoretical framework

This study adopts Optimality Theory (Prince & Smolensky, 1993) as its theoretical model of analysis. The theory claims that all languages contain a set of conflicting universal constraints which have violable constraints in two sets, namely Faithfulness and Markedness constraints (McCarthy & Prince, 1993; McCarthy, 2007) from which individual grammars are constructed with differently ranked constraints. In the analysis, an input receives a set of candidates which are evaluated against the constraint hierarchy (Dekkers, Leeuw & Weijer, 2000). The form that least violates higher-ranked constraints is the optimal output. The reason for adopting Optimality Theory (OT) is based on its strength in evaluation of candidate sets against the constraint hierarchy in order to yield the optimal output.

In Optimality theory, the input structure consists of lexical entries in which lexically contrastive constituents, featural or prosodic, are encoded (Achangeli & Pullyblank, 1994). In this study, a well-formed foot structure in Ìdọmà is assumed to derive from input-output relationship where candidate sets are produced by OT mechanism called GEN (the

Generator) and then evaluated by a mechanism called EVAL (the Evaluator). The EVAL screens all the candidate sets produced by GEN. Each candidate may satisfy or violate certain CON (the Constraint) which results in the selection of the optimal candidate at the output level. In this study therefore, both the faithfulness and markedness constraints are employed to account for evidence for foot structure in Ìdọmà. In this study, the interpretations of the OT constraints employed to account for foot structure are given as follows.
MAX B-R: Reduplicant must correspond to the base.
BASE = Ft: The base of the reduplication is a binary foot.
RED = Ft: The reduplicant is a binary foot.
M-PARSE: Morphemes are parsed into morphological constituents.
PARSE-Seg: Root nodes are parsed by syllables.
ALIGN-RED-L: The reduplicant must correspond to the left edge of the word.
ALIGN-RED-R: The reduplicant must correspond to the right edge of the word.
ALIGN-TRUNC-L: The left edge of the truncative must align with the left edge of the word.
ALIGN-HEAD-R: The right edge of the head of iamb must align with the right edge of the foot.
CONTIG: Adjacent segments in the input must not skip in the output.
TRUNC = Ft: The truncative must coincide with the binary foot.
Ft-Bin: Foot is binary at the moraic or syllabic level.
DEP I-O: A segment that is present in the output must be present in the input.

The convention developed by Prince and Smolensky (1993) for interpreting a tableau are the following: X >> Y means constraint X dominates constraints Y. Left-to-right column order shows the domination order of the constraints. Violation of a constraints is marked by (*). Constraint fatal violation (which results in the rejection of a candidate) is marked by an exclamation mark (*!). Constraint satisfaction is indicated by a blank cell. A pointing finger ☞ indicates the optimal or winning candidate.

5. Literature review

In every language, words are composed of units of sounds known as syllables. These units of sounds that make up the syllables are referred to as feet. The idea of feet can be traced to the Traditional Latin primers (Katamba, 1989) which states that a verse (line of Latin poetry) consists of certain number of feet. Each foot is made up of two or more syllables. One of the syllables in the foot, usually the heavy one dominates the other (Katamba, 1989). This means that in language, the dominant foot is the heavy or strong syllable, while the non-dominant foot is the light or weak syllable. A foot is accompanied by metre which is the arrangement of a regular pattern of beat (rhythm) in utterance.

Moreover, the foot is a grouping of two syllables into a rhythmic unit which is primarily relevant in phonology for the description of stress assignment (Odden, 2005). This means that the idea of foot was initially developed in metrical phonology as a branch of generative grammar (Katamba, 1989) in order to complement autosegmental phonology which proposes that phonological materials like tones are independent of segmental materials like vowels to which tones are associated. Therefore, foot formation was initially introduced to account for stress in languages.

In later discovery, researchers have shown evidence of foot structure in tone languages where tone rather than stress is used to assign metre in the prosodic foot structure. In tone languages, evidence for foot structure usually comes from the empirical domain of prosodic morphology such as reduplication and truncation (Ọla, 1995) which support the claim that tone languages make use of foot structure. This raises questions on a number of theoretical grounds. In light of this, questions have been raised concerning the nature and property of foot structure; that is, the question of binarity, headedness, and the issue of whether or not there is a distinction between metrical and morphological feet. Phonologists have different perspectives on these issues in the literature.

Since the study of foot structure has received adequate attention in stress languages compared with tone languages, some linguists claim that only metrical feet, that is, the type of foot structure found in stress languages are headed while morphological feet which exist in tone languages lack heads (Crowhurst, 1991). On the contrary, other linguists argue that

morphological feet in tone languages are also headed just like metrical feet. Ọla further observes that in tone languages, where tone rather than stress is used for lexical contrast, evidence for foot structure usually comes from the empirical domain of morphology such as reduplication, truncation and featural processes (Ọla, 1995).

In stress languages, the motivating factor for foot structure is the application of stress assignment which may group the syllables either in twos or in an unbounded shape form (Hayes, 1989). This shows that stress assignment is crucial to the groupings of syllables which further lays claim to a foot type known as binary foot. A binary foot selects any two members of the prosodic constituents below the foot level, namely moras or syllables, one of which is usually the strong member or the head. In metrical phonology, therefore, stress is assigned to the strong member which occupies the head position in the foot domain.

In the analysis of prosodic foot structure, binarity and headedness are considered as properties of the foot structure. The principle of binarity holds that a foot is maximally binary either at the moraic or syllabic level (McCarthy & Prince, 1993). As a result, the principle of binarity determines the general patterns in assigning bounded stress to metrical constituents whereby moras and syllables are grouped together in twos. It is important to note that although binary branching feet is preferred in most languages, there is one view that degenerate feet (a foot structure containing one syllable) and ternary feet (a foot structure composed of three syllables) do exist in some languages (Levin, 1985; Crowhurst, 1991). On the other hand, there is another view that degenerate and ternary feet are impossible and thus banned by Universal Grammar (UG) as possible foot types in languages (Kager, 2007). In this paper, the foot type which is the focus of interest is the binary foot which contains two syllables.

In view of the notion of headedness, the requirement for binary branching feet is that the foot must have head. However, there are two opposing views on the notion of headedness. The first view (McCarthy & Prince, 1993) is that all foot types, whether metrical or morphological feet are headed. The opposing view (Crowhurst, 1991) argues based on the notion of headedness that there is a difference between metrical and morphological feet; therefore, metrical feet have heads whereas morphological feet lack heads. These opposing views make different predictions on the phonological relationship of foot constituents (Ọla, 1995). Ọla observes that the first view (McCarthy & Prince, 1993) where a head is an obligatory component of foot structure predicts asymmetry between the two prosodic units (mora and syllable) contained within the foot. As a result, the head is assigned a special status while the non-head is not. In the second view (Crowhurst, 1991), however, since a morphological foot lacks a head, neither of the two prosodic members of the foot is more special than the other, predicting the absence of total asymmetry (Ola, 1995). From the available data, this study supports the claim by McCarthy and Prince (1993) and Ọla (1995) that morphological feet are headed and binary footed.

Previous studies on foot structure in Niger-Congo languages have shown strong evidence to support the claim that foot structure is headed and binary footed in these languages. In truncation of personal names which serves as evidence for foot structure in Yorùbá, (Oduoye, 1970) reveals that Yorùbá names like *Ọláolúwa* “the highest estate of God” can be shortened to *Ọlá* or *Olú*. In this process, the prosodic requirement for binary foot is met by truncation process which shortened the names to VCV in the output. Although the study does not treat foot structure as the focus of interest, the output of truncation of a long name which results in bi-syllabic patterns offers evidence for binary foot structure in Yorùbá.

Similarly, a study of foot structure in Ọwọn-Afa reveals that the notion of headedness in this language is motivated by the bimoraic requirement imposed on the head, a factor which triggers vowel lengthening in reduplication process when the base contains an open light syllable (Ọla, 1995) as shown in (1).

(1) Ọwọn-Afa

a.	**ʤu**	→	**ʤì-ʤúú**
	PRS		RED-PRS
	‘eat’		‘eat anyhow’
b.	**kpɛ́**	→	**kpì-kpɛ́ɛ́**

PRS	RED-PRS
'dig'	'dig anyhow'
	(Ọla, 1995, P. 167)

In (1), the base of the verb is CV while the characteristics of the reduplicant reveal that it is realised as CV-CV:. In other words, the initial (leftmost) vowel of the reduplicant is the default vowel in the language, and the vowel of the base systematically lengthens, thereby changing the original CV shape of the base to CVV. Thus, the foot structure type in Ọwọn-Afan which is an iamb, consists of a light-heavy syllable sequence. Ọla notes that weight requirement imposed on the rightmost syllable is a consequence of headedness, that is, the head of the iambic foot is expressed at the right edge of the word.

Foot structure is extensively studied in Anaang, a language spoken in Akwa Ibom State, Nigeria (Udoh, 2016). The study observes that verbal systems in the language have their foot organised into light-light and heavy-light during morphological processes. This means that for foot organisation to take place in the language, the output has to be bi-syllabic. Udoh provides evidence from a derived constructions of verbal items to show that phonological processes only take place within a foot, and a foot is not more than two syllables as shown in (2).

(2) Derived construction in Anaang

a.	**kʉk**	→	**kʉk-kɔ**
	PRS		PRS-RED
	'close'		'open' (reversive)
b.	**gʷáŋ**	→	**gʷá-ŋá**
	PRS		PRS
	'wrap'		'wrap oneself' (reflexive)
			(Udoh, 2016, p. 23)

A study on prosodic word and segmental processes in Dagbani, a Gur language spoken in Ghana (Hudu, 2022) explores the relevance of metrical structure in segmental processes. The study shows that the language has a prosodic word dominating a trochaic foot which permits segmental processes and phonotactics. The study argues that the foot is the domain for marked vowels and unmarked consonants and reveals that the prosodic word regulates the sequencing of syllables of different degrees of sonority and weight within a word. With the application of Optimality Theoretic analyses, the paper deploys classical metrical theory and prosodic principles used in defining the prosodic word in stress languages to highlight the typological relevance of these principles and the prosodic universality of these metrical structures. However, the study does not show whether trochaic foot in Dagbani exhibits binary foot and headedness which are typical of metrical systems, and which this current paper intends to prove in Ìdọmà.

Japanese also exhibits foot structure (Huang, 2023) where both morphological and phonological structure affect the phonetic realisation of foot structure in the language. Huang observes that Japanese operates a trochaic structure where emphasis is placed on the initial mora, that is, in Japanese, the foot is composed of a heavy-light syllable. Nina, Sharon and Mark (2025) examine prosody of topic and focus in Tira, a Niger-Congo language and find that topic and focus elements appear at the front of the sentence. The study explores the prosodic properties of these constructions and shows that cross-word high tone spreading occurs within prosodic constituents, but is blocked between a topic and remainder of the sentence, showing that the topic is prosodically separated from the focus. However, the study does not show evidence for foot structure in Tira despite the effects of prosody on the sentence structure of the language.

With regards to Ìdọmà, studies on prosodic foot structure are rarely documented in previous literature. Some aspects of foot properties which have received attention in the language include vowels, liquids and nasal as moraic units in Ìdọmà (Ọla, 1995). Ọla mentions that foot structure in Ìdọmà is binary footed and bi-moraic in the analysis of minimal prosodic word in the language.

Although studies on reduplication and truncation are documented in Ìdọmà, they only provide insight to other aspects of the language, and not on foot structure, for instance, reduplication in Ìdọmà may indicate evidence for agglutination in the language (Apeh, 2014). Similarly, a morphological analysis of truncation of personal names in Àgàtú, a dialect of Ìdọmà (Ocheje, 2019) reveals that personal names of more than two syllables can be shortened and the meaning is still retained. The study focuses on the shortening of longer segments attached to the root words **Òcho** "God" and **ọ̀yí** "child" at the word initial and final positions. The two words can be used to generate different personal names in Àgàtú dialect of Ìdọmà.

From the foregoing, it is shown that foot structure in Ìdọmà has not been given much attention in previous literature. As a result, this study provides evidence for foot structure in Ìdọmà from reduplication processes involving ideophones, distributive numerals and productive process of truncation. The study also demonstrates the notion of headedness and binarity as well as iambic structure in the language.

6. Data Analysis

This section presents evidence for foot structure in Ìdọmà from the domains of reduplication and truncation. In reduplication, the paper examines instances of ideophone and distributive numerals. The paper also provides evidence for iambic foot structure in Ìdọmà which provides more insight on the notion of foot typology, binarity and headedness in the language.

6.1 Reduplication as evidence for prosodic foot structure in Ìdọmà

As a morphological process, reduplication is a complete or partial repetition of sound segments which has certain phonological characteristics of the base or root word. The data presented show that the foot is binary and headed in the language. In light of this, two types of phonological phenomena are given as evidence for foot structure in Ìdọmà. These are ideophone reduplication and distributive numerals.

6.1.1 Ideophone reduplication in Ìdọmà

Ideophone according to Trask (1996) is "one of a grammatical distinct class of words occurring in certain languages which typically express either distinctive sounds or visually distinctive types of action." Ideophones are very productive in Ìdọmà and mostly involve reduplicative processes which exhibit interesting patterns that are significant for the theory of prosodic phonology and morphology in the language. In Ìdọmà, reduplication is governed by two basic patterns, namely the non-templatically governed and the templatically constrained. The non-templatically governed pattern involves total reduplication and is motivated by morphology, while the templatically constrained pattern involves partial reduplication and is motivated by prosody. In the non-templatically governed reduplication, all ideophones undergo total reduplication of both the segmental and tonal melody and the meaning suggests "description or state of a thing or person" as shown in (3).

(3)		Base	Reduplication
	a.	**lùmẹ̀**	**lùmẹ̀-lùmẹ̀**
		IDEO	IDEO-RED
		'soft'	'very soft'
	b.	**lọ̀gọ̀**	**lọ̀gọ̀-lọ̀gọ̀**
		IDEO	IDEO-RED
		'liquid'	'excess liquid'
	c.	**gbènyì**	**gbènyì-gbènyì**
		IDEO	IDEO-RED
		'watery'	'very watery'
	e.	**gbolí**	**gbolí-g͡bolí**
		IDEO	IDEO-RED
		'never'	'never again'

In (3), all the processes involve total reduplication. In view of prosodic morphology, total reduplication is not prosodically governed, but an instance where morphology takes priority over prosody. In light of Optimality Theory, total reduplication is governed by undominated constraint known as MAX B-R where the reduplicant is identical to the base. With the MAX B-R constraint governing total reduplication, Optimality Theory can account for the data in (3) as shown in tableau (1).

Tableau 1: MAX-R is undominated

Input: **/lùmẹ̀/**	MAX B-R
☞ a. **lùmẹ̀ - lùmẹ̀**	
b. **lùmẹ̀ - lù**	* *
c. **lù - lùmẹ̀**	* *

In tableau (1), candidates (b) and (c) are rejected since they violate the undominated constraint, MAX B-R. This means that reduplication is partial, not total in these forms. As a result, candidate (4a) which undergoes total reduplication, however obeys MAX B-R and is selected as the optimal form. In the templatically governed type of reduplication, a subset of ideophones which express "roughness" or "clumsiness" are selected for reduplication as illustrated in (4).

(4)		Base	Reduplication
	a.	**tínyáá**	**tínya-tìnya**
		IDEO	IDEO-RED
		'not smooth'	'not very smooth'
	b.	**híkọ́ọ́**	**híkọ-hìkọ**
		IDEO	IDEO-RED
		'scaly'	'very scaly'
	c.	**kwáchá á**	**kwácha-kwàcha**
		IDEO	IDEO-RED
		'unstable'	'very unstable'
	d.	**kóńgóó**	**kóngo-kòǹgo**
		IDEO	IDEO-RED
		'dried'	'well dried'

In (4), the base is two-syllable long CVCV: and there is vowel shortening to CVCV when it undergoes partial reduplication. Similarly, the tonal melody expressing "roughness" or "clumsiness", HMLM, maps on the vowels of the reduplicant from left-to-right, thereby displacing the original tones of the base HHH, except the first High tone. By observation, the study argues that reduplication processes in (4) are partial and different from the examples of total reduplication presented in (3). However, reduplication is not possible if the segments in the base are longer than a foot as shown in (5).

(5)		Base	Reduplication failure
	a.	**fíẹ́ńgẹ́lẹ́**	***fíẹ́ńgẹ́lẹ́-fíẹ́ńgẹ́lẹ́**
		IDEO	
		'a thin object'	
	b.	**kwọ́chọ́kọ́**	***kwọ́chọ́kọ́-kwóchókọ́**
		IDEO	
		'sound of a dropping sack'	
	c.	**plákátáá**	***plákátáá- plákátáá**
		IDEO	
		'very wide'	

In (5), reduplication fails to hold because the base is longer than a foot. Therefore, the contrast between the reduplication processes in (4) and (5) is accounted for by the fact that in (4), the base of the reduplication is a binary foot and prosodic restrictions are imposed on it in order to satisfy this requirement. An Optimality theoretic account of the prosodic conditions regulating the partial reduplication pattern in (4) with regards to the shape of the base and the reduplicant involves the undominated constraints, BASE = Ft and RED = Ft as evident from tableau (2).

Tableau 2: BASE = Ft, RED = Ft >> MAX I-O

Input: **/híkọ́ọ́/**	BASE= Ft	RED = Ft	MAX I-O
☞a. **híkọ-hìko**			*
b. **híkọ-hì**		**	**

In tableau (2), candidate (b) is sub-optimal since the reduplicant is not a binary foot which is a factor that circumvents the HMLM tonal specification of this reduplicative process. In Ìdọmà, the option of linking the two tonal melodies, LM to a single vowel or tone bearing unit (TBU) is not applicable because of the one-to-one linking constraint which holds between mora and tone in the phonology. Therefore, candidate (a) emerges as the winner, since the base and the reduplicant are binary footed. The differences are obvious when tableau (2) is compared with tableau (3).

Tableau 3: BASE = Ft, RED = Ft

Input: **/kwọ́chọ́kọ́/**	BASE= Ft	RED = Ft
a. **kwọ́chọkọ-kwọ̀chọ̀**	*!	
b. **kwọ́chọkọ-kwọ̀chọ̀kọ**	*!	*

In tableau (3), the base violates the binary foot requirement imposed on it by prosodic constraint. This explains why candidates (a) and (b) are rejected. It is important to note that candidate (a) is still ill-formed even though the reduplicant obeys RED = Ft, a fact which reveals that BASE = Ft is similarly undominated. Both constraints must be satisfied for the output to be well-formed as illustrated by the well-formedness of candidate (a) ***híkọ-hìkọ*** "scaly" in tableau (2). The optimal situation for longer forms such as the ones in (5) is a Null Parse or M-PARSE where morphemes are parsed into morphological constituent. The M-PARSE constraint was initially proposed to account for the failure of morphological parsing in situation where ill-formed output would result. However, it may be applied to a base that is longer than a foot such as the forms in tableau (3) where reduplication fails to apply. Therefore, if BASE = Ft and RED = Ft dominate M-PARSE, the optimal output is the one which does not reduplicate as shown in tableau (4).

Tableau 4: BASE = Ft, RED = Ft >> M-PARSE

Input: **/kwọ́chọ́kọ́/**	BASE=Ft	RED= Ft	M-PARSE
a. **kwọ́chọkọ-kwọ̀chọ̀**	*!		**
b. **kwọ́chọkọ-kwọ̀chọ̀kọ**	*!		
☞ c. **kwọ́chọ́kọ́**			*!

From the foregoing, evidence from ideophone reduplication is foot-constrained and presents a simple explanation for the well-formedness of the forms in (2), where the base of the reduplication is a foot and meets the prosodic condition which states that the base must be

binary. In (5), the failure of reduplication is equally explained because the base of the reduplication is longer than a foot.

6.1.2 Distributive numerals in Ìdọmà

A second argument for foot structure in Ìdọmà comes from distributive numerals which are productively derived by reduplicating the base. For instance, if the base is a V.CV, total reduplication applies as in (6a). On the other hand, if the base is longer, the rightmost V.CV is reduplicated as demonstrated in (6b).

(6)		Base	Reduplication
	a.	**ẹ̀pà**	**ẹ̀pà-ẹ̀pà**
		NUM	RED-NUM
		'two'	'two by two'
		ẹ̀tá	**ẹ̀tá-ẹ̀tá**
		NUM	RED-NUM
		'three'	'three by three'
		ẹ̀nẹ̀	**ẹ̀nẹ̀-ẹ̀nẹ̀**
		NUM	RED-NUM
		'four'	'four by four'
	b.	**òfùẹ̀pà**	**òfùẹ̀pà-ẹ̀pà**
		NUM	NUM-RED
		'forty'	'forty by forty'
		òfùẹ̀tá	**òfùẹ̀ta-ẹ̀tá**
		NUM	NUM-RED
		'sixty'	'sixty by sixty'
		òfùẹ̀nẹ̀	**òfùẹ̀nẹ̀-ẹ̀nẹ̀**
		NUM	NUM-RED
		'eighty'	'eighty by eighty'

In (6a), an explanation of the numeral formatives is obtained in prosodic terms if it is stated that the reduplicant is a foot prefix (6a) or suffix as in (6b). Furthermore, the base may contain materials which are longer than the foot as in (6b); that is, V. CV.V.CV. Based on the assertion that the reduplicant is a foot, one derives a straightforward explanation for why the reduplicant is systematically expressed as V.CV rather than V. CV.V.CV. This means that, the foot is expressed at the leftmost part of the base containing V.CV segments as in (6a), while it is expressed at the rightmost part of the base containing segmental materials (V. CV.V.CV) which are longer than the foot as shown in reduplicated forms in (6b).

Within the Optimality approach, the requirement in (6a) that the reduplicant must be a foot is accounted for by the constraints RED = Ft, while the prefixal position of the reduplicant can be accounted for by the alignment constraint, ALIGN-RED-L, then MAX B-R ensures that the reduplicant corresponds to the base. The constraint ranking that derive total reduplication in (6a) is illustrated in tableau (5).

Tableau 5: RED = Ft >> ALIGN-RED-L >> MAX B-R

Input: **/ẹ̀tá-ẹ̀tá/**	RED = Ft	ALIGN-RED-L	MAX B-R
☞ a. **ẹ̀tá-ẹ̀tá**			
b. **tá-ẹ̀tá**		*	*
c. **ẹ̀-ẹ̀tá**	**!*	*!	**

In tableau (5), candidate (a) is the optimal candidate because it satisfies all the constraints, RED-Ft, ALIGN-RED-L and MAX B-R, that is, the reduplicant is a foot and is properly aligned at the left of the base, while all the segmental materials in the base perfectly

correspond to the reduplicant. Candidate (b) and (c) are sub optimal because the former satisfies RED = Ft and violates ALIGN-RED-L and MAX B-R, while the latter fatally violates RED = Ft and ALIGN-RED-L and minimally violates MAX B-R.

In (6b), therefore, the right-to-left mapping of the base of the reduplicant is accounted for by the undominated constraints RED=Ft and ALIGN-RED-R. Therefore, MAX B-R, which requires that the reduplicant is identical with the base is violable because in cases where the base is longer than a foot, reduplication is not total; that is, the reduplicant is identical only to the rightmost foot of the base as revealed by the examples in (6b). The ranking and tableau that obtain this effect are demonstrated in tableau (6).

Tableau 6: RED = Ft, ALIGN-RED-R >> MAX B-R

Input: **/òfùẹ̀pà/**	RED = Ft	ALIGN-RED-R	MAX B-R
a.**òfùẹ̀pà-òfùẹ̀pà**	*!		
b. **òfù-òfùẹ̀pà**		*!	***
☞c. **òfùẹ̀pà-ẹ̀pà**			***

Tableau (6) reveals the effects of the ranking established for the numeral distributives. As shown, candidate (a) is rejected since the reduplicant is larger than a foot. Candidate (b) fails because it violates the higher-ranked ALIGN-RED-R which requires that the reduplicant be aligned at the right edge of the word. Candidate (c) therefore, is the optimal form because it obeys the highly ranked undominated constraints, RED=Ft and ALIGN-RED-R which the two candidates violate each of them. Although MAX B-R, a lowly ranked constraint is violated by (c), it does not prohibit its selection as the optimal form.

6.2 Truncation as evidence for foot structure in Ìdọmà

Truncation refers to a process of word shortening which is phonologically predictable (Crystal, 2008). Crystal observes that truncation has attracted particular attention in prosodic morphology, where it is used to illustrate such processes as template-mapping and prosodic circumscription. It mostly involves the shortening of personal names which also provides evidence for foot structure in Ìdọmà. Truncation is a foot dependent prosodic process which maps sufficient segmental materials from the base to foot to satisfy the binarity requirement. The implication is that truncation targets certain part of the words. As a result, some sound segments (syllables) within the word are resistant to truncation. This is expressed in Optimality Theory as PARSE-seg violation (Ọla, 1995) which means that the sound segments that avoid truncation violate PARSE-seg, the constraint that permits a sound segment within a long string of word to be truncated to a binary foot in the output. This highlights the difference between reduplication and truncation. In reduplication, the base is fully realised in the output because it does not violate PARSE-seg. In truncation, however, the base is only partially realised in the output form because some sound segments in the base avoid truncation, hence they violate PARSE-seg. Consider some name shortening in Ìdọmà thus.

6.2.1 Name shortening in Ìdọmà

Most Ìdọmà personal names are formed from a combination of two nouns, a noun plus verb phrase or a noun plus prepositional phrase. This can be illustrated in (7) for noun plus noun, (8) for noun plus verb phrase and (9) for noun and prepositional phrase.

(7) Noun + Noun name formatives:

	Noun	+	Noun		Output
a.	**áda**	+	**àjẹ̀**	→	**ádaàjẹ̀**
	‘father’		‘land’		‘father of the land/soil’
b.	**ọ̀yí**	+	**ọ̀wọ̀**	→	**ọ̀yíọ̀wọ̀**

	‘child’		‘destiny’		‘child of destiny’
c.	**òlẹ̀**	+	**ìjè**	→	**òlẹ̀ìjè**
	‘owner’		‘money’		‘owner of money’

(8) Noun + Verb Phrase name formatives

	Noun	+	VP		Output
a.	**ọ̀yí**	+	**wẹ̀-ọ̀dù**	→	**ọ̀yíwẹ̀ọ̀dù**
	‘child’		COP-wealth		‘child is wealth’
b.	**ẹ̀chẹ̀**	+	**wẹ̀-ọ̀fú-ń**	→	**ẹ̀chẹ̌wẹ̀ọ̀fúń**
	‘world’		COP-might-NEG		‘world is not might’
c.	**ọ̀nya**	+	**wẹ̀-ọ̀lé**		**ọ̀yawẹ̀ọ̀lé**
	‘wife’		COP-home		‘wife is the home’

(9) Noun + Prepositional Phrase name formatives:

	Noun	+	PP		Output
a.	**ẹ̀nọ̀**	+	**kú-ẹ̀la**	→	**ẹ̀nọ̀kúẹ́la**
	‘time’		PREP-matter		‘time for matter’
b.	**ẹ̀dọ̀**	+	**kú-achẹ̀**	→	**ẹ̀dọ̀kúáchẹ̀**
	‘kind’		PREP-people		‘kind of people’
c.	**áda**	+	**kú-ọ̀lẹ́**		**ádakúọ́lẹ́**
	‘father’		PREP-house		‘father of the house’

In Ìdọmà, the output forms of the names in (7), (8) and (9) are traditionally used to address a person, or to make reference to the circumstance that surrounds someone’s birth or the situation of the family at the time of a child’s birth. Name shortening can also be used in proverbs and when invoking incantation or blessings on someone. In recent times, it is used in formal contexts, for example, school registration and formal documentations such as birth registration and census. Name shortening is also used to show “familiarity”, “intimacy”, and “closeness” with a peer or younger ones. As a result, names are shortened to V.CV as appeared in (10), (11) and (12).

(10) Shortened names:

	Noun	+	Noun Base		Truncated Form (VCV)
a.	**áda**	+	**àjẹ̀**	→	**áda *àjẹ̀**
	father		land/soil		TRUNC
	‘father of the land’				‘father’
b.	**òlẹ̀**	+	**ìjè**	→	**òlẹ̀ *ìjè**
	owner		money		TRUNC
	‘owner of money				‘owner’
c.	**ọ̀nya**	+	**ọ̀wọ̀**	→	**ọ̀nya *ọ̀wọ̀**
	‘wife’		‘destiny’		TRUNC
	‘wife of destiny’				‘wife’

(11) Shortened names:

	Noun	+	VP Base		Truncated Form (VCV)
a.	**ọ̀yí**	+	**wẹ̀-ọ̀dù**	→	**ọ̀yí, ọ̀dù *wẹ̀ọ̀dù**
	child		COP-wealth		TRUNC
	‘child is wealth’				‘child’, ‘wealth’
b.	**ẹ̀chẹ̀**	+	**wẹ̀-ọ̀fúń**	→	**ẹ̀chẹ̀ *wẹ̀ọ̀fúń**
	‘world’		COP-might		TRUNC
	‘world is not by might’				‘world’
c.	**ọ̀nya**	+	**wẹ̀-ọ̀lé**	→	**ọ̀nya *wẹ̀ọ̀lé**

	wife	COP-home		TRUNC
	'wife is home'			'wife'

(12) Shortened names:

	Noun +	PP Base		Truncated Form (VCV)
a.	**ẹ̀nọ̀**	**kú-ẹ́la**	→	**ẹ̀nọ̀ *kúẹ̀la**
	time	PREP-matter		TRUNC
	'time for matter'			'time'
b.	**ẹ̀dọ̀ +**	**kú-áchẹ̀**	→	**ẹ̀dọ̀ *kúàchẹ̀**
	'kind'	PREP-people		TRUNC
	'a kind of people'			'kind'
c.	**áda +**	**kú-ọ́lẹ́**	→	**áda *kúọ́lẹ́**
	'father'	PREP-home		TRUNC
	'father of the house'			'father'

From the data in (10), (11) and (12), name truncation in Ìdọmà mostly selects the subject elements in the combination or the predicate in some few cases. As a result, the possibility of ***kúàchẹ̀*** in (12b) and other impossible forms thereof are not explicitly predictable. In order to capture the shortening pattern, it is important to consider the prosodic structure of these forms in addition to their morphemic information. The smallest and regularly shortened sound segment within the names is VCV which is identical to a binary foot in prosodic terms.

Furthermore, the shortened names always correspond to the segmental materials at the left edge of the names. Although a name such as ***ọ̀yíwẹ̀ọ̀dù*** "child is wealth" in (11a), for instance, may be truncated to ***ọ̀yí*** "child" or ***ọ̀dù*** "wealth", a name such as ***ẹ̀dọ̀kúàchẹ̀*** "a kind of people" (12b) may only have one shortened form, while other forms such as ***kúàchẹ̀*** or ***àchẹ̀*** are impossible. From the data in (10), (11) and (12), the study holds that truncation targets the VCV sound segments that occur at the left edge of the word. This explains why the output or the truncated forms are identical with the leftmost segments in the base. In view of the shortened names that contain two truncated variants, the study asserts that truncation targets mostly the leftmost materials in the base and sometimes the rightmost sound segments in the base.

In Optimality Theory, the formalisation of the templatic and leftmost requirement for the truncated foot are governed by the undominated constraints, TRUNC = Ft, ALIGN-TRUNC-L, ALIGN-TRUNC-R, CONTIG and the dominated constraint, PARSE-seg. The ranking that produces the optimal candidates is shown in tableau (7).

Tableau 7: TRUNC = Ft, ALIGN-TRUNC-L, ANCHOR-R, CONTIG >> PARSE

Input: **/ọ̀yí-wẹ̀-ọ̀dù/**	TRUNC=Ft	ALIGN-TRUNC-L	ANCHOR-R	CONTIG	PARSE
a. **ọ̀yíwẹ̀**	*!				***
b. **wọ̀dù**		*!	*		*****
c. **ọ̀yí**				*	****
☞ d. **ọ̀dù**					*****

In tableau (7), candidate (a) is ruled out for fatally violating TRUNC = Ft with minimal violation of ALIGN-TRUNC-L and ALIGN-TRUNC-R. Candidate (b) fails due to violation of ALIGN-TRUNC-L, ALIGN-TRUNC-R and CONTIG; that is, a segment in the truncated form has been skipped. Candidates (d) and (e) are the winners since they obey all the undominated constraints. Although the optimal candidates violate PARSE-seg, it is not

critical for evaluation because it is ranked low. In as much as the prosodic requirements are satisfied, PARSE-seg is treated as minimal. From the foregoing the constraints that motivate truncation in tableau (7) have revealed that the truncated forms are realised as a single binary foot whose segmental materials correspond to that of the leftmost foot or the rightmost foot in the base.

6.3 **Iambic structure in Ìdọmà**

Iambic structure is a foot type which is realised as light-heavy syllable and this study demonstrates how it is derived in Ìdọmà. In the infinitive construction, monosyllabic CLV verbs do not occur in isolation since they do not satisfy the bimoraic requirement of binary feet. As a result, an infinitive prefix **[o-]** is required to ensure that the verbs are binary footed and properly headed as shown in (13).

(13)		CLV		Infinitive (V-CLV)
	a.	**kĺá**	→	**o-kĺá**
		PRS		INF-stay
		‘stay’		‘to stay’
	b.	**bĺá**	→	**o-bĺá**
		PRS		INF-pair
		‘pair’		‘to pair’
	c.	**k͡pĺá**	→	**o-k͡pĺá**
		PRS		INF-borrow
		‘borrow’		‘to borrow’
	d.	**g͡bl̀à**	→	**o-g͡bl̀à**
		PRS		INF-resemble
		‘resemble’		‘to resemble’

In (13), a salient observation about the CLV verbs is that the liquid and the vowel are tone-bearing units hence they are moraic. In other words, both liquids and vowels participate in moraic weight count in Ìdọmà. Ọla (1995) demonstrates infinitive construction involving CV verbs in Ìdọmà as shown in (14).

(14)		Base (CV)		Infinitive (V-CV)
	a.	**pí**	→	**o-pí**
		PRS		INF-squeeze
		‘squeeze’		‘to squeeze’
	b.	**gọ́**	→	**o-gọ́**
		PRS		INF-sew
		‘sew’		‘to sew’
	c.	**nà**	→	**o-nà**
		PRS		INF-wash
		‘wash’	‘to wash’	
	d.	**lé**	→	**o-lé**
		PRS		INF-eat
		‘eat’		‘to eat’

In (14), the data follow the similar patterns recorded in (13). The difference is that Ọla (1995) emphasizes on CV verbs with no attention paid to CLV verbs. The study, following Ọla (1995) justifies the infinitive constructions in (13). On the status of the liquid as a tone-bearing units, Abraham (1951) notes that a consonant followed by the liquid /l/ employs this sound as a vowel, not as a consonant; and the combination forms a syllable. This often arises historically from the loss of a vowel: CVLV > CLV (Clements, 2000) and whenever the

vowel surfaces, the tone is delinked from the liquid and associates with the vowel as in the insertion of the vowel /u/ which is heard in slow speech of Ìdọmà speakers as illustrated in (15).

(15)		CVLV		CLV
	a.	**kúĺá**	→	**kĺá**
		PRS		PRS
		"stay"		'stay'
	b.	**búĺá**	→	**bĺá**
		PRS		PRS
		'pair'		'pair'
	c.	**kpúĺá**	→	**kpĺá**
		PRS		PRS
		'borrow'		'borrow'
	d.	**gbúl̀à**	→	**g͡bl̀à**
		PRS		PRS
		'resemble'		'resemble'

Apart from the moraic status of liquid demonstrated in (15), the study also asserts that CLV syllable does not have complex onset. This can also be confirmed from reduplication test for the CLV verbs in (16).

(16)		CLV verb		Reduplication
	a.	**kĺá**	→	**òko-kĺá**
		PRS		PROG-stay
		'stay'		'taying'
	b.	**ml̀ẹ̀**	→	**òmo-ml̀ẹ̀**
		PRS		PROG-swallow
		'swallow'		"swallowing"
	c.	**pl̀à**	→	**òpo-pl̀à**
		PRS		PROG-hang
		"hang"		'hanging'
	d.	**gbl̀à**	→	**ògbo-gl̀à**
		PRS		PROG-resemble
		'resemble'		'resembling'
	e.	**bĺá**	→	**òbo-bĺá**
		PRS		PROG-pair
		'pair'		'pairing'

As confirmed by the reduplication test in (16), the onset consonant (C) is separated from the liquid (L), showing that it is not an instance of complex onset which also confirms the tone-bearing status of the liquid. From the available evidence shown so far, this study posits that the CLV sequence contains two moras. With regards to the infinitive construction, the insertion of the infinitive prefix **[o-]** is be motivated by the notion of proper head and binarity, the prosodic constraints that govern the input-output realisation of binary foot which results in V-CLV iambic foot. In a nutshell, the head of the iamb is expressed at the right edge while the non-head is mapped at the leftmost part. The study argues that the CLV shape contains two moras which is a heavy syllable, while the V shape which contains one mora corresponds to light syllable. In all, this study holds that the foot type in Ìdọmà is iamb; that is, a light-heavy syllable. Similarly, ideophones of CV: syllable always co-occur with the causative verb **yá** "cause or made to become" which results in iambic feet as illustrated in (17).

(17)		CV:		CV- CV:
	a.	**gọ̀ọ̀**	→	**yá-gọ̀ọ̀**
		IDEO		CAUS-dim

	‘dim’		‘cause to become dim’
b.	**ŋ̀ọ̀ọ̀**	→	**yá-ŋ̀ọ̀ọ̀**
	IDEO		CAUS-deep
	‘deep’		‘cause to become deep’
c.	**boo**	→	**yá-boo**
	IDEO		CAUS-red
	‘red’		‘cause to become red’
d.	**wàà**	→	**yá-wàà**
	IDEO		CAUS-disperse
	‘disperse’		‘cause to disperse’

In (17), the CV: syllable does not satisfy the binary foot requirement, thus it co-occurs with the causative CV verb to be realised as CV-CV: which a light-heavy syllable (iamb). In Optimality theory, this is formalised by the constraint interaction of Ft-Bin, ALIGN-HEAD-R, while DEP I-O is ranked low. The ranking and constraint interactions for the data in (17a), for example, are shown in tableau (8).

Tableau 8: Ft-Bin, ALIGN-HEAD-R >> DEP I-O

Input:/**gọ̀ọ̀**/	Ft-Bin	ALIGN-HEAD-R	DEP I-O
a. **gọ̀ọ̀**	*!		
☞ b. **yá-gọ̀ọ̀**			*

In tableau (8), candidate (a) fails because it incurs a fatal violation of one of the undominated constraints, Ft-Bin, as a result, it becomes a loser. Candidate (b) is the optimal output since it satisfies all the undominated constraints; it is properly headed, binary footed and the head aligns at the right edge of the morpheme. The violation of DEP I-O is not crucial for picking the winner, so it does not prevent the optimal status of this candidate.

7. Conclusion

The controversy over whether foot structure in tone languages is headed may be due to little attention given to footing in non-metrical systems. However, studies in recent times have shown that foot structure has head in both metrical and non-metrical systems. Accordingly, this study which focused on foot structure in Ìdọmà has provided evidence to corroborate the fact of binarity and headedness in tone languages. The previous studies on Ìdọmà examined in this paper have not paid adequate attention to foot structure in the language. However, the data presented here have demonstrated that the language is productive in prosodic phonology and morphology. This has been revealed in prosodic evidence for foot structure discussed in this paper, namely reduplication and truncations.

In addition, the study examines binary feet and headedness as the two constituents of prosodic foot structure. This has addressed the misconception in earlier studies that binary feet and headedness only exist in stress languages while tone languages lack these foot properties. Flowing from this, this paper has provided sufficient evidence to prove that binary feet and headedness can be accessed in tone languages contrary to the claim of some previous studies. Interestingly, the study accounted for the derivation of iambic foot patterns in Ìdọmà. The language is also productive in this aspect that deals with the rhythmic pattern of arrangement of sound. The study provided the evidence for iamb in the language from infinitive construction and causative verbs co-occurring with certain ideophones to yield light-heavy syllable (iamb) in Idọmà.

From the foregoing, this paper establishes the following findings on prosodic foot structure in the language. Prosodic evidence in Ìdọmà reveals that foot structure is binary footed where two moras are usually present to satisfy the requirement for binary feet. The study also finds that evidence from reduplication and truncation confirm that the base of the

morphemes is a binary foot as shown by ideophone reduplication, distributive numerals and truncation in Ìdọmà.

The study establishes the existence of iambic foot pattern in the language. In the derivation of iamb as revealed in the analysis of infinitive construction and causative verbs co-occurring with certain ideophones, the study proves that the output form yields a light-heavy syllable which is typical of iambic foot. As demonstrated in the OT account, the head of the iambic foot is identical to the rightmost syllable, whereas the non-head is mapped at the left-edge of the syllable. In all, binarity constraint on footing ensure the proper derivation of iamb from input to output representation in Ìdọmà.

The study highlights the significant impact of both morphological and phonological interaction on the phonetic realisation of foot structure in Ìdọmà, implying that the morphological effect on speech production is universal. This study also contributes to the broader understanding of prosody in tone languages and the interplay between morphological and phonological factors. The study suggests more investigation on footing in Ìdọmà and other African languages to enrich documentation and provide more evidence to show that foot properties are not limited to metrical systems. Finally, the study emphasizes on the implications for universality of foot structure, in the sense that the properties of foot structure may differ cross-linguistically. Consequently, the study suggests directions for further research on foot structure, for example, by testing the phenomenon across other tone languages.

Abbreviations

COP = copular, CAUS = causative, CV = consonant-vowel, IDEO = ideophone, INF = infinitive, NEG = negative, NUM = numeral, PP = prepositional phrase, PREP = preposition, PROG = progressive, PRS = present, RED = reduplicant, V = verb, VP = verb phrase, VCV = vowel-consonant-vowel

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