

MORPHOPHONOLOGY OF REDUPLICATION IN ESAHIE

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Abstract

This paper discusses some morphophonological processes related to reduplication in Esahie, a Kwa language spoken in the Western North Region of Ghana. Reduplication is a process used in many languages for generating new words. It involves the copying of a whole, or part of a word. The process, although morphological, evokes phonological changes in the output form – both segmental and suprasegmental. For Esahie, the segmental modifications include consonant mutation and voicing assimilation for reduplicated nouns, and vowel change for reduplicated verbs, while suprasegmental changes include tone polarity, tone copying or vowel change in the output. The study shows that reduplicated verbs in Esahie have a change in vowel height in the reduplicant. The effect of tone on reduplication is also demonstrated in the study as it shows that whereas the monosyllabic reduplicated verb copies only the segmental form of the base, the disyllabic verbs, as well as reduplicated nouns copy both the segmental and the tonal pattern of the base. Fundamentally, the study shows that tone copying in Esahie reduplication is indexed to syllable count.

Keywords: Esahie, Sehwi, Reduplication, Tone, Morphophonology

Muabɔɛ dwirɛ

Sɔ krataa hɛ kã mɔfonologyi bɔ ɔfa reduplicahyen bɔ ɔwɔ Esahie dwudwɔɛ (bɔ beka ye wɔ Western North Region, Ghana) n'anu nwɔ dwirɛ. Reduplikahyen tɛ dwumaa bie bɔ befa be bɔ nzemfua fɔforɛ wɔ edwudwɔɛ pɔmmbaen nu'ɔ. Reduplikahyen kyirɛ kye ɛ 'copy' asemfua bie ye nwɔ fa bie anaakyɛ ɛ 'copy' asemfua bie ye mu, na ɛfa kakyi asemfua fɔforɛ. Owɔ nu kyɛ reduplikahyen adwuma ne bɔbɔ de fa mɔfologyi nwɔ, nakoso olɛ nzunzuansɔ wɔ fɔnɔlogyi so koso - nnyigyɛɛ (segmental) ne bɔ ɔtra nnyigyɛɛ nkoratɔi (suprasegmental). Nzunzuansɔ bɔ reduplicahyen nya wɔ nnyigyɛɛ (segmental) so ne bie le *consonant mutation* ne *voicing assimilation* wɔ dumaa nzemfua nu, ne *tone polarity*, *tone copying* or *vowel change* wɔ nkyeeyɔɛ nzemfua nu. Sɔ nhwehwenu he hɔ kye, se ɛfa nkyeeyɔɛ asemfua fa reduplikahyen atɛɛn so a, *vowel height* ne kakyi wɔ atɛɛn bie so. Nzunzuansɔ bɔ reduplikahyen nya wɔ tone so yeɛ ole kye, ɔbɔ nkyeeyɔɛ nzemfua bɔ betɛ selabool koma pɛ ne aa, nnyigyɛɛ (segment) n'angome yeɛ ye copy ɔ, koso, se oba nkyeeyɔɛ nzemfua bɔ betɛ selabool koma pɛ ne dumaaa nzemfua so de aa, ye copy nnyigyɛɛ (segment) ne tone (suprasegment) nenu nyɔ'n. Tone copying wɔ reduplikahyen nu koso gyin selaboo ne ye'anwosɛɛ ne ye dodoo so.

1. Introduction

This paper discusses the morphophonological changes that occur in reduplicated words in Esahie, a Kwa, Niger-Congo language spoken in the Western North Region of Ghana. Reduplication is a strategy through which many languages form new words/lexical items. It is fundamentally a morphological process, and it involves the repetition of a part or a whole of a word (Lazzeroni & Magni 2020; Singh 2011; Skinner 2008). Some researchers (Mattes 2014; Odden 2015) refer to it as an affixation process, and this affixation process can be understood considering the fact that the reduplicant is attached or affixed to the base. For instance, (Inkelas & Zoll 2000, 2005) in their morphological doubling theory perceive reduplication as the result of concatenation segmentally underspecifies shape by copying procedure. Marantz (1982: 438) also identifies “reduplication as a morphological process relating a base form of a morpheme or stem to a derived form that may be analyzed as being constructed from the base form via the affixation (or infixation) of phonemic material, which is necessarily identical in whole or in part to the phonemic content of the base form.” Bodomo (2000: 3) likewise explains reduplication as “involving repetition or multiple occurrences of a morphological entity within a larger unit”, whereas Inkelas (2014: 7) puts it that “reduplication is capable of conveying derivational as well as inflectional meaning of any sort” and that “it serves a wide variety of functions cross-linguistically and within individual languages.”

Many researchers also approach the subject from a morphology- phonology approach. Raimy (2012) for example describes reduplication as the repetition of a sequence of segments best studied under a morphology-phonology interface approach so as not to weaken the reliability of the outcome of any such study. He notes that “the most fruitful analysis of reduplication as a phenomenon unto itself will utilize aspects of both phonology and morphology, and any analysis that neglects either of these areas will not fully illuminate what reduplication is” (Raimy, 2012:1). He proposes that it “results from general properties of phonology and morphology, and more specifically to be the result of the interaction between these two modules of grammar” (Raimy, 2012:2). This view obviously appears to markdown the one-sided view of previous linguists, such as McCarthy and Prince (1995), that reduplication is the “microcosm of phonology...”

According to McCarthy and Prince (1995) reduplication is the “microcosm of phonology...” as it is a phonological realisation of some reduplicative morpheme that is phonologically empty. Reduplication as a phonological process involves the copying of both segmental and suprasegmental properties of the base word by the reduplicant (Ofori 2013). Abakah (2015: 22) agrees as he asserts that “in Akan reduplication construction, the segmental melodies of the base are at times copied with some of their prosodic properties, especially tone and nasality.”

Regarding types, it is noted that typologically, reduplication is of two types — full reduplication, and partial reduplication (Abakah 2015; Adomako 2012; Boakye 2015; Inkelas 2008; Osam 2013). Full reduplication involves a complete repetition of the word or word stem (root with one or more affixes) whereas partial reduplication involves a repetition of only a part of the stem. Rubino (2005) observes that partial reduplication may come in a variety of forms, from simple consonant gemination or vowel lengthening to a nearly complete copy of a base. In Akan, for instance (Osam et. al 2013) notice that verb-stem is generally full (or total) in terms of segments and it is also left-directed.

Functionally, reduplication serves semantic, morphological, syntactic, phonological as well as pragmatic roles. Morphologically, it is used to encode plurality, iterative, change or preserve the class of the base word (Ofori, 2013). For instance, in Kadorih, an Indonesian language, reduplicated adjectives encode comparative, excessive or intensification, whereas a reduplicated noun encodes plurality (Inagaki 2011). Also, in Bantik, a reduplicated noun marks plurality, whereas a reduplicated adjective indicates plurality or intensification. Some of these functions are exhibited in Esahie reduplicative forms.

Even though reduplication has received some attention cross-linguistically, it is relatively understudied in Esahie. Frimpong (2009), in her discussion of aspects of Esahie phonology made mention of it. However, Frimpong’s study was limited to mentioning the types of reduplication in Esahie, without paying attention to the intricate phonological as well as morphological changes observed in the process. It is in this light, that I describe some aspects of reduplication in this study. The issues dealt with in the study show the morphological role of reduplication in Esahie, and how these morphological processes evoke phonological changes in the output reduplicated form. Thus, I show that although reduplication is a morphological process, phonological information such as assimilation and tonal modifications are essential in understanding how reduplicated words are realized by speakers of the language. Segmental modifications include consonant mutation and voicing assimilation for reduplicated nouns, and vowel change for reduplicated verbs. The data show that reduplicated verbs evoke change in vowel height, where a [+High] is maintained in the reduplicated form; while a [-High] is raised to a [+High] in the reduplicated form.

Functionally the study shows that reduplication in Esahie is used to encode plurality of objects, emphatic purpose, and for indicating the repetition of actions or concepts. Among other things, this study shows that reduplication in Esahie is of two types—partial reduplication and total/full reduplication; however, partial reduplication is not as productive as the full reduplication in the language. Noun reduplication and adjectival involve copying of the base either partially or fully, whereas verbal reduplication is full.

The tonal modifications I discuss in this study include tone copying for both nouns and disyllabic verbs, and tone polarity for monosyllabic verbs. The study shows that reduplicated nouns copy both the segmental and prosodic feature of the base, whereas reduplicated monosyllabic verbs copy only the segmental properties without the tonal properties. Accordingly, both noun and disyllabic verbs maintain the tonal patterns of their base, while monosyllabic verbs exhibit tonal polarity when they are reduplicated, leads to the conclusion that, fundamentally, tone copying in Esahie reduplication is indexed to syllable count.

Data for this study is culled from a varied source, including the Esahie New Testament of the Holy Bible, and some other literature written in Esahie, which were crosschecked for native speaker acceptability. The paper is segmented as follows; the first section introduces the study and it provides a brief typological account on reduplication. I proceed in the same section to raise the issues to be discussed in this paper, properly contextualizing the need for such a study. In Section 2, I give an overview of reduplication in Esahie as a prominent word formation strategy. In Sections 3, 4 and 5, I concentrate, specifically on the nature of reduplication in nouns, verbs and adjectives respectively, and attempt to explain some morphological and phonological issues in the reduplication process. These processes include segmental changes as well as tonal modification, while Section 6 concludes the discussion.

2. Reduplication in Esahie

Akin to other languages (Lazzeroni & Magni 2020; Singh 2011; Skinner 2008) reduplication in Esahie is a productive process, and it involves the repetition of the whole stem or a part of the stem. Consequently, the same reduplicant could be repeated resulting in a complete or total reduplication. Reduplication in Esahie is of two types—partial reduplication and total/full reduplication; however, partial reduplication is not as productive as the full reduplication. In partial reduplication, only part of the base is repeated. For example, the word *pírí* ‘big’, when reduplicated becomes *pípírí* ‘very big’. In this reduplicated form, the second syllable of the base is deleted. Under total /full reduplication, the entire syllable of the base is repeated. For instance, *ḡvàà* ‘bad scent’ in the reduplicated form becomes *ḡvààḡvàà* ‘very bad scent’ where the entire base has been repeated.

Reduplication in Esahie is used to mark plurality of objects, derivation of new words, emphasis, and for encoding repetition of actions or concepts. For instance, a reduplicated verb indicates a repeated action or denotes an increase in the state of event as shown in example in (1).

- 1a. **àḡmàá né tú**
bird DEF flies
‘The bird flies.’
- b. **àḡmáá né tútú**
bird DEF fly.RED
‘the bird flies continuously.’

- c. **ànòmáá né tútútútú**
bird DEF fly.RED
'The bird flies continuously.'

In the examples above, one notices that the noun performs different actions, a single action, and repeated action. In example (1a) the act *tú* 'fly' is single, and not reduplicated, but in example (1b), the act is reduplicated as *tútú*, and further reduplicated as *tútútútú* in example (1c). The reduplication signifies that the action in (1b and 1c) is not a single event but rather a repetitive one or an increase in the occurrence of the act. While a reduplicated noun may encode plurality, it can further function as an adjective. The noun which has been reduplication can also be used in apposition to other nouns to modify them as in *mmòdzámmòdzá àsíé* 'land full of or associated with blood'. Here, the base noun *mmòdzá* 'blood' has been reduplicated to *mmòdzámmòdzá* 'bloody' which is used to modify the noun *àsíé* 'land'. Thus, the reduplicated noun in this context serves as an adjective to modify the noun *àsíé* 'land'.

Reduplication may further be used to intensify the meaning of words. This is an augmentative use of reduplication. The number of times a stem is repeated may depend on the degree of intensity as shown in example (2).

Base	Reduplicated Form	Meaning
2a. jèméné 'nice/beautiful'	nyèménényèménényèméné	'extremely nice/beautiful'
b. nyàà 'slow'	nyàànyàànyàà	'extremely slow'
c. mmàkàáá 'trees'	mmàkàáámmàkàáá	'full of trees'

The examples show the degree of words in a comparative form. The repetition in (2a) shows how extremely beautiful the object in question is. Consider the following example.

- 3a. **bràsuá nè té nyèméné**
female DEF COP beautiful/nice
'the lady is nice/beautiful.'
- b. **bràsuá nè té nyèménényèménényèméné**
female DEF COP beautiful/nice- RED
'the lady is extremely nice/beautiful.'

The examples in (3), show that the lady in question is beautiful; however, the reduplicated form in example (3b) shows the degree or intensity of her beauty, thus extremely beautiful. In the ensuing sections, I focus on the reduplication of some lexical categories in Esahie and show how this morphological process triggers phonological changes.

3. Reduplication of Nouns

Nouns in Esahie can be reduplicated as shown below in example (4).

Noun (SG)	Reduplicated Form	Meaning
4a. bòwíé	mmòwíémmòwíé	'bones'
b. bàkàá	mmàkàáámmàkàáá	'trees'
c. àkwàlàá	ngwàlàáángwàlàá	'children'
d. súá	nzúánzúá	'rooms'

The data show nouns that are fully reduplicated. The reduplicated forms are a total repetition of the base nouns. Morphologically, the reduplicated forms encode plural or multiplicity of the nouns in context. It can be noticed from the data that the nouns have been reduplicated in the plural forms. This is because these nouns are count nouns, and they can only be reduplicated in their plural forms. Reduplicating them in their singular form as in * *bòwíébòwíé* 'bones' or **bàkǎǎbàkǎǎ* 'trees' is unacceptable in the language. Like Esahie, Akan also exhibits a very productive total or fully reduplication (Osam et.al., 2013), and the reduplicated forms can further be reduplicated.

A further look at the data also shows some phonological processes at play in the reduplicated forms. The data shows instances of assimilation in the reduplicated form. In Esahie whenever a voiceless consonant comes after a nasal sound, or occurs intervocalically, that voiceless consonant changes to its voiced counterpart (Frimpong 2009; Owusu Ansah 2019; Owusu Ansah 2020). This explains why in all the examples, we notice a change from voiceless to voiced counterpart when the conditions mentioned are met. Subsequently, in examples (4a) and (4b) we observe a complete mutation of consonants in the reduplicated form. This is due to the influence of the pluralisation. The plural marker in Esahie is a homorganic /N/. In the case of examples (3a) and (3b), the plural marker changes to a bilabial nasal /m/ when prefixed to the base noun. The initial non-nasal bilabial plosive of the base is further assimilated to a bilabial nasal /m/ under the influence of the bilabial nasal plural marker resulting in a complete mutation of the consonants.

Then in example (4d), one further observes an instance of intervocalic assimilation where a voiceless fricative /s/ becomes a voiced fricative /z/ under intervocalically. The initial consonant /s/ in the reduplicated form occurs between two sonorants, i.e., /n/ and /u/, and because sonorants are voiced, one can understand why /s/ changes to /z/ in the reduplicated form. Again, whereas these instances of assimilation are progressive, example (4c) shows a regressive homorganic assimilation where the initial alveolar nasal /n/ becomes a velar nasal /ŋ/ under the influence of the velar sound /g/. These assimilatory changes are expected as nasals naturally influences a place in articulation change or manner of articulation change of sounds in their nasal environments. This process is illustrated below in example (5).

5. N+ *bòwíé* → *nbòwíé* → *mbòwíé* → *m̀m̀bòwíé* 'bones'

PL + bone

Noun	Reduplicated Form	Meaning
6a. <i>m̀m̀bòdzá</i>	<i>m̀m̀bòdzám̀m̀bòdzá</i>	'bloody'
b. <i>ndzí</i>	<i>ndzíndzí</i>	'salty'
c. <i>ngóó</i>	<i>ngóóngóó</i>	'oily'

Example (6) shows that aside from count nouns, non-count nouns can also be reduplicated. These reduplicated forms connote plural forms or multiplicity of the nouns. For instance, *ndzíndzí* in example (6b) connotes increase in quantity or the multiplicity of salt. These nouns can only be used as modifiers in their plural or reduplicated forms as shown in example (7) below.

- 7a. *àlíé ndzíndzí*
 food salt. RED
 'salty food'

- b. **̀̀nzúé ̀̀m̀m̀òdzá̀̀m̀m̀òdzá**
 water blood. RED
 'bloody water'

In these examples, the reduplicated non-count nouns, indicate multiplicity or plurality of the object. The example in (7a) **̀̀álíé ̀̀ndzú̀̀ndzú̀̀** 'salty food' shows plenty or multiplicity of salt in relation to the food. To use the modifier in the singular form as in ***̀̀álíé ̀̀ndzú̀̀** is considered unacceptable in the language.

4. Reduplicated Adjectives

Whereas reduplicated nouns can have adjectival function, prototypical adjectives can also be reduplicated in Esahie, either full or partially. Tang (1988), and Zhu (2003) observe that adjectives open to reduplication, are not only gradable, but always denote a property easily perceived by the human senses of sight, taste, smell, touch, and hearing, while those signifying properties are not easily perceived by these senses. These adjectives are replicable, and like in Chinese (Liu, 2013: 104), the replicability of these adjectives is determined by factors such as the gradability of the adjectives, and the perceptibility of properties. One will notice from the examples in (8) that the gradable adjectives describe properties with maximal and minimal values, and can show variations in degrees.

	Base	Meaning	Reduplicated	Meaning
8a	tíká	'short'	tíkátíká	'very short'
b.	kàábá	'small'	kàábákàábá	'very small'
c.	dínn	'quiet'	dínndínn	'very quiet'
d.	bré	'black'	brébré	'very black'
e.	pírí	'big'	pírípírí	'very big'

The adjectives in the data are non-derived, and they exemplify adjectives that can be fully reduplicated as in examples (8a-d), and one that can be partially reduplicated in (8e). In the full reduplicated form, there is a numerical limit as the form can only be reduplicated twice. This is different from what pertains in Akan (Osam et.al, 2013) where some reduplicated forms have no numerical limited. In the partial reduplicated form, the second syllable of the base is deleted. The data collected show that partial reduplication is not productive in Esahie compared to the full reduplication. Morphologically, these reduplicated adjectives show the degree or intensity of the object they modify as illustrated in example (9).

9a.	bíá	né	té	tíká
	man	DEF	copula	short
	'the man is short'			
b.	bíá	né	té	tíkátíká
	man	DEF	copula	short (RED.)
	'the man is very short'			

In example (9), the adjective *tíká* is used to describe the noun man. However, the reduplicated adjective *tíkátíká* in (9b) shows the degree, or intensity of the man in terms of height, as in not only being short, but very short.

Like nouns, adjectives inflect for numbers in some languages using distinct plural markers (Abakah 2010; Abakah et al. 2010; Boakye 2015; Dolphyne 1988; Ollennu 2016). In Akan for instance, one is likely to come across pluralized adjectives (Abakah, 2010; Abakah, et al. 2010; Dolphyne, 1988) such as the following in (10) with the prefix [a-] as the plural marker.

- 10a. **a-kəkɔɔ** ‘red’
 PL- red
- b. **a-titire** ‘important persons’
 PL- important
- c. **a-kɛsɛ** ‘big’
 PL- big
- d. **akəkɔɔ-akəkɔɔ**
 PL- red
- (Boakye, 2015:67)

For Esahie, number marking in adjectives is expressed via the reduplicating adjective as can be seen in example (11).

- 11a. **tɛiá bré**
 dog black
 'black dog'
- b. **ɲ-dziá brébré**
 PL-dog black.RED
 'black dogs'

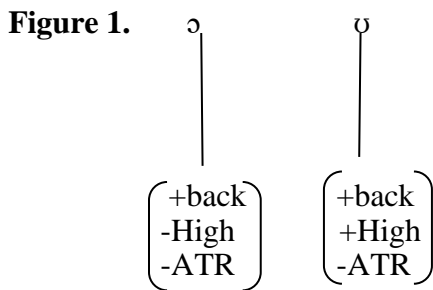
Example (11) shows two phrases with modifiers. In the case of (11a), both the noun and the adjective are singular. However, in (11b) that both constituents are in the plural form. It is clear from example (11b) that whereas the noun takes a plural marker /n/, the adjective is rather reduplicated to signal plurality. It follows that to indicate plurality, the adjective assumes a reduplicated form to agree with its head noun in plurality. An non-reduplicated adjective attached to the plural noun as in **ɲdziá bré* is ungrammatical. Thus, the adjective is reduplicated to agree with its head noun in plurality. I conclude, therefore, based on the discussion, that whether to mark intensity or to indicate number agreement, adjectives are to be in their reduplicated form to carry out these morphological functions. Let us now turn our attention to the behaviour of verbs in their reduplicated form.

5. Reduplication of Verbs

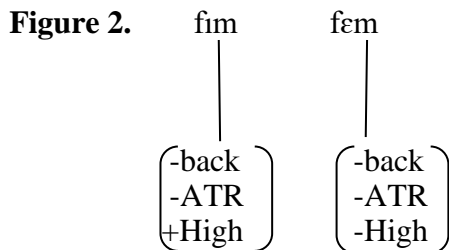
Verbs in Esahie, like verbs in other Kwa languages (Abakah, 2015: 27, Osam, et.al, 2013) can be reduplicated endlessly to morphologically enhance the multiplicity, magnification and amplification of the action it encodes. In Akan verbal reduplication involves several phonological processes such as homorganic nasal assimilation, preference for low tone, deletion with compensatory lengthening, and progressive nasal assimilation (Ofori, 2013). In Esahie, vowel heights normally increase when verbs are reduplicated. Thus, if the vowel in the base is [+High], it is maintained in the reduplicated form. However, if it is [-High] it is usually raised to a [+High] in the reduplicated form. Let us consider the following examples in (12).

	Base	Meaning	Reduplicated Form
12a.	kó	'go'	kòkó
b.	ká	'say'	kìká
c.	fém	'lend'	fímfém
d.	káí	'remember'	kààkái/ kàìkái
e.	srí	'laugh'	srísrí
f.	teqí	'pull'	teqíteqí

A similar observation is made in Akan (Osam, et.al.,2013) where the whole verb-stem is reduplicated and, in most cases, the base and the reduplicant are numerically identical. We notice from examples (12a-d) that in the reduplicated form, the duplicants are [+High] even though the base verbs are [-High] vowel, whereas in (12e-f) the vowels of the verbs are maintained the in the duplicant. I shall explore the change in the vowel quality by examining examples (12a) and (12d). In example (12a), *kó* 'to go' reduplicates into *kòkó*, whereas in (12c), *fém* 'to lend' reduplicates into *fímfém*. One observes from the former that the vowel changes from /ɔ/ to /o/. One further notice that both /ɔ/ and /o/ are [+back, +ATR] vowels. They only differ in vowel height; while /ɔ/ is [-high], /o/ is [+high] as captured in figure 1.



As in the example (12a), in example (12f), there is also a change vowel in the reduplicant from *fém* → *fímfém*. Here, /ɛ/ changes to /i/ in the reduplicant.



An observation in both examples show that the vowel difference between the base and the reduplicant is the height. Reduplicant verbs in Esahie prefer [+High] vowels, so where the vowel in the base is [-High], it is raised to [+High] in the duplicated form, but maintained if the base is [+High]. The preference for [+high] vowel in the reduplicant may be a phenomenon in Kwa languages as Abakah (2015) and Adomako (2012) make similar observations about verbal reduplication in Akan. Adomako (2012: 20) notes that “non-high vowels in the (verb) stem becomes high vowels in the reduplicants, but high vowels in the (verb) stem maintain their vowel heights in the reduplicants.” Also, in Yoruba, (Akinlabi et al. 2009) non-high vowels

in the (verb) stem become high vowels in the reduplicant, but high vowels in the (verb) stem maintain their vowel heights in the reduplicants. Another observation is in (12d) *káí* ‘to remember’ reduplicated as *kàikáí*, where the vowel is lengthened in the reduplicant. Checks reveal that [*kààkái*] is used in rapid speech whereas [*kàikái*] is used in individualized or isolated cases. It can, therefore, be concluded that [*kàikái*] is the true form of the reduplicant, while [*kààkái*] is influenced phonologically in rapid speech to evoke regressive height assimilation.

In addition to vowel change, tonal modifications are also observed in the reduplication process. Let us turn our attention to this in the next section.

6. Tone in Reduplication

The subject of tone in reduplication has sparked much interest in the literature by researchers into tonal languages (Abakah et al. 2010; Akinlabi & Liberman 2001; Mtenje 1988; Myers & Carleton 1996; Ofori 2013; Osam 2013). Some studies on reduplication have always required suprasegmental information to correspond faithfully as segmental information from the base (Akinlabi et al. 2009; Inagaki 2011; Inkelas & Zoll 2000, 2005; Mattes 2014; Mattes & Schwaiger 2014; McCarthy & Prince 1986, 1995; Steriade 1988). In his discussion on tonal reduplication in Chichewa, Mtenje (1988: 125) posits three logical possibilities in the reduplication of segmental and suprasegmental material:

- i. Reduplication can transfer segmental material.
- ii. Reduplication can transfer both segmental and tonal material.
- iii. Reduplication can transfer suprasegmental material.

These observations mean that in reduplication, the tendency for the tone of the base to be copied or left out is possible. Myers and Carleton (1996: 6) also predict that in Chichewa “the tone of the base will always appear on the reduplicant”, while (Ofori, 2013) envisages differences in tone when he made the following observations about tone in Akan reduplicants:

- a reduplicant and base do not harmonise in tone
- tonal output of CV syllables does not correspond with the base
- reduplicants do not generally agree with their output tones
- base tone is always the polar of a reduplicant final tone

Ofori’s (2013) observation shows that there is variation in the tonal output of reduplicants compared to the base. The first assertion by Mtenje is confirmed by (Abakah et al. 2010) when they showed that in Akan, the reduplicant copies only the segmental melody and not the tone as it realises a default low tone.

6.1 Tone in Reduplicated Nouns

In this subsection, I examine tone in reduplicated nouns in Esahie. As mentioned earlier, (cf. §3) noun reduplication involves copying of the base. The data in example (13) show that the reduplicant noun copies both the segment and the supra segmental feature of the base noun. Examine the following data in example (13).

	Base	Reduplicated Form	Meaning
13a.	ḡgóó	ḡgóóḡḡ!óó	'oily'
b.	ḡgwàláá	ḡgwàlááḡgwà!áá	'children'
c.	ḡmàkáá	ḡmàkááḡmàk!áá	'trees'

We see from the examples that the reduplicant does not only copy the entire base, but it also copies the tone of the base. However, the high tone of the base is

downstepped because of the intervening low tone. The tone copying by the reduplicant is consistent with Mtenje's (1988) observation in Chichewa that reduplication can transfer both segmental and tonal material. Now let us turn our attention to tone in reduplicated verbs.

6.2 Tone in Reduplicated Verbs

Monosyllabic verbs in Esahie are mostly high toned. Study the monosyllabic verbs in example (14) below.

	Base	Meaning	Reduplicated Form
14a	wú	'to die'	wùwú
b.	teí	'to catch'	teíteí
c.	tá	'to fart'	títá
d.	dá	'to sleep'	dìdá
e.	kó	'to go'	kòkó

Contrary to the reduplicated nouns where the reduplicant copies both the base and the tone, we notice a polarity of tone in the data at example (14). The reduplicant bears a tone that is opposite in value to the base. The reduplicant carries a low tone whereas the base carries a high tone. If we consider example (14a) for instance, we realise that while the base bears a low tone, the reduplicated form bears a LH tonal pattern. This shows that the reduplicant fails to copy the tone of the base, but assumes a tone that is opposite in value to the base. Akan has a similar occurrence which corroborate this position. Explaining a similar occurrence for monosyllabic verbs in Akan, Abakah, et al. (2010: 26) suggest, "the reduplicant and the base are realized with different tones because reduplication copies only the segmental melody and as such the reduplicant receives a low tone". We assume a similar explanation for Esahie that the reduplicant fails to copy the tone of the base for these verbs, hence the polarity in tone.¹ The reduplicated disyllabic verbs in Esahie behave differently from the monosyllabic reduplicated verbs. Let us consider the data in example (15) below.

	Base	Meaning	Reduplicated form
15a.	sèteí	'to destroy'	sèteísèteí
b.	húró	'to jump'	húróhúró
c.	sòmá	'to send'	sòmásòmá
d.	tíé	'to listen'	tíétíé

In the data, we see that both the base verb and the reduplicated form have the same tonal pattern. When we specifically consider example (15a and 15b), *sèteí*→*sèteísèteí* and *húró*→*húróhúró* respectively, we observe that the reduplicant bear a LH tonal pattern, same as the base. Thus, unlike the monosyllabic verbs where the reduplicant copies the tone of the base, in the case of the disyllabic verbs, both segmental and suprasegmental features are entirely copied. Accordingly, I conclude that in reduplicating disyllabic verbs, the underlying and phonetic tone melodies of the base are transferred to the reduplicant without any tonal change. This show that both nouns and disyllabic verbs maintain the tonal patterns of their base; whereas

¹ Aside being a cognate of Akan, Esahie speakers share geographical border with Akan; so, these words are borrowed from Akan and they preserve all properties of the source as suggested by one reviewer.

monosyllabic verbs exhibit tonal polarity when they are reduplicated. This leads to the conclusion that, fundamentally, tone copying in Esahie reduplication is indexed to syllable count. This explains why verbs and nouns form a natural class in term of the distribution of tones in reduplicated forms in the language.²

7. Conclusion

This study has revealed that reduplication in Esahie essentially involves the repetition of the base fully or partially. Whereas full or total reduplication is very productive, the data show that partial reduplication is rare. These reduplicated may be used morphologically to encode plurality or multiplicity of objects, intensification, number marking or even show degree or intensity.

It further shows that after the reduplicating process, some phonological processes also apply on the output. These include segmental and tonal modifications. Segmental modifications include consonant mutation and voicing assimilation for reduplicated nouns, and vowel change for reduplicated verbs. The data analysis shows that reduplicant verbs in Esahie prefer [+High] vowels, hence, if the vowel in the base is [+High], it is maintained in the reduplicated form; however, if it is [-High] it is raised to a [+High] in the reduplicated form.

Tonal modifications also include tone copying for both nouns and disyllabic verbs, and tone polarity for monosyllabic verbs. Thus, reduplicated nouns copy both the segmental and prosodic feature of the base, whereas reduplicated monosyllabic verbs copy only the segmental properties without the tonal properties. I accordingly conclude from the discussion that both noun (which are, so far, disyllabic in nature) and disyllabic verbs maintain the tonal patterns of their base, whereas monosyllabic verbs exhibit tonal polarity when they are reduplicated, leads to the conclusion that fundamentally, tone copying in Esahie reduplication is indexed to syllable count.

List of Abbreviations

DEF	Definite Article
PERF	Perfective
PL	Plural
PST	Past tense
Rd	Round
RED	Reduplicated
SG	Singular
L	Low tone
H	High tone
ATR	Advanced Tongue Root

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