Research Article

Samuel Kayode Akinbo*, and Philip Oghenesuowho Ekiugbo

Iconicity as the motivation for morphophonological metathesis and truncation in Nigerian Pidgin

Abstract: We present evidence for iconicity as the motivation for two patterns of morphophonological alternation in Nigerian Pidgin, also known as Naijá. To express an 'unconventional positive' in all varieties of Naijá, some nouns with the tone melodies H-L and L-H surface with the tone melodies L-H and H-L, respectively. In addition to unconventional positive, the Wafi variety of Naijá also expresses 'unconventional negative.' In this case, the first syllable of bisyllabic nouns (analogously, the first foot of four-syllable nouns) is transposed with the second syllable. However, in onsetful monosyllabic nouns, the initial consonant is deleted to express an unconventional negative. We account for the metatheses and truncation using transderivational faithfulness constraints and other independent constraints. Expressing the notion of unconventionality by changing the prosaic linear order of phonological elements in a word is a kind of form-meaning resemblance. Similarly, the association of (unconventional) negative with a reduction in a string of segments is another pattern of iconicity. This suggests that crossmodal depiction of sensory imagery, in addition to articulatory and auditory factors, can motivate morphophonological patterns. The morphophonological metatheses and truncation in Naijá contribute to the typology of morphophonological alternations with iconicity as their motivation. Most importantly, these patterns run counter to the claim that pidgins and creoles have simplified morphophonology.

Keywords: iconicity, tone, metathesis, truncation, expressiveness, pidgin, creole

1 Introduction

This work investigates how iconicity motivates morphophonological metatheses and truncation in varieties of Naijá, also known as Nigerian Pidgin. Iconicity, which is the perceptual resemblance between form and meaning (Perniss and Vigliocco 2014, Dingemanse 2018), is mostly found in lexical forms but under-represented in morphophonological alternations. Similarly, morphophonological metathesis and truncation are rare (Pulleyblank 2006, de Lacy 2012, 2020). To present evidence for morphophonological metathesis and grammaticalised iconicity, we describe and analyse two emerging patterns of morphological derivation in Naijá. The first pattern, which involves prosodic metathesis and truncation, is only attested in the Wafi variety of Naijá. To express the semantic notions that can be categorised as 'unconventional negative' in Wafi, the first syllable surfaces as the last syllable in a bisyllabic noun, as shown in (1a). In a monosyllabic noun, the initial consonant is deleted if there is one, as shown in (1b). The second pattern, which is found in all documented

---

* Corresponding author: Samuel Kayode Akinbo, Department of Linguistics, University of Toronto, Toronto, Ontario, Canada, e-mail: samuel.akinbo@utoronto.ca

Philip Oghenesuowho Ekiugbo: Department of Linguistics, National Institute for Nigerian Languages, Aba, Nigeria, e-mail: oghenesuowho@gmail.com

---

varieties of Naijá, involves the status of the tone contrast in pairs like the examples in (2). As shown in the examples, H-L and L-H nouns surface with L-H and H-L melody, respectively, when they express semantic notions that we will term 'unconventional positive.'

(1)   Prosodic metathesis and truncation in the Wafi variety of Naijá
    a.   pòló   'polo shirt'   lòpó   'inferior polo shirt'
         fótò   'photo'   tófò   'inferior photo'
    b.   bâːg   'bag'   âːg   'inferior bag'
(2)   Tonal near-minimal pairs in all varieties of Naijá (Faraclas 1984)
    a.   mɔ́dà   'mother'   mɔ̀dá   'reverend mother'
    b.   màmá   'mother'   mámà   'trendy old woman'

Previous studies, citing only a few examples, consider the tone distinction in (2) to be lexically contrastive (Faraclas 1984, Elugbe and Omamor 1991). In line with the previous studies, we will argue that one word of each pair in (2) has a lexical tone that can be traced to the tone or stress of the source languages (e.g., an ethnic Nigerian language or English). By presenting novel data, we will argue otherwise that the other half of each pair is the by-product of an 'unconventional positive' morpheme. Consequently, the two patterns of morphological derivation in (1–2) are morphophonological metatheses and truncation, which descriptively are a kind of morphophonological exchange (Section 4.1). To account for both patterns, we propose that the unconventional positive and negative are phonologically empty but semantically specified morphemes, which are realised via metatheses (or truncation for a monosyllabic unconventional-negative form). Drawing insights from the similarity of the unconventional positive and negative to language games, the realisation of the morphemes is considered a by-product of the interactions between transderivational faithfulness constraints and the constraint MORPH-REAL, which requires morphemes to have distinct phonological realisation (de Lacy 2002, Benua 2004).

In Section 4.4, we show that the semantic properties of the metatheses are consistent with expressive morphology. In addition to the expressiveness and semantic variability, the expression of unconventionality and negativity through the reordering and reduction of phonological elements, respectively, is considered a depictive mode of signification. It is comparable to *gestal diagrammatic iconicity*, such as the expression of repetition with reduplication or morphological doubling (Dingemanse 2011a, Johansson et al. 2020). Their affective meanings, semantic variability, and depictive mode of signification strongly indicate that the morphophonological metatheses and truncation in Naijá are consistent with crosslinguistic patterns of iconicity. In Section 5, we discuss the implications of these morphophonological patterns.

The unconventional positive and negative in Naijá present implications for linguistic theory, especially challenging the idea that iconicity does not play a role in grammar (de Saussure 1916, Hockett 1960). The intention to create a morphophonological analogy of language-external events or entities as the motivation for the unconventional positive and negative indicates that iconicity can contribute to lexical expansion and the emergence of grammar. The mapping of language-external structures to linguistic forms also challenges the perspective that the source of grammar is a language-specific cognitive system (Chomsky 1965, Chomsky and Halle 1968) but supports the new perspective that considers linguistic knowledge and representation a product of general cognitive processes (Hopper 1987, Bybee 2003, Mielke 2008, Archangeli and Pulleyblank 2022). Considering the proposal that the growth of iconicity signals a new facet of creolisation, we argue that Naijá might be entering a new stage of its development. While morphophonological metathesis and truncation are rare crosslinguistically, the iconicity of these patterns in Naijá adds another layer of rarity. Contrary to the traditional perspective (Bickerton 1984, McWhorter 1998), the patterns also indicate that creoles are as complex as any language. As a result of this, Naijá contributes to the typology of morphophonological alternations, especially those with iconicity as their motivation (Alderete and Kochetov 2017, Akinbo 2021b, 2021a, 2023, Akinbo and Bulkaam 2024). To integrate the functional source of the morphophonological metatheses and truncation into phonological theory, we extend the notion of perceptual motivations in phonological theory to include the crossmodal depiction of sensory imagery (Akinbo and Bulkaam 2024).

Table 1: Tonal minimal pairs and cooccurrence in Naijá

			σ2	
			H	L
σ1	H	fɔ́	kóló	mágà
		'four'	'piggy bank'	'victim of scam'
	L	fɔ̀	kòló	màgà
		'preposition'	'to be crazy'	(*nonce word*)

As a background to the discussion in this work, the relevant sound inventory of Naijá is presented in Section 2. The description of the morphophonological patterns is presented in Section 3. The summary and conclusion are presented in Section 6. Following the recommendation of Naijá Langwej Akedemi (NLA) and recent research practices (Ofulue 2017, Esizimetor and Egbokhare 2012, Akande and Okesola 2021), we refer to all the varieties of the language as Naijá, except when it is necessary to distinguish one variety from the other.

2 Language background

Naijá is an English-lexifier contact language with more than 80 million speakers along the West African coast and predominantly in Nigeria (Ihemere 2006, Faraclas 2013). The language contrasts two tones, namely, H(igh) and L(ow). The tone contrast and co-occurrence are illustrated in Table 1.

When Naijá words are from English, the stress of the lexical source tends to determine the tone of the words in Naijá. Specifically, the stressed and unstressed syllables of the English sources bear H and L tones, respectively, when incorporated into Naijá. While this is so for English-based words in all the other varieties of Naijá, there are a few exceptions in the Wafi variety. For example, the English word ['məʊ.təʳ] 'motor' is [mɔ́tò] in all other varieties but [mɔ̀tó] in Wafi.

There are seven oral vowels in Naijá, as presented in (3). The vowels in Naijá are present in most Niger-Congo languages spoken in the Southern parts of Nigeria (Williamson 1984, Elugbe and Omamor 1991). Vowel length is not contrastive, occurring predictably with a contour tone or immediately before a coda consonant. Nasal vowels are also not contrastive in the language.

(3) Contrastive vowels in Naijá

	Front	Central	Back
High	i		u
High-mid	e		o
Low-mid	ɛ		ɔ
Low		a	

A syllable in Naijá is constructed of a syllabic nasal or a vowel with(out) an onset or a coda consonant. Naijá permits most if not all the onset and coda clusters in English (see Kahn 1976, Selkirk 1982). Consider the examples in (4). The examples are partly from Faraclas (2002, 256–7).

(4) Syllable template in Naijá: $(C_1)(C_2)(C_3)$ V/N $(C_4)(C_5)$

a.	V	à	'I'	e.	N	ŋ́gwá	'okay'
b.	CVC	kɔ́t	'cut'	f.	CVCC	tést	'test'
c.	CCV	sté	'stay'	g.	CCVC	stát	'start'
d.	CCVCC	blást	'blast'	h.	CCCVC	strít	'street'

The syllable structure in Naijá is crucial to the main focus of this work, namely, the unconventional positive and negative. The positive pattern, involving tonal metathesis, is attested in the speech of nearly all Naijá speakers, regardless of their dialects. The second pattern, which involves syllable manipulation and onset deletion, is only attested in the Wafi variety of the language. Most of the data presented in this work are novel.

3 Data presentation

Datasets for this study come from three varieties of Naijá: the Southwestern and Southeastern varieties, and the Wafi variety. Considering that the datasets from the Southwestern and Southeastern varieties are also found in every variety of Naijá, we consider these varieties to be representative of all varieties, including the general variety used on radio and television. So, when we refer to the general variety, we are indirectly referring to every other variety of Naijá, except when there is a need to distinguish Wafi from the other varieties. The data for the general variety were collected virtually by the first author, and the Wafi data were collected in-person in Sapele, Delta State, by the second author. Aspects of our elicitation are guided based on the word list from the *Naijionary*.[1]

The data for the Southeastern variety come from two female speakers (ages 35 and 43) born and raised in Plateau and Anambra, respectively. In addition to the Southeastern variety of Naijá, the consultants also speak Igbo and Nigerian English. The data from the two speakers of the Southeastern variety are supplemented with the intuition of the first author, who speaks the Southwestern variety of Naijá, in addition to Yoruba and Nigerian English. The first author was born and raised in Lagos but spent parts of his teenage years in Abeokuta and Ibadan. The dataset for the Wafi variety of Naijá comes from six male speakers between the ages of 35 and 45 from Sapele, Delta. In addition to Wafi, the language consultants speak Urhobo and Okpe. As a speaker of Wafi, the second author also provided supplementary data. Just like the Wafi consultants, the second author also speaks Urhobo and is from Delta State. All the datasets presented in this work are phonetically transcribed.

3.1 Tone metathesis in all varieties of Naijá

Naijá expresses various semantic notions, which can be categorised as unconventional positive, by transposing the lexical tones of certain nouns. The pattern, which is illustrated with the examples in (5), is found in all varieties of Naijá.[2]

(5) Tone metathesis in Naijá
    a. H-L bródà   'brother' bròdá 'religious male/young elder (honorific)'
          sístà   'sister'   sìstá 'religious sister'
          fádà   'father'   fàdá   'reverend father'
          mőtò   'car'   mȍtó   'luxurious car'
          mɔ́dà   'mother'   mɔ̀dá 'reverend mother'
          ɔ́kù   'uncle/   ɔ̀kú   'male (honorific)'
                   teacher'

---

1 https://naijasyncor.huma-num.fr/
2 In some words, the L tone of the Naijá variety spoken in Southwest, Nigeria is perceptually similar to the M tone in Yorùbá. However, the tone in this case still phonologically patterns like the L tone. Thus, the phonetic contrast is considered a low-level variation.

		pésì̃	'person'	pèsí̃	'extraordinary person'
		lédì	'lady'	lèdí	'educated lady'
		bébì	'baby'	bèbí	'toy'
		dádì	'father'	dàdí	'spiritual father'
		mɔ́mì̃	'mother'	mɔ̃̀mí̃	'spiritual mother'
		bɔ́dì	'body'	bɔ̀dí	'attractive body'
b.	L-H	màmá	'mother'	mámà	'trendy elderly woman'
		pàpá	'father'	pápà	'trendy elderly man'
		bòbɔ́	'male'	bɔ́bɔ̀	'trendy young male'
		ã̀tí	'aunty'	ã́tì	'female teacher/female (honorific)'

As shown in (5), H-L nouns are realised as L-H and *vice versa* for the expression of unconventional positive. We used only one gloss for each aforementioned example, but the alternation can introduce more than one meaning. For instance, the form [mámà] 'trendy elderly woman' in (5b) can also mean 'a powerful woman.' 'a female boss.' etc. Regardless of the noun, the tonal alternation has a positive affective meaning, and compared to the underived nouns, the alternation also introduces the semantic sense of unconventionality. Thus, the semantic notions can be captured as unconventional positive. The tonal alternation mostly applies to and derives animate words, but the derivation of [mõ̀tó] 'luxurious car' from [mṍtò] 'car' is the only example of an inanimate derived form. As shown in (6), the alternation can also derive animate forms from inanimate words.

(6)   Deriving animacy with positive unconventionality
      fótò 'photograph'   fòtó 'photographer'
      bɔ́tà 'butter'   bɔ̀tá 'someone born and raised with wealth'

We agree with an anonymous reviewer that the unconventional-positive form [bɔ̀tá] in (6) has the same meaning as the word [àjèbɔ́tà] (or [àjè] in the Wafi variety), which is incorporated into Naijá from the derived Yorùbá word [ajɛbɔ́tà] with the same meaning, 'someone raised with wealth.' In the source language, the word is derived from the agentive prefix [a]- and the verb phrase [dʒɛ] 'eat' + [bɔ́tà] 'butter' (see Pulleyblank and Akinlabi 1988, for the phrasal morphology). The word is borrowed in whole into Naijá as a single word [àjèbɔ́tà] without its morphological subcomponents, given that the initial [a] is never used as a prefix in any known variety of Naijá. For example, the form *[àtʃɔ́bɔ́tà] 'someone raised with wealth' (expected meaning) from *[à] [tʃɔ́p] 'eat' + [bɔ́tà] 'butter' is not a word in any known variety of Naijá.

To the best of our knowledge, the tonal metathesis in Naijá only applies to the nouns cited in (5) and (6). Even though examples like [títʃà] 'teacher' and [bàká] 'curvaceous buttock' have H-L and L-H melodies like the nouns above, they are not morphologically marked for unconventional positive. That said, there is a purely expressive tonal metathesis, as illustrated in (7), that applies to all nouns. Depending on the context, this variant of the tonal metathesis can express either unconventional positive or negative. For example, in a situation where speakers A and B are talking about a person who is a teacher, and A says the sentence in (7a). To indicate that 'the person is an unconventionally competent or incompetent teacher' or 'not a teacher at all', Speaker B can realise the H-L tone of the word [títʃà] 'teacher' as L-H, as in (7b). In another context, where speakers A and B are talking about a curvaceous buttock, and A says the sentence in (8a). To indicate that the person has a bigger or smaller than usual [bàká] 'curvaceous buttock.' the person could say the sentence in (8b). The positive or negative reading depends on the speaker's intention or context.

(7)   Unconventional marking in contrastive negative construction
     a.   dís   pésî̀   bì   tíʃà
         this   person   COP   teacher
         'this person is a teacher'
     b.   nő   bì   tíʃà,   nằ   tìʃá
         NEG   COP   teacher,   FOC   teacher.UNCON
         'not a regular teacher but an unconventional teacher (or something else)'

(8)   Unconventional marking in contrastive negative construction
     a.   nằ   bàká   bì   dîs
         FOC   big.buttock   FOC   this
         'this is a curvaceous buttock'
     b.   nő   bì   bàká,   nằ   bákà
         NEG   COP   big-buttock,   FOC   big.buttock.UNCON
         'it is not a curvaceous buttock but an unconventionally curvaceous buttock (or something else entirely)'

Unlike the unconventional-positive forms in (5) and (6), which can occur in isolation or any kind of construction, the purely expressive variant only appears in a contrastive negative construction, where it is compared to the base form. Another distinction is that the purely expressive variant is mostly used for exaggeration.

As noted by an anonymous reviewer, the expression of lexical or grammatical notions through tonal alternation as an attribute of Naijá is a property contributed by the indigenous or substrate languages. For example, the purely unconventional form in (7) and (8) has cognates in some indigenous languages of Nigeria (e.g. Yorùbá in Awoyale 1989). Beyond the purely expressive forms, the expression of lexical or grammatical notions through tonal alternation is a common attribute of the indigenous languages of Nigeria. However, to the best of our knowledge, no indigenous languages of Nigeria have been shown to derive new forms from existing lexical items through a pattern of tonal metathesis. In this sense, the tonal metathesis in Naijá is rare.

An anonymous reviewer also suggests that the unconventional positive is a property of youth language, slang or wordplay. While the unconventional positive is more productive among young speakers of Naijá, there is evidence to suggest that the reviewer's characterisation of the form is inaccurate. It is known that both young and old speakers of Naijá use the unconventional-positive form for honorific purposes. For example, regardless of the context or interlocutors, speakers of Naijá refer to male and female pastors with the unconventional-positive forms [pápà] and [mámà], respectively, not the neutral forms [pàpá] 'mother' and [màmá] 'father.' The most recent and popular example of this usage involves a leaked phone conversation between the presidential candidate of the Labour Party, Peter Obi, and the founder of the Living Faith Church Worldwide, Bishop David Oyedepo (Folorunsho-Francis 2023). The former referred to the latter, using the unconventional-positive form [dàdí] (compared to the neutral form [dádì] 'father'). Another piece of evidence suggesting that the unconventional-positive forms are not mere slang words is that researchers have long misclassified them as lexically contrastive, rather than derived from the neutral forms. If we consider that expressive morphology plays a key role in grammar (Dingemanse 2018), we can further argue that the unconventional positive is an aspect of Naijá grammar. In the next section, we present another pattern of morphological derivation that is similar to the tonal metathesis.

3.2 Syllable metathesis and onset elision in the Wafi variety of Naijá

This section focuses on a pattern of metathesis and truncation that is only found in the Wafi variety of Naijá. The pattern is found in the speech of middle-aged adults and most youths, but our datasets come from middle-

aged adults. By transposing adjacent syllables or deleting a word-initial consonant, Wafi expresses inferiority and other notions that can be categorised as unconventional negative. Examples of the prosodic metathesis and deletion are presented in this section. For simplicity, only the inferior meaning of the unconventional negative is included in the gloss. The examples are grouped based on their syllables and tones.

(9)   Bisyllabic words with level tone

	N	Inferior N	
a. H-L	fótò	tófò	'photo'
	bánà̀	nã́bà	'banner'
	pástò̀	tópàs	'pastor'
	kã́vàs	váskà̀	'canvas'
	frízà	záfrì	'freezer'
	kétò	tókè̀	'kettle'
b. L-H	pòló	lòpó	'polo shirt'
	kòló	lòkó	'craze'
	kàʃú	ʃùká	'cashew'
	gètmã́	mà̀gét	'gateman'
	pàtí	tìpá	'party'

(10)   Bisyllabic words with contour tones

N	Inferior N	
màʃî	ʃìmâ	'machine'
láptɔ̂:p	tóplâ:p	'laptop'
rístwɔ̂tS	wɔ́tʃrîst	'wrist watch'
tívî:	vítî:	'TV'
ã́drɔ̀ìd	drɔ́ídã̀	'android'

The bisyllabic words in (9) show that the first syllable metathesises with the second syllable to express inferiority. While the syllables metathesise, the tones do not. For example in (10), the H and L tones of the diphthong in [ã́.drɔ̀ìd] are associated with the second vowel of the diphthong and the word-final vowel in the unconventional-negative form [drɔ́íd.ã̀]. We had no examples of the metathesis occurring in words with three syllables, except for the form [àwóʃá] 'cheap/inferior sex worker' from [àʃáwó] 'sex worker' which was pointed out by an anonymous reviewer and confirmed by the second author. The use of this trisyllabic unconventional negative might have been popularised by the hit song *Nwa Baby (Ashawo Remix)* of the Nigerian artist Flavour (2011). That said, there are a few examples of four-syllable words with the metathesis, as shown in (11). In this case, the first two syllables of the words are transposed to the end of the word, while the linear order of tones remains unchanged.

(11)   Quadrisyllabic words

N	Inferior N	
bàbárìgá	rìgábàbá	'type of men's cloth'
bàbàláwò	làwòbábà	'healer'
káʃà̀kárì	kárìkáʃà̀	'pay-as-you-go'
bàbádáʃmî	dàʃmíbábâ	'hand-me-down'
ékélébé	lébééké	'police'

The expression of unconventional negative is different in monosyllabic nouns. As shown in (12) and (13), the initial consonant of each monosyllabic noun is deleted.

(12)   CC(C)V:C words

	N	Inferior N	
a.	strî:t	trî:t	'street'
	strî̃:g	trî̃:g	'string'
b.	grî:n	rî:n	'green'
	brû:m	rû:m	'broom'
	spú:n	pú:n	'spoon'
	brê:d	rê:d	'bread'
	blê:d	lê:d	'blade'
	stô:v	tô:v	'stove'
	glô:v	lô:v	'glove'
	smâi	mâi	'smile'
	plê:	lê:	'play'

(13)   CV:(C)(C) words

	N	Inferior N	
a.	pî:g	î:g	'pig'
	fû:d	û:d	'food'
	kê:g	ê:g	'keg'
	kô:t	ô:t	'coat'
	dɔ̂:g	ɔ̂:g	'dog'
	bâ:t	â:t	'bat'
	bã̂:k	ã̂k	'bank'
	tã̂:k	ã̂:k	'tank'
b.	hô:st	ôst	'host'
	pô:st	ô:st	'post'
	dɔ̂:st	ɔ̂:st	'dust'
c.	tô:	ô:	'toe'
	bî:	î:	'bee'

As shown in (12), the initial consonant of each consonant cluster is deleted in the derivation of unconventional negative, regardless of whether the cluster involves two or more consonants. The initial-consonant deletion still applies even when a monosyllabic word has one onset consonant, as shown in (13). The onset deletion applies to all types of nouns including nonce words, as illustrated in (14). Similar to the actual words in the language, the onset deletion also introduces the notion of unconventional negative for the nonce words.

(14)   Monosyllabic nonce words

	N	Inferior N
a.	strég	trég
	skrìt	krìt
b.	prót	rót
	krùp	rùp
c.	pàt	àt
	dót	ót
d.	pó	ó
	mɔ̌	ɔ̌

The expression of unconventional negative is not a secret language or argot, given that it occurs in natural conversations for open communication. The morphological derivation occurs in both expressive and non-expressive contexts. Regardless of the contexts or function, the morphophonology of the metathesis and truncation does not change. Compared to the unconventional positive, the unconventional negative is more productive. We find no instances where the unconventional negative applies to monosyllabic onsetless words, proper names or trisyllabic words, except [àwóʃá] 'a cheap sex worker' from [àʃáwó] 'sex worker.' Before turning to an analysis of the unconventional positive and negative, we present the descriptive generalisations in the next section.

3.3 Descriptive generalisations

The descriptive generalisations of the unconventional positive and negative are presented as follows:

(15)   Expressing unconventional positive in all varieties of Naijá
        a. The sequence of H-L tones is realised as L-H to express unconventional positive.
        b. The sequence of L-H tones is realised as H-L to express unconventional positive.
        c. Only certain L-H and H-L nouns are marked for unconventional positive.
        d. The unconventional positive is comparable to a purely expressive and restricted pattern of tonal metathesis.
(16)   Expressing unconventional negative in the Wafi variety of Naijá
        a. The first syllable metathesises with the second syllable in bisyllabic nouns.
        b. In quadrisyllabic nouns, the first pair of syllables metathesises with the second pair of syllables.
        c. In monosyllabic nouns with an onset cluster, the initial consonant of the cluster is deleted.
        d. In monosyllabic nouns with only one onset consonant, the onset is deleted.
        e. No tonal changes or complications occur.

The meanings of the unconventional positive and negative are comparable to those of diminutive and augmentative morphemes (good vs bad, original vs fake, rich vs poor, superior vs inferior, etc.), but they do not express the prototypical semantics of diminutive and augmentative crosslinguistically (e.g., *size*: big vs small; *gender*: masculine vs feminine, *age*: old vs young) (Jurafsky 1996, Kortvelyessy and Stekauer 2011). Thus, we call them unconventional positive and negative.

4 Analysis

4.1 Morphophonological metathesis

We present an analysis of the unconventional positive and negative in this section. As a point of departure, we first focus on the expression of unconventional positive, which is found in all varieties of Naijá. Previous studies of Naijá suggest that the tone distinction between the nouns and the corresponding unconventional positive is lexically contrastive (Faraclas 1984, Faraclas 2002, Elugbe and Omamor 1991, Esizimetor and Egbokhare 2012), but the phonological and semantic features of the data are not consistent with the account. The first observation against the previous account is that the words in each pair share a core meaning. For example, the form [fàdá] 'reverend father' shares its core meaning with the form [fádà] 'father'. Second, one of the words in each pair has an additional semantic meaning, which can be captured as unconventional positive,

extraordinary or positive opposite. This suggests that the unconventional-positive forms are morphologically derived from the other phonologically and semantically related forms.

We now turn to the expression of unconventional negative. Compared to the expression of unconventional positive, the fact that the prosodic metathesis or onset deletion in Wafi involves a morphological derivation is fairly straightforward in the descriptive sense. To capture the fact that an onset-consonant deletion or syllable metathesis marks unconventional negative, we refer to the constituents of the prosodic word, following the unified version of the prosodic hierarchy (Selkirk 1986, 2011).

(17) Prosodic hierarchy
      P-Word (ω) > Foot (Ft) > Syllable (σ) > Mora (μ)

We assume that the realisation of the unconventional-negative morpheme involves altering the linear order of the elements in a prosodic word ω, but the re-ordering varies based on word size. Thus, the unconventional negative targets the foot Ft in ω with at least two feet, such that the order Ft_1 Ft_2 in (18a) surfaces as Ft_2 Ft_1. When the base of an unconventional negative lacks two feet, as in the structure shown in (18b), the metathesis occurs at the syllable level, resulting in $\sigma_2\sigma_1$. Consequently, we refer to the morphophonological process in the unconventional negative as prosodic metathesis. In the absence of binarity at the level of foot and syllable, the unconventional negative is expressed by deleting the initial consonant of the syllable. The metathesis and truncation seem different on the surface, but the general goal is to change the precedence and linear order of the phonological elements in a word for the morphological derivation.

(18) The prosodic structures of quadrisyllabic, bisyllabic and monosyllabic words in Naijá
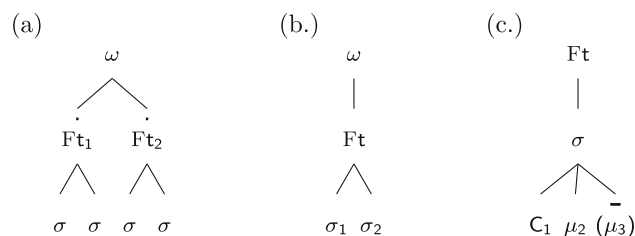
Before presenting a formal analysis of both unconventional positive and negative, we compare them to similar morphophonological processes across languages. Marking unconventional positive and negative with tone and prosodic metatheses, respectively, is consistent with descriptive patterns of morphophonological exchange. de Lacy (2020) describes morphophonological exchange as follows:

> [T]wo pairs of forms, where each pair includes forms that differ in terms of a single morpheme M. One pair consists of a form that lacks M and contains [α] (a feature, segment, prosodic element, or substructure) and another form that contains M and has a corresponding [β]; the other pair has a form with [β] and an M form with a corresponding [α] (de Lacy 2020, 30)

The tone metathesis of unconventional positive is in line with a morphophonological exchange, given that H-L and L-H words surface with L-H and H-L, respectively. Similarly, transposing the initial prosodic unit with the second prosodic unit in the expression of unconventional negative (e.g. $\sigma_1\sigma_2$ > $\sigma_2\sigma_1$) is unambiguously a kind of morphophonological exchange. Descriptive patterns with morphophonological exchange are rare but exist (Kouneli and Nie 2021 on Kipsigis, DiCanio et al. 2020 on Itunyoso Triqui). The most popular example is from DhoLuo (Okoth-Okombo 2008 cited in Alderete 1999, 129), where voicing polarity occurs in certain nouns when marked for plural.

(19) Voicing Exchange in DhoLuo (Nilotic, Kenyan and Tanzania)

SG	PL	
bat	bed-e	'arm'
luedo	luet-e	'hand'

Based on the arguments of de Lacy (2012) and Wunderlich (2012), DiCanio et al. (2020, 3) propose three criteria for identifying true morphophonological exchange: (i) 'the alternation must not apply to a limited, closed set of roots in the language'; (ii) 'the alternation must be the dominant morphological exponent for the morpheme in question'; (iii) 'all roots undergoing the alternation must belong to the same morphosyntactic category.' They named these criteria *dominance, productivity* and *morphosyntactic uniformity*, respectively. To show that the morphemic metatheses in Naijá are indeed morphophonological exchanges, we consider these criteria. As shown in Section 3, the metatheses and truncation are the only ways of expressing unconventional positive and negative, respectively. The morphemic metatheses apply only to nouns and always maintain their word class. While the onset truncation of the unconventional negative applies to all monosyllabic common nouns except onsetless ones, the prosodic metathesis only applies to a small set of bisyllabic and quadrisyllabic nouns. Similarly, the tonal metathesis only applies to a small set of bisyllabic nouns with H-L and L-H tones. These properties indicate that the morphemic metatheses and truncation are the dominant exponents of unconventional positive and negative; they are morphosyntactically uniform but less productive. In contact languages like pidgins or creoles, it is difficult to use productivity as a criterion considering that a linguistic pattern might apply to a subset of the lexicon at an early stage of creole development (Plag 2008, 2009). If we consider that Naijá has less affixes compared to its lexical sources (Babalola 2021), the morphophonological metatheses could be another stage of morphological development. The fact that the tone and syllable metatheses do not apply to three-syllable words also indicates that the unconventional positive and negative are still emerging. Thus, the morphemic metatheses are a true pattern of morphophonological exchange. As mentioned earlier, the unconventional positive has a purely expressive variant that is productive but restricted to the context of exaggeration and contrastive negation (see the examples in (7)). The unconventional positive can be considered a grammaticalised form of the purely expressive variant. The non-productivity of unconventional positive points to an ongoing grammaticalisation of the productive but restricted variant (see Section 5). That the restricted variant can express unconventional positive or negative also suggests that only the positive usage of the purely expressive tonal metathesis is grammaticalised.

(20) Dhochi: A Dholuo Language Game (Borowsky and Avery 2009, 171)

	Language form	Game form	
a.	wɛy-a	ya-wɛ	'leave-1.sg 'leave me alone'
	waŋ-a	ŋawa	'eye-1.sg 'my eye'
b.	tʃak	katʃ	'milk'
	but	tub	'side'

The metatheses of the unconventional positive and negative are similar to the patterns found in reversal language games, such as French Verlan (Gotowski 2019), Yoruba Ena (Isola 1982), Dholuo Dhochi (Borowsky and Avery 2009), and others (Bagemihl 1995, Alidou 1997, Ozburn and Schellenberg 2019). Despite this similarity, there are certain differences. For example, monosyllabic forms in reversal language games, such as the examples in (20b), tend to undergo reversal, not truncation like the unconventional-negative form in the Wafi variety. Truncation language games are rare, but even in most documented cases, the segments at the right edge of the word are the usual target of deletion (Bagemihl 1988, Borowsky 2010). Unlike the expression of unconventional positive and negative in Naijá, language games targeting feet and tones are unattested (Bagemihl 1988, 308). While sociolinguistic factors, such as group identity and exclusion, motivate the distortion of

linguistic patterns in language games (Isola 1982, Lefkowitz 1989), the metatheses and segment truncation in Naijá involve morphological derivation. Another difference is that language games rarely contribute any meaning to the base form, but the metatheses and truncation in Naijá make semantic contributions. Consequently, the metatheses and segment truncation in Naijá are not language games but rather morphological derivations that share the phonological properties of language games.

The unconventional negative in the Wafi variety of Naijá is structurally and historically similar to the Verlan sociolect, which has the French reversal language game with the same name as its source of grammar. Similar to Naijá, the sociolect emerged in a multiethnic population (Doran 2002). Thus, it is highly plausible that the unconventional negative in the Wafi variety is from a reversal language game. In the absence of strong evidence connecting the source of unconventional-negative form to a language game, we leave our analysis of the unconventional negative as an innovation of Wafi speakers open for further inquiry. Unlike language games, which have been analysed within various formal frameworks including Optimality Theory (OT), the patterns in Naijá had not been (properly) documented and described, let alone analysed until now. By drawing insights from the OT account of language games, we present an account of the unconventional positive and negative in the next section.

4.2 Transderivational analysis

We account for the realisation of the unconventional positive and negative morphemes by adopting transderivational correspondence theory (TCT) (Benua 2004, Alderete 2001), which is an extension of correspondence theory (McCarthy and Prince 1995). TCT is based on the idea that the correspondence relation does not only hold between input–output and base-reduplicant pairs but also between independent words (McCarthy and Prince 1994). The core proposal of TCT is that words in a paradigm are in a transderivational correspondence relation, whereby phonological similarity within the paradigm is regulated by O(utput)-O(utput) faithfulness constraints, similar to the constraints on base-reduplicant relations. As proposed in Benua (2004), a morphologically derived word and its base are in OO-faithfulness relations. Studies of language games have applied the OO-correspondence to the relations between the base and game form (argot) (Itô et al. 1996, Borowsky and Avery 2009, Borowsky 2010). The correspondence relations between the base and argot form are regulated by faithfulness constraints such as Anchor constraints in (21), which require any element at a specific edge of the base to have a correspondent at the same edge of the argot form. The reordering of base forms in language games violates the constraints. The metathesis and truncation in language games are considered the result of concatenating a word with a phonologically and semantically empty morpheme ARGOT (Bagemihl 1988, 1989, Itô et al. 1996, Borowsky and Avery 2009, Borowsky 2010). The assumption is that the violation of the faithfulness constraints is not driven by the ARGOT morpheme but by the constraint MORPH-REAL in (22), which assigns a violation to a morpheme in the input without a distinct phonetic realisation in the output (Borowsky and Avery 2009).

(21) Faithfulness constraints
    a. ANCHOR-LEFT-BA: Any element at the left edge of the base has a correspondent at the left edge of the argot form.
    b. ANCHOR-RIGHT-BA: Any element at the right edge of the base has a correspondent at the right/left edge of the ARGOT form.
(22) MORPH-REAL (de Lacy 2002): Every morpheme in the input should have a distinct phonetic realisation in the output.

We adopt the account of language games sketched above for our analysis of the unconventional positive and negative in Naijá. Our proposal is that the unconventional positive and negative morphemes are phonologically empty, but unlike argot forms, they are semantically specified.

(23) Faithfulness constraints for unconventional negative (after Benua 2004)
     a.   BNEG-ANCHOR$_{FT}$-L: The foot (Ft) at the left edge of the base form must have a correspondent at the left edge of the unconventional-negative form.
     b.   BNEG-ANCHOR$_\sigma$-L$_{FT}$: The syllable (σ) at the left edge of a foot (Ft) in the base form must have a correspondent at the left edge of the foot (Ft) in the unconventional-negative form.
     c.   BNEG-ANCHOR$_{SEG}$-L$_\sigma$: The segment at the left edge of a syllable (σ) in the base form must have a correspondent at the left edge of the syllable (σ) in the unconventional-negative form.
     d.   BNEG-ANCHOR$_{SEG}$-R$_\sigma$: The segment at the right edge of a syllable (σ) in the base form must have a correspondent at the right edge of the syllable (σ) in the unconventional-negative form.
     e.   BNEG-CONTIGUITY$_{SEG,\sigma}$: Segments of a syllable (σ) that form a contiguous string in the base are contiguous in the unconventional-negative form.

The unconventional positive and negative morphemes could have been realised without being phonetically distinct from the base, considering that they are phonetically empty. That the two morphemes have a phonetic realisation is considered the effect of the constraint MORPH-REAL, which requires every morpheme to have a unique phonetic realisation in the output. As demonstrated in the previous section, the realisation of the unconventional negative involves reversing the linear order of Ft or σ, or deleting a word-initial consonant. For a four-syllable word, the realisation of the unconventional negative can lead to a violation of the faithfulness constraint BNEG-ANCHOR$_{FT}$-L in (23a). The constraint assigns no violation mark to a foot at the left edge of the base form, which has a correspondent at the left edge of the unconventional-negative form. If the leftmost foot Ft$_1$ of the base is realised in the unconventional-negative form but not at the left edge, the constraint BNEG-ANCHOR$_{FT}$-L assigns a violation for each foot located to the left of Ft$_1$ within the unconventional-negative form. We assume that a right-edge instantiation of the constraint BNEG-ANCHOR$_{FT}$-L exists, but it is redundant for the illustration of our analysis. For a bisyllabic form, the MORPH-REAL can force the violation of the constraint BNEG-ANCHOR$_\sigma$-L$_{FT}$ in (23b), which requires the syllable at the left edge of the foot in the base to have a correspondent at the left edge of the foot in the unconventional-negative form. If the leftmost syllable σ_1 of a foot in the base form is realised in the unconventional-negative form but not at the left edge, the constraint BNEG-ANCHOR$_\sigma$-L$_{FT}$ assigns a violation for each syllable located to the left of σ_1 within the foot of the unconventional form (right-edge version of this constraint is also assumed to exist in the grammar). Foot or syllable deletion, or metathesis can result in the violation of the anchor constraints.

We can account for the foot and syllable metatheses by ranking the constraint MORPH-REAL above BNEG-ANCHOR$_\sigma$-L$_{FT}$, which in turn is ranked above BNEG-ANCHOR$_{FT}$-L. The constraint MORPH-REAL does not determine whether the unconventional negative is realised through tonal or syllable metathesis. The fact that the language expresses the unconventional negative through syllable metathesis, instead of tone metathesis, can be considered an effect of the constraint BNEG-LINEARITY-T, which requires the linear order of tones in the base to be preserved in the corresponding unconventional-negative form. The account is illustrated in tableau (24). The edges of Ft and σ are indicated with parentheses and dot '.' respectively.

(24)　Foot and syllable metathesis

Input		Output	M-REAL	BNEG-LIN-T	BNEG-ANCH$_\sigma$-L$_{Ft}$	BNEG-ANCH$_{Ft}$-L
a. /ká.ʃầ.ká.rì+UNC.NEG/	i.	(ká.ʃầ)$_{Ft}$(ká.rì)$_{Ft}$	*!			
	ii. ☞	(ká.rì)$_{Ft}$ (ká.ʃầ)$_{Ft}$				*
	iii.	(ʃâ̌.kà)$_{Ft}$(ká.rì)$_{Ft}$			*!	
	iv.	(kà.ʃá)$_{Ft}$(ká.rì)$_{Ft}$		*!		
b. /pò.ló+UNC.NEG/	i.	(pò.ló)$_{Ft}$	*!			
	ii. ☞	(lò.pó)$_{Ft}$				*
	iii.	(pó.lò)$_{Ft}$		*!		

The constraint MORPH-REAL rules out unconventional-negative forms that are not phonologically distinct from their base. For the four-syllable form, the candidate in (24a-iii) satisfies MORPH-REAL but is ruled out for violating the constraint BNEG-ANCHOR$_\sigma$-L$_{Ft}$. The winning candidate in (24a-ii) satisfies MORPH-REAL to the detriment of BNEG-ANCHOR$_{Ft}$-L. The constraint ranking also accounts for the bisyllabic unconventional-negative form in (24b). For the words with two or four syllables, MORPH-REAL could have been satisfied by deleting a segment instead of resorting to metathesis. That the option of deletion is not utilised is considered an effect of the constraints BNEG-ANCHOR$_{SEG}$-L$_\sigma$ and BNEG-ANCHOR$_{SEG}$-R$_\sigma$ in (23c-d). The constraints assign no violation to the segments at the left and right edges of a syllable in the base form, when the segments have correspondents at the left and right edges of the syllable in the unconventional-negative form, respectively. If the leftmost segment S$_1$ of a syllable in the base form has a correspondent in the syllable of the unconventional-negative form but not at the left edge, the constraint BNEG-ANCHOR$_{SEG}$-L$_\sigma$ assigns a violation for each segment located to the left of S$_1$ within the syllable of the unconventional-negative form. The same condition holds for the right-edge counterpart, BNEG-ANCHOR$_{SEG}$-R$_\sigma$. These constraints must be ranked above BNEG-ANCHOR$_{Ft}$-L and BNEG-ANCHOR$_\sigma$-L$_{Ft}$ in the language, but no evidence for the ranking of the segment anchoring constraints in relation to the constraint MORPH-REAL. The effects of these constraints are shown for the monosyllabic forms in (25), which vacuously satisfy BNEG-ANCHOR$_{Ft}$-L and BNEG-ANCHOR$_\sigma$-L$_{Ft}$ due to the absence of adjacent feet and syllables.

(25)　Onset deletion

Input		Output	M-REAL	BNEG-CONTIG$_{SEG,\sigma}$	BNEG-ANCH$_{SEG}$-R$_\sigma$	BNEG-ANCH$_{SEG}$-L$_\sigma$	BNEG-ANCH$_\sigma$-L$_{Ft}$	BNEG-ANCH$_{Ft}$-L
a. /strî:t+UNC.NEG/	i.	(strî:t)$_{Ft}$	*!					
	ii.	(stî:t)$_{Ft}$		*!*				
	iii.	(tî:str)$_{Ft}$		*!	*!***	**		
	iv.	(strî:)$_{Ft}$			*!***			
	v. ☞	(trî:t)$_{Ft}$				****		
	vi.	(tsrî:t)$_{Ft}$			*!			
b. /bâ:t+UNC.NEG/	i.	(bâ:t)$_{Ft}$	*!					
	ii.	(tâ:b)$_{Ft}$			*!*	**		
	iii. ☞	(â:t)$_{Ft}$				**		

The possible ways for a monosyllabic form to satisfy Morph-Real are segment deletion or metathesis. In the case of a monosyllabic word with a consonant cluster, metathesising the clustered consonants or deleting the medial consonant of the cluster can result in the violation of BNeg-Contiguity$_{SEG,\sigma}$, which requires contiguous segments of a syllable in the base form to be contiguous in the unconventional-negative form, as shown in (25aii-iii). The option of onset-coda metathesis can also result in a fatal violation of the constraints BNeg-Anchor$_{SEG}$-L$_\sigma$ and BNeg-Anchor$_{SEG}$-R$_\sigma$, as the candidate in (25b-ii) does. While the candidate in (25a-iv) incurs a fatal violation of BNeg-Anchor$_{SEG}$-R$_\sigma$, the candidates in (25a-v) and (25b-iii) win despite satisfying Morph-Real to the detriment of BNeg-Anchor$_{SEG}$-L$_\sigma$.

(26)   Faithfulness constraints for unconventional positive (Benua 2004, Alderete 2001)
   a. BPos-Anchor$_T$-L: The tone at the left edge of the base form must have a correspondent at the left edge of the unconventional-positive form.
   b. BPos-Anchor$_T$-R: The tone at the right edge of the base form must have a correspondent at the right edge of the unconventional-positive form.

As mentioned earlier, the unconventional positive is also a phonologically empty morpheme with semantic specification. The realisation of the unconventional-positive morpheme through base-tone metathesis results in the violation of the constraints BPos-Anchor$_T$-R and BPos-Anchor$_T$-L, which require the tones at the left and right edges of the unconventional-positive form to have correspondents at the left and right edges of the base form, respectively. By ranking these constraints below Morph-Real, we can account for the tonal metathesis. That the language expresses the unconventional positive through tonal metathesis, instead of syllable metathesis, can be considered an effect of the constraint BPos-Linearity-σ, which requires the linear order of syllables in the base to be preserved in the unconventional-positive form. The tableau in (27) illustrates this account.

(27)   Tone metathesis

Input	Output		M-Real	BPos-Lin-σ	BPos-Anch$_T$-R	BPos-Anch$_T$-L
a. /pà.pá+UNC.POS/	i.	pà.pá		*!		
	ii. ☞	pá.pà			*	*
b. /fó.tò+UNC.POS/	i.	fó.tò	*!			
	ii. ☞	fò.tó			*	*
	iii.	tó.fò		*!		

We have shown that the realisation of the unconventional positive and negative involves violating OO-faithfulness constraints. The Morph-Real constraint drives these violations, determining the shape of the unconventional positive and negative. We assume that general faithfulness constraints are also violated in the realisation of the unconventional positive and negative, but the constraints are not included in the tableaux. We explore alternative analyses in the next section and compare them to the one in this section.

4.3 Alternative analyses

The proposal of TCT is that base-derivative relations are governed by faithfulness constraints (Benua 2004). Alderete (2001) expands upon this idea by proposing anti-faithfulness constraints, which are negated counterparts of faithfulness constraints. The constraints, such as the example in (28), only assign one violation.

(28) ¬OO-Anchor$_{Ft}$-L (Alderete 2001): Not the case that the foot Ft at the left edge of the base form has a correspondent at the left edge of the unconventional-negative form.

The empirical bases of anti-faithfulness constraints are patterns of morphophonological exchange across languages (Alderete 1999, 2001, Gotowski 2019). Under this account, the ranking of anti-faithfulness constraints over faithfulness constraints drives morphophonological exchange. As we briefly illustrate with the unconventional-negative form in (29), the ranking can account for the morphophonological metathesis in Naijá. The account can also be extended to tone polarity and truncation.

(29) Prosodic metathesis

Base		/unc.neg+ ká.ʃà̃.ká.rì/	¬OO-Anch$_{Ft}$-L	OO-Anch$_{Ft}$-L
ká.ʃà̃.ká.rì	i.	(ká.ʃà̃)$_{Ft}$(ká.rì)$_{Ft}$	*!	
	ii. ☞	(ká.rì)$_{Ft}$ (ká.ʃà̃)$_{Ft}$		*

The proposal that anti-faithfulness constraints are exchange-inducing mechanisms has been questioned, as various patterns of morphophonological exchange have been reanalysed and generated without the use of anti-faithfulness constraints (Kurisu 2001, Pulleyblank 2006, de Lacy 2012). Our account of the unconventional positive and negative in Naijá also points to the sufficiency of faithfulness constraints for the analysis of morphophonological exchange.

Another alternative analysis is that the unconventional positive is a morpheme with a floating L tone as its exponent (following Akinlabi 1996). Under this account, we have to assume that the lexical H tone occurs in a prosodically prominent position. The idea is uncontroversial, considering that high pitch is one of the phonetic correlates of stressed syllables in certain languages (Lehiste and Peterson 1959) and that stressed syllables tend to surface with H tone in loanword adaptation (Kenstowicz 2006). We can account for the realisation of the L tone with the constraint Unc.Pos-Anchor$_{PROM}$, which requires the tone of the unconventional positive to have a correspondent in a prominent position. The realisation of the L tone in the prominent position will result in the violation of the constraint Max-H, which requires an H tone in the input to have a correspondent in the output (Zoll 2003). The Max-H constraint can be satisfied by relinking the delinked H tone to another TBU. Under this account, the tonal metathesis can be considered a by-product of equal ranking of Unc.Pos-Anchor$_{PROM}$ and Max-H. We illustrate the account in (30). The lexical tone and the exponent of the unconventional positive are indicated with numeral indexation. The association of the tones is indicated with parentheses, which are comparable to association line.

(30) Unconventional positive as a floating L tone

Input	Output		U.P-Anc$_{PROM}$	Max-H	Max-T
a. /(pà)$_1$.(pá)$_2$ +unc.pos$_3$/	i.	(pà)$_1$.(pá)$_2$	*!		
	ii.	(pà)$_1$.(pà)$_3$		*!	
	iii. ☞	(pá)$_2$.(pà)$_3$			*
b. /(fó)$_1$.(tò)$_2$+unc.pos/	i.	(fó)$_1$.(tò)$_2$	*!		
	ii.	(fò)$_3$.(tò)$_1$		*!	
	iii. ☞	(fò)$_2$.(tó)$_3$			*

A reviewer suggests analysing the tonal metathesis of the unconventional-positive form as an effect of their final (or initial) syllable being extrametrical (as in Hayes 1982, Pulleyblank 1986). Under such an account, the H-tone syllables in Naijá will be considered stressed. The tonal metathesis will be considered a byproduct of an extrametrical morpheme which occupies the prominent position in the word and shifts the stress away from the extrametrical syllable. This account is similar to the floating tone account that is sketched in (30).

The alternative analyses sketched here are plausible but a combination of the accounts in (29) and (30) may not be able to capture the similarities between the unconventional positive and negative. We believe that our account, as presented in Section 4.2, not only unifies the prosodic and tonal metatheses with the truncation but is also consistent with the fact that the unconventional positive and negative share properties, such as reordering of phonological elements, semantic opposition (positive *versus* negative), expressiveness, and context sensitivity. In the next section, we discuss these similarities and their implications for form-meaning association.

4.4 Iconicity and expressiveness of unconventional positive and negative

This section focuses on the form-meaning association of morphophonological metatheses and truncation in Naijá. The emerging perspective on form-meaning mapping acknowledges the role of arbitrariness and iconicity in core grammar (Dingemanse 2018, Kawahara 2020), contrary to the Saussurean view that it is completely arbitrary (de Saussure 1916, Hockett 1960). Studies suggest that depictive mode of signification and expressive meaning distinguish iconic forms from arbitrary forms (Zwicky and Pullum 1987, Dingemanse 2015). We will argue that the form-meaning association of the unconventional positive and negative in Naijá involves iconicity. To this end, we refer to the properties of expressiveness and depictive signification.

Expressive morphology tends to involve evaluative meaning (e.g. positive vs negative, big vs small, good vs bad, inferior vs superior), vocal artistry and mimicry (Zwicky and Pullum 1987, Kita 1997, Dingemanse 2015, Akinbo 2021b, 2023). Morphosyntactically, most examples of expressive morphemes do not change the syntactic category of the base they apply to. Prosodically, expressive forms, such as ideophones, tend to have marked or unusual phonological patterns (Hinton et al. 1994, Dingemanse 2018). The other properties of expressive morphemes that are relevant to our discussion are semantic variability and non-displaceability (Potts 2007, Fortin 2011). The semantic variability of expressive morphology arises from its strong ties to the utterance situation. Potts (2007) refers to this property as non-displaceability.

The first expressive property of the tone metathesis and prosodic metathesis, with its truncation variant, in Naijá is their association with positive and negative affective meanings, respectively. In this case, we can consider the tone metathesis and the prosodic metathesis alongside its truncation variant to be two sides of the same affective expression. The semantic opposition between the unconventional positive and negative markers is responsible for their non-overlapping distribution. As mentioned earlier, the exact meaning contributed by the tone metathesis varies, but it can be captured only with the notion of unconventional positive. The multiple meanings of the tone metathesis are consistent with expressive morphology. To better understand the meanings introduced by tone metathesis, we have to consider their context of occurrence. For example, when the form [màmá] 'mother' is marked for unconventional positive, the derived form [mámà] can express multiple meanings, including beautiful, strong, charismatic, powerful, good, important, pious, etc. In some cases, female children that are believed to be reincarnations of their grandmothers are nicknamed using the unconventional-positive form [mámà] 'a special woman'.[3] The naming context suggests that the

---

3 The usage of the unconventional-positive forms as a nickname for a child considered a reincarnation of someone's parent is based on the personal experience of the first author and supported with data from digital sources: listed here: Nairaland <https://www.nairaland.com/1916561/why-parents-call-girl-child>, Lipstickalley <https://www.lipstickalley.com/threads/africans-did-your-parents-ever-call-you-mommy-or-daddy.3505445/page-2>, and Online Dictionary of Edo names <https://www.edoworld.net/Edo_Africa_names_dictionary_E.html>

unconventional-positive forms can also be honorific. The unconventional negative is similar to the unconventional positive in this regard, as its meaning includes cheap, small, fake, bad, unremarkable, etc. The semantic variability of the unconventional positive and negative is from their semantic dependency on context and speaker's intention.[4]

We now turn to depiction as a property of expressive morphemes. As described by Dingemanse (2015, 950), "depictions are typically iconic, representing what they stand for in terms of structural...resemblances between form and meaning." Crossmodal depiction is shared by various patterns of iconicity. For example, the association of low acoustic frequency (e.g. low F1 and F2) with high magnitude and *vice versa* in various patterns of iconicity depicts the natural acoustic principle, which is the inverse relationship between the length of a vibrating object (e.g. vocal cords) and the natural frequency at which the object vibrates (Sapir 1929, Titze 1989, Ohala 1994, Johansson and Zlatev 2013, Knoeferle et al. 2017). Another example of depiction is the association of repetition or intensity with morphophonological reduplication or repetition in languages around the world (Awoyale 1989, Hinton et al. 1994, Voeltz and Kilian-Hatz 2001, Hurch 2005). Depiction is robust in verbal arts such as poetry, singing and chants (Brown 1999, Dingemanse 2009, Agawu 2016). Expressing unconventionalities by changing the conventional linear order of linguistic units can be considered a kind of depiction. Associating the unconventional negative with truncation can be considered another pattern of iconicity, as deleting or subtracting a segment is like adding a negative. That said, consonant deletion exists as a form of non-iconic subtractive morphology, as observed in languages such as Tohono O'odham (Kosa 2008) and Hebrew (Bat-El 2002).

The expression of unconventional positive and negative through metathesis is comparable to the pattern of iconicity found in antonyms of languages such as Coptic and Demotic Egyptian ([mes-] 'darkness': [sem-] 'to be become visible'), Lithuanian ([ker-as] 'to be dumb, unable to speak': [rek-ti] 'to speak, talk') and Russian ([rab-] 'slave': [bar-in] 'lord, master') (Croft 1978, 511). Gamkrelidze (1974) refers to these patterns of form-meaning mapping as horizontal iconicity. Considering that horizontal iconicity involves perceptual resemblance between word structure and meaning, it is similar to the expression of iteration through reduplication or lengthening. Dingemanse (2011a) classifies iconic reduplication and repetition as 'gestalt diagrammatic iconicity,' which he defines as 'resemblance between a word structure and structure of perceived event' (Dingemanse 2011a cited in Johansson et al. 2020, 258). Given that negation is conceptually a kind of reduction, the expression of unconventional negative by truncating or reducing a string of segments is another kind of iconicity, which is form-meaning resemblance. Consequently, the unconventional positive and negative in Naijá are consistent with gestalt diagrammatic iconicity.

The origin of the tonal metathesis can be understood if we consider that Naijá also exhibits an exaggerative unconventional marking, as shown in (7), which is similar to the unconventional-positive form in terms of meaning, expressiveness, and the use of tonal metathesis. Due to the similarity, the expression of unconventional positive with tonal metathesis can be considered a grammaticalisation of the exaggerative unconventional marking. As mentioned earlier, the foot and syllable metathesis are comparable to language games. However, it is difficult to tell whether the prosodic metathesis and truncation of the unconventional negative are from language games, linguistic innovations, or other morphophonological patterns in the substrate languages. Regardless of their origin, the morphophonological metatheses and truncation in Naijá contribute to the typology of non-segmental morphology in human language. Overall, the properties of depiction, expressiveness, semantic variability, and unusual morphophonological patterns strongly suggest that the unconventional positive and negative involve iconicity.

5 Theoretical implications of Naijá

This section focuses on the implications of the morphophonological metatheses and truncation in Naijá for linguistic theory. As a point of departure, we focus on the implications of iconicity for creolisation. Childs (1994,

---

4 It is important to note that the unconventional-positive forms of [fádà] 'father' and [mɔ́dɔ̀] 'mother,' namely, [fàdá] 'rev. father' and [mɔ̀dɔ́] 'rev. mother,' have less semantic variability.

258) notes that "the growth of ideophones represents another facet of creolisation." Although the observation is based on ideophones, it can be extended to morphophonological patterns that are motivated by iconicity, such as the morphophonological metatheses and truncation in Naijá. This observation is consistent with the morphemic metatheses, given that the variety of Naijá mostly spoken as a first language has both unconventional positive and negative.

In pidgin and creole studies, the source of linguistic features is a recurrent issue. Studies mostly attribute the morphophonology of Atlantic pidgin and creoles to the superstrate, substrates, or language universals, but ideophonic forms and other patterns of iconicity are mostly attributed to substrate languages (Childs 1994, Bartens 2000). The proposal that expressive morphology in pidgins and creoles mostly comes from the substrate languages is consistent with our account, which is that the tonal metathesis of the unconventional-positive form is a grammaticalised variant of the expressive exaggeration in the language. Another factor that points to grammaticalisation is that the unconventional-positive form occurs in any syntactic environment, unlike its source, which is restricted to the syntactic and literal contexts of contrastive negation and hyperbole respectively. As mentioned earlier, the purely expressive variant can have either a positive or negative meaning, depending on the situational context. That the syntactically unrestricted but less productive tone metathesis only has a positive meaning can be considered a kind of semantic bleaching, which is a mechanism of grammaticalisation across languages (Heine and Kouteva 2002). The prosodic metathesis and truncation, however, are difficult to trace to any natural morphophonological phenomena in the substrate and superstrate languages. It is plausible that the metathesis and truncation of the unconventional-negative form are innovations of the creole speakers, in this case, the first-language users of the Wafi variety. If this holds, it means that certain features of pidgins and creoles are innovations of their speakers.

An important question to ask is regarding the motivation for expressing unconventional positive and negative with form-meaning resemblance in Naijá. To answer this question, we have to consider that the language emerges in a multilingual contact situation involving numerous people who do not share a language in common. To effectively bridge the linguistic divide in this context and facilitate language learning, linguistic signification might necessitate form-meaning mapping that saliently calls attention to the signified. By mapping structures of real-life events or entities to linguistic structure, instead of following the route of arbitrary form-meaning mapping, the speakers of the contact language will be able to facilitate communication and language learning.[5] This proposal is consistent with the findings that iconicity facilitates language acquisition and learning (Ramachandran and Hubbard 2001, Imai and Kita 2014, Bankieris and Simner 2015, see Nielsen and Dingemanse 2008 for a review).

We now turn to the issue of functional motivation for phonological patterns, which is mostly limited to articulatory and auditory factors. The perceptual enhancement of 'the coding properties of specific morphological categories' is considered the motivation for morphophonological metathesis, truncation, and polarity (Boersma 1998, Alderete 2001, 214). The explanation does not hold for morphophonological alternations with iconicity as their motivation, as their phonological structures are determined by the intention to depict the structure of language-external events and entities with linguistic forms. To integrate iconic morphophonological alternations into phonological theory, we have to extend the notion of perceptual motivation in linguistic theory to include crossmodal perception. If we consider that iconicity is based on a depictive mode of signification (Dingemanse 2011a), the functional source of grammaticalised iconicity has to be grounded in the structural resemblance between the phonological pattern and the perceptual or motor properties of the signified. By extension, the morphophonological metatheses and truncation in Naijá have to be grounded in the perceptual similarity between the order of (un)conventional events and the linear order of phonological elements. Similarly, the morphophonology of the unconventional negative forms has to be grounded in the similarity between negativity and string reduction. This suggests that perceptual motivation for morphophonological patterns is not limited to distinct identification and auditory improvement of phonological features but also includes cross-modal perception of sensory imagery. In this sense, the morphophonological metatheses and truncation in Naijá are perceptually motivated.

---

5 Thanks to Philipp S. Angermeyer of York University for calling our attention to this fact about the language.

The unconventional positive and negative can provide insights into the source of grammatical knowledge if we consider their depictive mode of signification. As iconicity involves crossmodal depiction of sensory imagery, the rules and constraints of the morphophonological metatheses and truncation cannot be attributed to universal grammar (UG), which is said to be biologically preprogrammed with all the rules and constraints of human language (Chomsky 1965, Chomsky and Halle 1968). To formulate the phonotactic conditions for iconic morphophonological patterns, it is imperative for humans to observe the structure of language-external entities or events before depicting an aspect of that structure with linguistic elements. The phonotactic conditions in this case have to emerge from paying attention to details, creating new patterns based on previously encountered linguistic and non-linguistic patterns, and understanding crossmodal similarity. By extending this explanation to Naijá, it means that the users of the language generalise their perceptual knowledge of unconventionality and negativity as the phonotactic conditions for metatheses and truncation respectively. This account is consistent with the alternative hypothesis that grammar emerges from human interaction with linguistic and non-linguistic data in the environment (Hopper 1987, Bybee 2003, Mielke 2008, Archangeli and Pulleyblank 2022). Therefore, we consider the general cognitive system, rather a language-specific one, to be the source of the phonotactic conditions for the unconventional positive and negative.

Iconicity, as mentioned earlier, has long been considered to be irrelevant to grammar (Hockett 1960, Zwicky and Pullum 1987, Pinker and Jackendoff 2009), until recently (Perniss et al. 2010, Dingemanse et al. 2015, Alderete and Kochetov 2017, Akinbo 2021a, Akinbo and Bulkaam 2024). Evidence from the form-meaning association in ideophones, large language survey of lexicon and psycholinguistic experiments suggests otherwise (Dingemanse 2011b, Alderete and Kochetov 2017, Ibarretxe-Antunano 2017, Winter et al. 2022). Beyond ideophones, experimental conditions, and sociolinguistic motivation such as infant-directed speech and artistic expression, morphophonological processes that are motivated by iconicity are underrepresented. Interestingly, recent studies indicate that it might be widely attested (Alderete and Kochetov 2017 on expressive palatalisation across languages, Akinbo 2021b, 2021a, 2023 on evaluative formation and root-vowel fronting and backing in Fungwa, Akinbo and Bulkaam 2024 deictic iconicity and locality of tone). Adding to recent discoveries in the study of morphophonological alternations with iconic functional sources, the morphophonological metathesis and truncation in Naijá indicate that iconicity, as an aspect of grammar, is not only probabilistic but also categorical. Therefore, the morphophonological metatheses and truncation in Naijá strongly support the emerging view that form-meaning mapping in grammar involves both arbitrariness and iconicity, which is antithetical to the Sausserean view of complete arbitrariness.

The morphophonology of unconventional positive and negative in Naijá contradicts assumptions about creoles having simplified (morpho)phonology and universal attributes of human language (Bickerton 1983, Bickerton 1984, McWhorter 1998, 2001, Siegel 2004). The patterns of morphophonological exchange in Naijá are rare in world languages (de Lacy 2012, DiCanio et al. 2020, Kouneli and Nie 2021), challenging the notion of UG being responsible for its structure. To argue for creole simplicity, McWhorter (2005, 13) claims that creoles generally 'make little or no use of tone to distinguish monosyllabic lexical items or to encode morphosyntactic distinctions.' but this is not true for Naijá. The language has lexical and grammatical tones, with monosyllabic tonal minimal pairs comparable to those found in some substrate languages (see the Appendix for a short list), as well as all combinatorial possibilities for lexical tones in bisyllabic forms (Faraclas 1984, Yakpo 2021). Similar to other tone languages, uttering a word in Naijá with the wrong tone results in a new or nonce word. In addition, the morphophonological metatheses and truncation in Naijá are a non-transparent derivational morphology.

6 Summary and conclusion

We have described and analysed the patterns of morphophonological metathesis and truncation in Naijá. The first pattern involves expressing unconventional positive with metathesis of lexical tone, and the second pattern involves expressing unconventional negative with prosodic metathesis or truncation. Using transderivational faithfulness constraints and Morph-Real, we formally account for these patterns. Due to their

expressiveness, semantic variability, non-displaceability, and depictive signification, we argue that the unconventional positive and negative are a type of iconicity. The patterns present evidence for iconicity as an integral aspect of morphophonological grammar and for the complexity of pidgins and creoles. Most importantly, we show that certain aberrant phonological patterns can be explained with the integration of iconicity into phonological theory. Considering that the pattern of iconicity presented in this work is rare in natural language, this work also augments the typology of morphophonological patterns. If we take into account that language change and innovation are often driven by children and youths (Kerswill 1996), a major limitation of the present work is that it is based on the speech of middle-aged adults. For future research, we hope to sample the speech of Naijá children and youth to examine these patterns of morphophonological alternation. This will enable us to determine whether the pattern is more productive in the language or not.

Author contributions: We accept responsibility for the content of the manuscript, consent to its submission, review all the results, and approve the final version of the manuscript. The first author is responsible for the conception, data collection, description, analysis, and for the preparation and revision of the manuscript. The second author is responsible for data collection, description, analysis, and for the preparation and revision of the manuscript.

Conflict of interest: The authors state no conflict of interest.

Data availability statement: The sound files and corresponding time-aligned annotated textgrids of the datasets that underpin this work are available in the OSF repository, https://osf.io/k8yat/.

References

Agawu, V Kofi. 2016. *The African imagination in music.* Oxford, UK: Oxford University Press.
Akande, Akinmade T, and Saheed Okesola. 2021. "Morpho-syntactic features of Nigerian Pidgin on radio programmes rendered in Naija." In *Current Trends in Nigerian Pidgin English: A Sociolinguistic Perspective*, edited by Salami, Akinmade, T. Akinmade, Oladipo, p. 201–20. Berlin: Walter de Gruyter.
Akinbo, Samuel Kayode. 2021a. "Featural affixation and sound symbolism in Fungwa." *Phonology* 38(4), 537–69.
Akinbo, Samuel Kayode. 2021b. *Vowel harmony and some related processes in Fungwa*. PhD diss., University of British Columbia, Vancouver.
Akinbo, Samuel Kayode. 2023. "Reduplication, repetition and sound symbolism in Fungwa." *Phonological Data and Analysis* 5(2), 1–24.
Akinbo, Samuel Kayode, and Michael Bulkaam. 2024. "Iconicity as the motivation for the signification and locality of deictic grammatical tones in Tal." *Glossa: A Journal of General Linguistics* 9(1), 1–41.
Akinlabi, Akinbiyi. 1996. "Featural affixation." *Journal of Linguistics* 32(2), 239–89.
Alderete, John, and Alexei Kochetov. 2017. "Integrating sound symbolism with core grammar: The case of expressive palatalization." *Language* 93(4), 731–66.
Alderete, John D. 1999. *Morphologically governed accent in Optimality Theory*. PhD diss., Amherst: University of Massachusetts.
Alderete, John D. 2001. "Dominance effects as transderivational anti-faithfulness." *Phonology* 18(2), 201–53.
Alidou, Ousseina Dioula. 1997. *A phonological study of language games in six languages of Niger*. PhD diss., Indiana University.
Archangeli, Diana, and Douglas Pulleyblank. 2022. *Emergent phonology.* Berlin: Language Science Press.
Awoyale, Yiwola. 1989. "Reduplication and the status of ideophones in Yoruba." *Journal of West African Languages* 19(1), 15–34.

Babalola, Adesoji. 2021. "Morphological features of Nigerian Pidgin in the football commentary." *Journal of Universal Language* 22(1), 27–64.

Bagemihl, Bruce. 1988. *Alternate phonologies and morphologies*. PhD diss., University of British Columbia.

Bagemihl, Bruce. 1989. "The crossing constraint and 'backwards languages." *Natural Language & Linguistic Theory* 7, 481–549.

Bagemihl, Bruce. 1995. "Language games and related areas." In *The handbook of phonological theory*, edited by Goldsmith, John A. p. 697–712. Cambridge, MA: Blackwell.

Bankieris, Kaitlyn, and Julia Simner. 2015. "What is the link between synaesthesia and sound symbolism?." *Cognition* 136, 186–95.

Bartens, Angela. 2000. *Ideophones and sound symbolism in Atlantic Creoles.* Helsinki: Finnish Academy of Science and Letters.

Bat-El, Outi. 2002. "True truncation in colloquial Hebrew imperatives." *Language* 78(4), 651–83.

Benua, Laura. 2004. *Transderivational identity: Phonological relations between words*. PhD diss., Amherst: University of Massachusetts.

Bickerton, Derek. 1983. "Creole languages." *Scientific American* 249(1), 116–23.

Bickerton, Derek. 1984. "The language bioprogram hypothesis." *Behavioral and Brain Sciences* 7(2), 173–88.

Boersma, Paul. 1998. *Functional phonology*. PhD diss., University of Amsterdam.

Borowsky, Toni. 2010. "Language disguise in OT: Reversing and truncating." In *Indigenous Language and Social Identity: Papers in Honour of Michael Walsh*, edited by Baker, Brett J., Ilana Mushin, Mark Harvey, and Rod Gardner, No. 626, p. 347–64. Canberra: The Australian National University.

Borowsky, Toni, and Peter Avery. 2009. "Dhochi: A Dholuo language game." *Australian Journal of Linguistics* 29(2), 169–94.

Brown, Penelope. 1999. "Repetition." *Journal of Linguistic Anthropology* 9(1/2), 223–6.

Bybee, Joan. 2003. *Phonology and language use*, Vol. 94. Cambridge: Cambridge University Press.

Childs, G Tucker. 1994. "Expressiveness in contact situations: The fate of African ideophones." *Journal of Pidgin and Creole Languages* 9(2), 257–82.

Chomsky, Noam. 1965. *Aspects of the theory of syntax.* Cambridge, MA: MIT Press.

Chomsky, Noam, and Morris Halle. 1968. *The sound pattern of English.* New York: Harper & Row.

Croft, Lee B. 1978. "The mnemonic use of linguistic iconicity in teaching language and literature." *Slavic and East European Journal* 509–18.

de Lacy, Paul. 2002. *The formal expression of markedness*. PhD diss., Amherst: University of Massachusetts.

de Lacy, Paul. 2012. "Morphophonological polarity." In *The morphology and phonology of exponence*, edited by Trommer, Jochen. p. 121–59. Oxford, UK: Oxford University Press.

de Lacy, Paul. 2020. "Do morphophonological exchange rules exist? a reply to DiCanio et al. (2020)." *Phonological Data and Analysis* 2(4), 29–43.

de Saussure, Ferdinand. 1916. *Cours de Linguistique Générale.* Paris: Payot & Cie.

DiCanio, Christian, Basileo Martínez Cruz, Benigno Cruz Martínez, and Wilberto Martínez Cruz. 2020. "Glottal toggling in Itunyoso Triqui." *Phonological Data and Analysis* 2(4), 1–28.

Dingemanse, Mark. 2009. "Ideophones in unexpected places." In *Proceedings of Conference on Language Documentation and Linguistic Theory 2*, edited by Austin, PeterK, Oliver Bond, Monik Charette, David Nathan, and Peter Sells, p. 83–97. London.

Dingemanse, Mark. 2011a. "Ezra pound among the Mawu: Ideophones and iconicity in Siwu." In *Semblance and signification*, edited by Michelucci, Pascal, Christina Ljungberg, and Olga Fischer, p. 39–54. Amsterdam: John Benjamins.

Dingemanse, Mark. 2011b. *The meaning and use of ideophones in Siwu*. PhD diss., Nijmegen: Radboud University.

Dingemanse, Mark. 2015. "Ideophones and reduplication: Depiction, description, and the interpretation of repeated talk in discourse." *Studies in Language* 39(4), 946–70.

Dingemanse, Mark. 2018. "Redrawing the margins of language: Lessons from research on ideophones." *Glossa: a journal of general linguistics* 3(1), 1–30.

Dingemanse, Mark, DamiánE Blasi, Gary Lupyan, MortenH Christiansen, and Padraic Monaghan. 2015. "Arbitrariness, iconicity, and systematicity in language." *Trends in Cognitive Sciences* 19(10), 603–15.

Doran, Meredith Christine. 2002. *A sociolinguistic study of youth language in the Parisian suburbs: Verlan and minority identity in contemporary France*. PhD diss., Cornell University.

Elugbe, Ben Ohiọmamhẹ, and Augusta Phil Omamor. 1991. *Nigerian Pidgin: Background and prospects*. Ibadan, Nigeria: Heinemann Educational Books.

Erben Johansson, Niklas, Andrey Anikin, Gerd Carling, and Arthur Holmer. 2020. "The typology of sound symbolism: Defining macro-concepts via their semantic and phonetic features." *Linguistic Typology* 24(2), 253–310.

Esizimetor, David, and Francis Egbokhare. 2012. "Naija (Nigerian Pidgin)". *Language varieties*, 1–6, https://www.hawaii.edu/satocenter/langnet/definitions/naija.html.

Faraclas, Nicholas. 1984. "Rivers pidgin English: tone, stress, or pitch-accent language?" *Studies in the Linguistic Sciences* 14(2), 67–76.

Faraclas, Nicholas. 2013. "Nigerian Pidgin." In *The survey of pidgin and creole languages*, edited by Michaelis, Susanne Maria, Philippe Maurer, Martin Haspelmath, and Magnus Huber, p. 176–84. Oxford, UK: Oxford University Press.

Faraclas, Nicholas G. 2002. *Nigerian Pidgin.* London/New York: Routledge.

Flavour, N'abania. 2011. "nwa baby" (ashawo remix)." In Uplifted, Nr. Track 4. Obaino Music.

Folorunsho-Francis, Adebayo. 2023. *Yes daddy: Obi admits phoning Oyedepo, denies 'religious war' allegation*. Punch.

Fortin, Antonio. 2011. *The morphology and semantics of expressive affixes*. PhD diss., Oxford, UK: Oxford University.

Gamkrelidze, Thomas V. 1974. "The problem of 'l'arbitraire du signe'." *Language* 50(1), 102–110.

Gotowski, Megan. 2019. "La règle du jeu: Verlan as an example of anti-faithfulness." *Linguistica Atlantica* 37(2), 1–13.

Hayes, Bruce. 1982. "Extrametricality and English stress." *Linguistic Inquiry* 13(2), 227–76.

Heine, Bernd, and Tania Kouteva. 2002. *World lexicon of grammaticalization.* Cambridge: Cambridge University Press.

Hinton, Leanne, Johanna Nichols, and John J. Ohala. 1994. *Sound symbolism.* Cambridge: Cambridge University Press.

Hockett, Charles F. 1960. "The origin of speech." *Scientific American* 203(3), 88–97.

Hopper, Paul. 1987. "Emergent grammar." In *Annual Meeting of the Berkeley Linguistics Society*, edited by Aske, Jon, Natasha Beery, Laura Michaelis, and Filip Hana, Vol. 13, p. 139–57, Berkley, California: Berkeley Linguistics Society.

Hurch, Bernhard, ed. 2005. *Studies on reduplication.* Berlin: Walter de Gruyter.

Ibarretxe-Antuñano, Iraide. 2017. "Basque ideophones from a typological perspective." *Canadian Journal of Linguistics/Revue Canadienne de Linguistique* 62(2), 196–220.

Ihemere, Kelechukwu U. 2006. "A basic description and analytic treatment of noun clauses in Nigerian Pidgin." *Nordic Journal of African Studies* 15(3).

Imai, Mutsumi, and Sotaro Kita. 2014. "The sound symbolism bootstrapping hypothesis for language acquisition and language evolution." *Philosophical Transactions of the Royal Society B: Biological Sciences* 369(1651), 296–313.

Isola, Ena. 1982. "Code-talking in Yoruba." *Journal of West African Languages* 12(4), 3.

Itô, Junko, Yoshihisa Kitagawa, and Armin Mester. 1996. "Prosodic faithfulness and correspondence: Evidence from a Japanese argot." *Journal of East Asian Linguistics* 5(3), 217–94.

Johansson, Niklas, and Jordan Zlatev. 2013. "Motivations for sound symbolism in spatial deixis: A typological study of 101 languages." *The Public Journal of Semiotics* 5(1), 1–20.

Jurafsky, Daniel. 1996. "Universal tendencies in the semantics of the diminutive." *Language*, 533–78.

Kahn, Daniel. 1976. *Syllable-based generalizations in English phonology*. PhD diss., Massachusetts Institute of Technology.

Kawahara, Shigeto. 2020. "Sound symbolism and theoretical phonology." *Language and Linguistics Compass* 14(8), e12372.

Kenstowicz, Michael. 2006. "Tone loans: the adaptation of English loanwords into Yoruba." In *Selected proceedings of the 35th Annual Conference on African Linguistics*, edited by Mugane, John, John P Hutchison, and Dee A Worman, p. 136–46. Somerville, MA.

Kerswill, Paul. 1996. "Children, adolescents, and language change." *Language Variation and Change* 8, 177–202.

Kita, Sotaro. 1997. "Two-dimensional semantic analysis of Japanese mimetics." *Linguistics* 35, 379–415.

Knoeferle, Klemens, Jixing Li, Emanuela Maggioni, and Charles Spence. 2017. "What drives sound symbolism? different acoustic cues underlie sound-size and sound-shape mappings." *Scientific Reports* 7(1), 1–11.

Körtvélyessy, Livia, and Pavol Štekauer, eds. 2011. "Diminutives and augmentatives in the languages of the world." *Lexis: Journal in English Lexicology* 6, 5–25.

Kosa, Loredana Andreea. 2008. *An argument for process-based morphology: subtractive morphology in Tohono Oodham (Uto-Aztecan)*. MA Thesis, Simon Fraser University.

Kouneli, Maria, and Yining Nie. 2021. "Across-the-board tonal polarity in Kipsigis: Implications for the morphology-phonology interface." *Language* 97(2), e111–38.

Kurisu, Kazutaka. 2001. *The phonology of morpheme realization*. PhD diss., Santa Cruz: University of California.

Lefkowitz, Natalie J. "Verlan: talking backwards in French." *The French Review* 63(2), 312–22.

Lehiste, Ilse, and Gordon E Peterson. 1959. "Vowel amplitude and phonemic stress in American English." *The Journal of the Acoustical Society of America* 31(4), 428–35.

McCarthy, John J, and Alan Prince. 1994. "An overview of Prosodic Morphology: Parts I and II." Tech. rep., Talks presented at the OTS/HIL Workshop on Prosodic Morphology, Utrecht.

McCarthy, John J, and Alan Prince. 1995. "Faithfulness and reduplicative identity." In *Papers in Optimality Theory*, edited by Beckman, Jill N, Laura Walsh Dickey, and Suzanne Urbanczyk, p. 249–384, Amherst: University of Massachusett, GLSA.

McWhorter, John H. 1998. "Identifying the creole prototype: Vindicating a typological class." *Language* 74(4), 788–818.

McWhorter, John H. 2001. "The world's simplest grammars are creole grammars." *Linguistic Typology* 5, 125–66.

McWhorter, John H. 2005. *Defining creole.* Oxford, UK: Oxford University Press.

Mielke, Jeff. 2008. *The emergence of distinctive features.* Oxford, UK: Oxford University Press.

Nielsen, Alan KS., and Mark, Dingemanse 2021. "Iconicity in word learning and beyond: A critical review." *Language and Speech* 641, 52–72.

Ofulue, Christine I. 2017. "Towards the standardisation of Naija: Vocabulary development and lexical expansion processes." *Journal of The Linguistic Association of Nigeria* 20(1), 1–9.

Ohala, John J. 1994. "The frequency code underlies the sound-symbolic use of voice pitch." In *Sound Symbolism*, edited by Hinton, Leanne, Johanna Nichols, and John J Ohala, p. 325–47. Cambridge: Cambridge University Press.

Okoth-Okombo, Duncan. 1982. *Dholuo morphophonemics in a generative framework.* Berlin: Dietrich Reimer Verlag.

Ozburn, Avery, and Murray Schellenberg. 2019. "Largonji des loucherbems: An optimality-theoretic analysis of a 19th century French." *Canadian Journal of Linguistics/Revue canadienne de linguistique* 64(3), 509–37.

Perniss, Pamela, Robin L Thompson, and Gabriella Vigliocco. 2010. "Iconicity as a general property of language: evidence from spoken and signed languages." *Frontiers in Psychology* 1, 227.

Perniss, Pamela, and Gabriella Vigliocco. 2014. "The bridge of iconicity: from a world of experience to the experience of language." *Philosophical Transactions of the Royal Society B: Biological Sciences* 369(1651), 20130300.

Pinker, Steven, and Ray Jackendoff. 2009. "The reality of a universal language faculty." *Behavioral and Brain Sciences* 32(5), 465–6.

Plag, Ingo. 2008. "Creoles as interlanguages: Inflectional morphology." *Journal of Pidgin and Creole Languages* 23(1), 114–35.

Plag, Ingo. 2009. "Creoles as interlanguages: Phonology." *Journal of Pidgin and Creole Languages* 24(1), 119–38.

Potts, Christopher. 2007. "The expressive dimension." *Theoretical Linguistics* 33(2), 165–97.

Pulleyblank, Douglas. 1986. *Tone in lexical phonology.* Dordrecht, Holland: D. Reidel Publishing Company.

Pulleyblank, Douglas. 2006. Minimizing UG: constraints upon constraints. In *Proceedings of WCCFL*, edited by Baumer, Donald, David Montero, and Michael Scanlon, Vol. 25, p. 15–39. Somerville, MA: Cascadilla Proceedings Project.

Pulleyblank, Douglas, and Akinbiyi Akinlabi. 1988. "Phrasal morphology in Yoruba." *Lingua* 74(2–3), 141–66.

Ramachandran, Vilayanur S, and Edward M. Hubbard. 2001. "Synaesthesia-a window into perception, thought and language." *Journal of Consciousness Studies* 8(12), 3–34.

Sapir, Edward. 1929. "A study in experimental symbolism." *Journal of Experimental Psychology* 12, 225–39.

Selkirk, Elisabeth. 1982. "The syllable.." In *The Structure of Phonological Representations*, edited by van Der Hulst, Harry, and Norval Smith, Vol. 2, p. 337–83. Dordrecht: Fortis.

Selkirk, Elisabeth. 1986. *Phonology and syntax: the relationship between sound and structure*. PhD diss., Massachusetts Institute of Technology.

Selkirk, Elisabeth. 2011. "The syntax-phonology interface." In *The Handbook of Phonological Theory*, edited by Goldsmith, John A, Vol. 2, p. 435–83. Malden, MA: Wiley-Blackwell.

Siegel, Jeff. 2004. "Morphological simplicity in pidgins and creoles." *Journal of Pidgin & Creole Languages* 19(1), 139–62.

Titze, Ingo R. 1989. "Physiologic and acoustic differences between male and female voices." *The Journal of the Acoustical Society of America* 85(4), 1699–707.

Voeltz, FK Erhard, and Christa Kilian-Hatz, eds. 2001. *Ideophones*, Vol. 44. Amsterdam: John Benjamins.

Williamson, Kay. 1984. *Practical orthography in Nigeria*. Ibadan: Heinemann Educational Books.

Winter, Bodo, Márton Sóskuthy, Marcus Perlman, and Mark Dingemanse. 2022. "Trilled/r/is associated with roughness, linking sound and touch across spoken languages." *Scientific Reports* 12(1), 1035.

Wunderlich, Dieter. 2012. "Polarity and constraints on paradigmatic distinctness." In *The Morphology and Phonology of Exponence*, edited by Trommer, Jochen, p. 160–94. Oxford, UK: Oxford University Press.

Yakpo, Kofi. 2021. "Creole prosodic systems are areal, not simple." *Frontiers in Psychology* 12, 690593.

Zoll, Cheryl Cydney. 2003. "Optimal tone mapping." *Linguistic Inquiry* 34(2), 225–68.

Zwicky, Arnold M, and Geoffrey K. Pullum. 1987. "Plain morphology and expressive morphology." In *Berkeley Linguistics Society: Proceedings of the Thirteenth Annual Meeting*, edited by Aske, Jon, Natasha Beery, Laura Michaelis, and Hana Filip, Vol. 13, p. 330–40. Berkeley, California: Berkeley Linguistics Society.

Appendix: Tone contrast in Naijá

(31) Tonal minimal pairs

a.	dé	'exist'	dè	IMPERFECTIVE	
	dɛ́m	'them'	dɛ̀m	'they'	
	gó	'go'	gò	'will'	
	tú	'two'	tù	'to' PREPOSITION	
	bí	NONCE WORD	bì	'be' COPULA	
b.	pɛ́pɛ̀	'pepper'			
	dʒígì	'party'	dʒìgì	'to shake' IDEOPHONE	
	wɔ́rì	'worry'	wòrí	'Warri (a city in Delta State)'	
	òkpó	'sex worker'	òkpò	NONCE WORD	
	lètè	'food'	létè	NONCE WORD	
			lɛ́tɛ́	NONCE WORD	
			lètɛ́	NONCE WORD	