

**Morphological Causatives in ChiBarwe:
An LMT Analysis**

JLLE
Vol 19(1) 97–107
© The Publisher
DOI:10.56279/jlle.v19i1.8

Tendai Chirimaunga¹
ORCID: 0009-0006-5850-7914

Abstract

The distinguishing characteristic that makes Bantu languages well known is their robust morphology, which is characterised by the complex concatenation of morphemes to form words. This paper analyses morphological causatives in ChiBarwe. Morphological causatives are verb forms that express causation through morphological modifications, such as affixation, rather than separate auxiliary verbs or periphrastic constructions. ChiBarwe, a Bantu language spoken in the north-eastern parts of Nyanga District in Zimbabwe, has a rich and complex verbal system in which verbal suffixations play a central role in changing the valency of a verb. Data for this research were collected using a questionnaire, in-depth interviews, Focus Group Discussions (FGDs), the ChiBarwe Language Database, and intuition/introspection, since the researcher is a ChiBarwe speaker. Guided by lexical mapping theory, the data were analysed qualitatively. The argument avowed in this paper is that the ChiBarwe morphological causative takes a distinct phonetic shape which can be categorised into long and short causatives.

Keywords: *ChiBarwe, morphology, causative, morpheme, affixation*

Introduction

One of the ways in which Bantu languages extend the semantics of verbs is through affixing a number of inflectional or derivational affixes whose ordering must be stipulated through the use of position class morphology (Zemba, 2022). One of these affixes is verbal extensions, attached to the right of the verb root. As Khumalo (2014) points out, these verbal extensions differ in shape, syntactic function and meaning. Similarly, Matambirofa (2010) describes all the verbal extensions, which he says are distinguished from the other by (i) their shape, (ii) meaning, and (iii) syntactic function. Out of these, shape and meaning are said to be obtained subtractively, whilst syntactic function is said to be obtained by some form of transformation. Although there is a paucity of literature on ChiBarwe verbal morphology, present studies have shown that ChiBarwe, just like other Bantu languages, has a lot of verbal extensions which include the applicative, causative, intensive, stative, reciprocal, reversive, passive, associative, extensive, impositive, repetitive, and contactive (Mangoya, 2012 & Chirimaunga, 2013). Mberi (2002) proposed a model that can be used for analysing Shona verbal affixes, which in my view applies to ChiBarwe as well. He suggests a paradigm consisting of thirteen slots that can accommodate various verbal grammatical elements or morphemes, in which the verbal extension, where the causative falls, is one of them.

The present study is an investigation of the morphological causative in ChiBarwe under the guidance of the Lexical Mapping Theory (henceforth LMT). Morphological causatives are taken here to refer to causative verbs that are a result of a regular and productive word formation process of combining a non-causative verb and a causative suffix or verbal extension (Karimjonova, 2024). The causative construction, together with the applicative, is regarded as highly productive and is a valency-increasing affixation (Matambirofa, 2010 & Chabata, 2007). This implies that the causative suffix increases the number of arguments a verb can take, effectively expanding the verb's valency (i.e., the number of participants in the action). Researchers such as Nyota (2002), Mashiri and Warinda (1999), Chabata (2007), Mabugu (2001) and Matambirofa (2003, 2010) have examined the causative extension and other verbal extensions within the context of descriptive Shona grammar. Our examination of morphological causative affixes draws from the

¹ **Corresponding author:**

Tendai Chirimaunga, National Language Institute, Midlands State University, Zimbabwe. E-mail chirimaungat@staff.msu.ac.zw and tendaichirimaunga343@gmail.com

insights gained from these pioneering studies of Shona grammar. This is because there is a relatively higher degree of mutual intelligibility between ChiBarwe and Shona (Chirimaunga, 2025; Magwa, 2021; Mangoya, 2012; and Hachipola, 1998).

Objectives

This study sought to identify the morphemes of ChiBarwe morphological causatives and examine the allomorphic variations of the ChiBarwe morphological causatives. The study was guided by the theory described below.

Theoretical Perspective

This study gets insight from the Lexical Mapping Theory (LMT), a sub-theory of the Lexical Functional Grammar (LFG). The discussion is based on what has been articulated about this theory by such scholars as Lødrup (2006), Bresnan and Kanerva (1989), Bresnan and Moshi (1990), Alsina (1992, 1994, 1996), Alsina and Joshi (1991), Alsina and Mchombo (1988, 1990, 1991, 1993), Mchombo (1993), Falk (2001), Harford (1993) and Matambirofa (2003), among others. Bresnan (2001) postulates that the Lexical-Functional Grammar (LFG) was established and used to consider data from many languages across the world, including the Bantu ones. In this theory, verbal affixes are viewed as indicators of morphological operations that use lexical rules to the argument structure of a given verb stem. LFG takes verbal extensions as lexical processes; this signifies that they are handled like any other lexical process, including nominalisation. This element and the application of a mapping theory make LFG more interesting to explain morphological data from Bantu languages such as ChiBarwe. As noted by Chabata (2007), the LMT can best be described as a lexicalist theory, meaning that it recognises the syntactic importance of the information that derives from the lexicon. It has been described by Bresnan and Kanerva (1989) as the correspondence between thematic structure and syntactic functions.

Under the LMT, the idea is that argument structure (a-structure) plays a pivotal role in the mapping between thematic roles and grammatical functions. This means LMT deals with grammatical function changes and is about the syntactic realisation of a predicate's arguments. LMT gives simple and general principles that account for the syntactic valency of a predicator based on its argument structure (Lødrup, 2006). This a-structure can be described as a list of the thematic roles of a predicator (Jerro, 2023 & Nordlinger, 2023). It is derived from the predicator's lexical semantics and is used to derive its syntactic valency (Chabata, 2007 & Matambirofa, 2010). The Lexical Mapping Theory (LMT) is relevant in studying morphological causatives in ChiBarwe as it provides a structured framework for analysing how arguments are introduced and mapped onto syntactic functions. LMT helps explain how the ChiBarwe causative affixes, such as *-es-* and *-is-*, and the hypothetical *-y-* affect argument structure and alter the valency of the verb. Conceived this way, LMT becomes the relevant theory in the analysis of the morphology of ChiBarwe causatives since a-structure is an interface between semantics and syntax.

Methods

The data for the study were collected from thirty (30) informants who took part in the study based on being ChiBarwe speakers. The informants were high school students, language academics, and language teachers who were fluent ChiBarwe speakers. The study also drew on data collected through questionnaires, in-depth interviews, and Focus Group Discussions (FGDs), which provided insights into native speakers' perceptions, usage patterns, and interpretations of morphological causatives in ChiBarwe. These methods facilitated the elicitation of targeted linguistic forms and allowed for cross-speaker validation. Primary data were also collected using a corpus-based analysis of the ChiBarwe Language Database as well as written ChiBarwe texts. The ChiBarwe Language Database was consulted to extract relevant verb forms and confirm patterns of causative morphology across a broader corpus of naturally occurring language use.

In this study, data on morphological causatives in ChiBarwe were collected using both linguistic intuition and discourse analysis. As a fluent speaker of ChiBarwe, the researcher relied on introspective knowledge to make informed judgments about the grammaticality, acceptability, and semantic appropriateness of causative constructions. Thus, before embarking on data collection, the principal researcher had the advantage of being a ChiBarwe speaker. Kadenge (2007) notes that there is an added advantage to the linguist who researches a language that he or she is familiar with. This means that, when a researcher has

some knowledge of the linguistic operations of a language, he will be in a better position to appreciate the underlying grammatical patterns in that language.

In the analysis of data, the study made use of qualitative approaches. Data from questionnaires, in-depth interviews, and FGDs were transcribed and analysed together with that collected from documents. Open coding was used through the identification of affixations used in ChiBarwe. The verb roots were coded VR, final vowel (FV), and causative extension (CAUS), to mention just a few. To abide by ethical issues, the researcher received informed consent from respondents to take part in interviews, FGDs, or questionnaires. Another ethical issue adhered to was not revealing the identities of the participants whose messages were analysed in this study. This was a necessary measure to protect all members from possible harm should their names be exposed. Consequently, the researcher read various works and recorded the different forms and functions of causative extensions. The data were then classified thematically to generate the findings.

Contextualising Morphological Causatives in ChiBarwe

When investigating causative constructions in Bantu and non-Bantu languages, it has become a tradition to differentiate the various types of causatives that might be observed in any given language. A cross-linguistic analysis (e.g., Comrie, 1976, 1981, 1985; Kroeger, 2004; Chabata, 2007; Matambirofa, 2010, among others) has revealed that three categories of causative constructions may be identified and distinguished in most languages. These comprise the analytic, the lexical, and the morphological causatives. As noted by Matambirofa (2003), the differentiation between these three types of causatives is mostly determined by the expression or surface representation of causation in the grammar of various languages. Although our main interest in this study is on the morphological causative, the researcher finds it necessary to also briefly look at the other types as a way of enhancing our understanding of the morphological type. There are three categories of causatives, which are analytic (or periphrastic), morphological (or synthetic), and lexical causatives.

Analytic Causatives

In the analysis of ChiBarwe causatives, analytic causatives use regular syntactic devices to express causation through what Guasti (2006) refers to as the formation of complex sentences from simple sentences. The following English examples are given by Comrie (1985:331) as an illustration of a complex causative sentence;

- (1) Mary made Sam slide the door.

In this instance, the primary verb, *made*, denotes causation, as demonstrated by the sentence; the causative verb *made* and the non-causative verb *slide* are two separate predicates that are interconnected under the same causative event in which they participate. In ChiBarwe, analytic causatives appear to be lengthy and cumbersome in expression as compared to the more convenient morphological ones. This is what made Comrie (1981:167) resonate that, in terms of frequency of occurrence, cross-linguistically, and in terms of naturalness of use within individual languages, such pure analytic causatives are relatively rare. In ChiBarwe, the following examples can be used to illustrate analytic causatives;

- (2) (a) Sekuru wa-da-it-a *kuti* ti-dy-e chi-ngwa
1a-Uncle S-PST-do-FV COMPL S-eat-FV 7-bread
'Uncle made us eat bread.'
- (b) Mbuya wa-da-it-a *kuti* mw-ana a-teng-e u-fu
1a-Grandmother S-PST-do-FV COMPL 1-child-buy-FV 14-mealie meal 'Grandmother made the child buy mealie meal.'

The two sentences in 2(a) and 2(b) demonstrate the employment of the verb *-ita* 'do' acts as the matrix verb which conveys its causative action to the embedded predicate inside the sentential complement phrase, led by the complementiser *kuti* 'that'. Since causativity is conveyed through two separate clausal units, syntactically these types of causatives are known as bicausal causatives (Chabata, 2007). ChiBarwe and other Bantu languages generally prefer to express causativity through the use of morphological causatives rather than analytical causatives.

Lexical Causatives

Another type of causative that has gained a lot of attention historically is the lexical causative. As noted by Chabata (2007), lexical causatives are the type of causatives that are expressed by single-word forms that do not have extensions attached to them. For this reason, they are said to be expressed by 'zero morphology.' Matambirofa (2010) notes that, as implicit as the term itself, lexical causatives express causativity by using a predicate whose semantics already includes causation. Matambirofa (ibid) further gives an over-cited English example of the lexical causative which is the verb *kill*. He argues that in causative terms, it has double verbs, which are; *cause* and *die*. This observation made Comrie (1985:331) relate the two predicates in the following manner, '*kill*' is thus the lexical causative of '*die*.' This makes the lexical causative fairly complex in terms of its conceptualisation and comprehension. The ChiBarwe equivalent of the verb *kill*, that is, *-uraya*, can also be an example of a lexical causative in this language. Like *kill*, *-uraya* also has the 'cause' and 'result' senses inherent in its meaning. In ChiBarwe, lexical causatives are infrequently used, possibly due to the widespread utilisation of morphological causatives.

Morphological Causatives

The morphological or synthetic causative is the third type of causative in ChiBarwe. As previously said, morphological causatives are our primary focus because of their suitability for grammatical analysis within LMT. ChiBarwe, just like other Bantu languages, marks causativisation with an affix or morpheme (cf. Mangoya, 2012). For this reason, ChiBarwe morphological causatives are monocausal, and Polinsky (1994:136) describes monocausal causatives as ones in which the causative verb and the embedded verb represent a single syntactic unit. They are the 'opposite' of the bicausal causatives that have already been defined above. The following ChiBarwe examples are an illustration of morphological causatives, where causativity is achieved through the attachment of a causative affix to the base verb.

- | | | |
|---------|---|-----------------|
| (3) (a) | Chinheya a-mw-a madzi
1a-Chinheya S-PST-drink-FV-water
'Chinheya drank water.' | [non-causative] |
| (b) | Tongesai a-mw-is-a Chinheya madzi
1a-Tongesai S-PST-drink-CAUS-FV 1a-Chinheya 9-water
'Tongesai made Chinheya drink water.' | [causative] |

The sentences in (3) are paired according to the non-causative and causative variations, respectively. Examples 3(a) and 3(b) illustrate morphological causatives in ChiBarwe through the causative suffix *-is-*. In 3(a), the verb *-mw-a* 'drink' is non-causative, with Chinheya as the subject and *madzi* 'water' as the object. In 3(b), the causative *-mw-is-a* 'cause to drink' introduces an additional agent, Tongesai, who causes Chinheya to act. The causative suffix *-is-* increases valency by adding an external argument (the causer). ChiBarwe and other Bantu languages generally prefer to express causativity through the use of morphological causatives rather than periphrastic (analytical) or lexical strategies. This preference is due to the language's rich agglutinative morphology, which allows causative meaning to be integrated directly into the verb structure.

Findings and Discussion

This study analysed two hundred (200) verbs that were extracted from questionnaire responses. Each verb was tested for its semantic compatibility with the causative affix to systematically assess whether ChiBarwe verbs can naturally take the causative affix without altering their meaning or grammaticality. Five ChiBarwe speakers participated and agreed to determine the semantic compatibility of the causative. The involvement of mother-tongue speakers ensured linguistic accuracy and validated the semantic compatibility of each affix. In doing so, the infinitive form of the verb is the one that was chosen for semantic compatibility testing, as it is highly recommended for identifying various post-root forms of Bantu verbs.

Morphological Causatives in ChiBarwe

After the analysis of the 200 verbs extracted from the questionnaires on the causative extension in ChiBarwe, a variety of forms of the causative extension were identified, which the researcher classified into long (regular) and short (irregular) causatives depending on their morpho-phonological shapes and morpho-phonemic alterations. However, it needs to be pointed out from the onset that, regardless of the different morpho-phonological shapes taken by morphological causatives in ChiBarwe, their general

semantic effect is 'to cause to act', 'to make to act'. Put differently, the causatively extended verb stem indicates that the action in question is being caused or brought about by one agent on another. From the data collected, the researcher distinguishes two types of morphological causative morphemes in ChiBarwe, that is, the long causative morphemes (realised by two affixes, that is, -is- and -es-, in which the phonetic shape of each allomorph is determined by the phonological environment under which it operates such as vowel harmony) and the short causatives (represented by the hypothetical form -y-, which denotes the causative affix in a series of morphophonemic changes that ensue at the radical-extension boundary). As noted by Chabata (2007), the form -y- is termed hypothetical because it is not directly attested as an independent morpheme in surface forms but is posited based on patterns of morphophonemic alternations observed at the radical-extension boundary. This is reinforced by Aronoff (1994) and Kenstowicz (1994) when they assert that its existence [the hypothetical-y-] is inferred from systematic phonological changes rather than from clear-cut overt realisations in the data, a practice supported in generative morphology where underlying morphemes are reconstructed from surface alternations.

The Morphology of Long Causatives in ChiBarwe

In ChiBarwe morphological causatives, causativity primarily manifests in two morpho-phonological shapes, which are -is- and -es-. These morphemes are also regarded as long causative and are complementary. The existence of two long causative morphemes exhibits allomorphs in ChiBarwe, where the phonetic shape of each allomorph is determined by the phonological environment under which it operates, such as vowel harmony and verb root final sound. Put differently, these two causative forms are phonologically conditioned and interact with the verb root based on vowel harmony and phonotactic constraints. Research data reveals that the morpheme -is- occurs when the last vowel of the verb root is /a/, /i/, or /u/ and with consonant verb roots, whilst -es- occurs when the last vowel of the verb root is /e/ or /o/. The examples below illustrate the formation of long morphological causative extensions in ChiBarwe by attaching to the base verb the causative affix -is- and -es- as in examples (4) and (5) respectively.

- | | | | | |
|-----|-----|---------------------------------|---|---|
| (4) | (a) | -dy-a
-eat-FV
'eat' | → | -dy-is-a
-cause to eat-CAUS-FV
'cause to eat' |
| | (b) | -bat-a
-catch-FV
'catch' | → | -bat-is-a
-catch-CAUS-FV
'cause to catch' |
| | (c) | -gar-a
-sit-FV
'sit' | → | -gar-is-a
-sit- CAUS-FV
'cause to sit' |
| (5) | (a) | -cher-a
-fetch-FV
'fetch' | → | -cher-es-a
-fetch-CAUS-FV
'cause to fetch' |
| | (b) | -chek-a
-cut-FV
'cut' | → | -chek-es-a
-cut-CAUS-FV
'cause to cut' |
| | (c) | -tor-a
-take-FV
'take' | → | -tor-es-a
-take-CAUS-FV
'cause to take' |

The examples in (4) and (5) illustrate the formation of long causatives by affixing the causative affix -is- and -es-, which depends on vowel harmony. Jerro (2023) notes that vowel harmony is a process where the vowels in the causative affix harmonise or match the vowels in the verb root based on certain phonological features. This pattern confirms Chabata's (2007), Mabugu's (2006), and Matambirofa's (2010) observation that the causative affix -es- is associated with verb roots containing the vowels [e] and [o], whereas the

form -is- is compatible with [a], [i], and [u]. The harmonisation of vowels in the morphology of ChiBarwe causative extensions is presented in the table below.

Table 1: Vowel Harmony in ChiBarwe Long Causative Extensions

Penultimate vowels		is realised as
i	u	> -is-
e	o	> -es-
a		> -is-

Table 1 above summarises the results arising from the formation of causatives in ChiBarwe as presented in examples (4) and (5) above. In these instances, the verb roots with penultimate vowels [a], [i], and [u] are compatible with the -is- causative form as in example 4(a-c). This differs from verb roots with penultimate vowels [e] and [o], which are compatible with -es- causative affix as demonstrated in examples 5(a-c). From the analysis of 200 verbs used to test the semantic compatibility of the causative extensions in this research, it can be asserted that more verbs adopt the -is- affix than those that conform to the -es- causative affix in ChiBarwe. Consequently, this leads the researcher to designate -is- as the main ChiBarwe causative affix, and -es- is automatically relegated to the status of an allomorph.

The basis for treating -is- as the main causative morpheme and -es- as its allomorph is grounded in the principle of Elsewhere and Restricted Condition, a concept widely discussed in morphophonology and morphology (Aronoff, 2023). According to this principle, when multiple morphophonological rules or allomorphs apply, the more specific (or restricted) form surfaces only in narrowly defined environments, while the more general (or default) form applies elsewhere. In ChiBarwe, the -es- form is restricted to verb roots with penultimate vowels [e] and [o], making it the more specific allomorph. Conversely, the -is- form occurs in a wider range of environments, that is, [a], [i], [u], and is therefore considered the default or elsewhere morpheme. It should be highlighted, however, that this allomorphic difference between -is- and -es- in ChiBarwe does not possess any significant implications for the functional structures of ChiBarwe causatives.

The Morphology of Short Causatives in ChiBarwe

Findings also indicated that apart from the long or regular causatives, ChiBarwe has a wide range of other allomorphic realisations due to spirantisation, or being sensitive to the phonological value of the last consonant of the verb root that the causative affix attaches to. The causative affixes falling under the short causative category in ChiBarwe are /-dz-, -ts-, -s-, -ng-, -nz-, -edz-, and -idz-/ which, as previously highlighted, are a result of morphophonemic changes and spirantisation. Mudzingwa (2010) describes morphophonemic changes as the change that usually occurs at morpheme boundaries and involves sounds that are associated with separate phonemes. On the other hand, the phonological process of spirantisation is described by Bostoen (2008) as the sound change in Bantu languages where obstruent sounds such as stops and fricatives, change into fricative sounds such as 'f' and 's' when preceding high vowels such as 'i' and 'u', as illustrated in Figure 1. Following these morphophonemic changes and phonological processes, the causative consonant-extensions correlations in ChiBarwe short causatives are demonstrated in Table 2 below.

Table 2: Causative Consonant-extension Correlations

Root Consonant	Shape of the Causative Consonant
-r-	-dz- / -z-
-t-	-ts- / -s-
-k-	-ts- / -s-
-b-	-s-
-p-	-idz- / -iz-
-k-	-idz- / -iz-
-nd-	-nz-
-y-	-nz-

-ng-

-edz- / -ez-

Table 2 shows the morphological realisation of short causatives in ChiBarwe and reveals a highly systematic and phonologically conditioned pattern of allomorphy that aligns with the broader spirantisation process in Bantu languages. As elaborated by Bostoen and Downing (2017), it is a diachronic and synchronic phenomenon whereby voiceless stops in ChiBarwe, particularly /p/, /t/, and /k/, undergo sound change, surfacing as fricatives or affricates at morpheme boundaries. This process usually occurs in morphologically complex environments, particularly where verbal extensions, such as causatives, interact with verb stems. The examples above show consonant-extension correlations in ChiBarwe morphological causatives. From these examples, verb roots ending with the consonant -r- are extended by the extension -dz- or -z- while verb roots ending with consonants -k- and -t- are extended by the causative morpheme -ts- or -s-. Verb roots ending with consonant -b- and -p- are extended by -s- and -idz- or -iz- respectively. On the other hand, the verb roots ending with consonant -ng-, -nd-, and -y- are extended by the causative extension -nz-, while -ng- also takes -ez- as its allomorph.

In examining the morphology of short causatives in ChiBarwe, a notable characteristic is the use of a causative marker traditionally labelled as -y-, which, paradoxically, never surfaces phonetically. As observed by Matambirofa (2010) and Jefferies (2000:11), -y- functions as an abstract or underlying morpheme that “never appears,” yet it underlies and supports a variety of phonologically realised allomorphs. These include allomorphs such as -ts-, -s-, -z-, -dz-, -idz-, -edz-, and -nz-, which appear in restricted phonological environments, often determined by the final consonant of the verb root. These allomorphs typically occur with roots ending in consonants such as -k-, -r-, -p-, -b-, -nd-, and -ng-, as illustrated in Figure 2. This phenomenon is best explained through the lens of the process of Y-absorption. The Y-absorption, as noted by Bostoen and Downing (2017), is a historical and synchronic phonological process whereby the causative morpheme that is originally realised as -i- or -y- is absorbed into the final consonant of the verb root. This absorption does not simply result in deletion but rather triggers spirantisation or affrication of the root-final consonant. For example, a root ending in -k- may surface with a causative form like -ts-, derived from the fusion of -k- and the absorbed -y- element. Likewise, -p- + -y- may result in -s-, and -b- + -y- in -z-, as part of this phonologically conditioned alternation. The use of -y- as a placeholder for a set of morphophonemic processes is therefore a reflection of deep structure morphology. It serves as a theoretical representation of causativity whose realisation is entirely determined by the phonological context at the morpheme boundary.

Following Matambirofa (2010) and other traditional descriptive grammarians, the researcher also refers to this group of short causative extensions as -y- causatives in contradistinction to long causatives such as -is- and -es- that we have referred to as regular causatives. Concerning these short causatives in ChiBarwe, their form or shape is therefore realised as -y-, which is hypothetical and is used to represent the causative morpheme in a series of spirantisation and morphophonemic changes that occur at the boundary where the verb root and the extension meet. Examples (6) to (11) below illustrate the morphology of short causatives in ChiBarwe. To begin with, as it has been noted previously, the morpheme -ts-/s- is one of the many allomorphs that are used to denote causativity in ChiBarwe. This allomorphic variation is illustrated in example (6) below.

- | | | | | | |
|-----|-----|--|---|---|-----------|
| (6) | (a) | -net-a
-get tired-FV
'get tired' | → | -ne-ts-a (-net-y-a)
-get tired- CAUS-FV
'cause to get tired' | [-ts-] |
| | (b) | -muk-a
-stand up-FV
'stand up' | → | -mu-ts-a / mu-s-a (-muk-y-a)
-stand up- CAUS-FV
'cause to stand up' | [-ts-/s-] |

Example (6) illustrates the use of -ts- as the short causative suffix in ChiBarwe and also exhibits important morphological and morphophonemic changes. A notable morphophonemic phenomenon observed in these examples is the shift of root-final voiceless stops /t-/ and /k-/ to the affricate /ts-/ when followed by a causative extension. This pattern is exemplified by verb pairs such as *ku-gut-a* 'to be satisfied'

and *ku-gu-ts-a* 'to cause to be satisfied', or *ku-muk-a* 'to wake up' and *ku-mu-ts-a* 'to cause to wake up'. The underlying cause of this alternation lies in the interaction between the verb root and the abstract causative morpheme historically reconstructed as *-i-* or *-y-*. Although this causative morpheme does not surface phonetically in these constructions, its presence is phonologically active. Following the process known as *-y-* absorption, the high front glide /-y-/ is absorbed into the preceding consonant at the morpheme boundary, resulting in palatalisation and the emergence of the affricate /-ts-/. This aligns with the broader phenomenon of spirantisation. In this context, the causative meaning is retained while the phonological form adapts to satisfy articulatory ease and maintain structural regularity. The resulting surface forms reflect a productive and predictable morphophonological process, confirming that the variation is not arbitrary but grounded in the interaction between morphology and phonology within Bantu verbal extension systems.

Under short causatives in ChiBarwe, the allomorph, -nz- is also used when the root final consonant ends with -nd-. This form of morphological causatives can be illustrated by the example (7) below.

- | | | | | | |
|-----|-----|--|---|---|--------|
| (7) | (a) | -wand-a
-be many-FV
'increase in number' | → | -wa-nz-a (-wand-y-a)
-be many-CAUS-FV
'cause to increase in number' | [-nz-] |
| | (b) | -pind-a
-enter-FV
'enter' | → | -pi-nz-a (-pind-y-a)
-enter-CAUS-FV
'cause to enter' | [-nz-] |

Examples 7(a) and 7(b) show the use of the allomorph *-nz-* as a short causative affix in ChiBarwe, as a result of morphophonemic changes. The causative morpheme in this case surfaces as *-nz-*, showing nasal assimilation and consonant alternation. In this case, example 7(b) shows that the nasal consonant changes its place of articulation to match that of the following sound. For instance, the morphophonemic change from *-pind-a* ‘enter’ to *-pin-nz-a* ‘cause to enter’ the final *-d-* of the root assimilates to the nasal *-n-* in the causative suffix. This morphophonemic alternation aligns with common Bantu phonotactic constraints, where certain consonants fortify or assimilate when combined with causative affixes (Bostoen & Guerois, 2022).

Morphological causatives in ChiBarwe also manifest in the form of /-s-/ , a short causative allomorph that emerges from morphophonemic changes involving verb roots whose final consonants are /-r-/ or /-b-/ . This phonological alternation is not arbitrary but follows a systematic pattern consistent with the principles of spirantisation. In particular, the historical causative morpheme -i- or its abstract variant -y- interacts with the final consonant of the verb root, resulting in the fricativisation of that consonant. For example, /-b-/ may spirantise to /-s-/ or /-z-/ , while /-r-/ , an alveolar approximant, may similarly condition the emergence of /-s-/ in the causative form. These alternations represent a case of Y-absorption, where the causative morpheme does not surface directly but instead induces a predictable phonological shift in the stem-final consonant. The use of this morpheme to show causativity is exemplified below.

- | | | | | | |
|-----|-----|--------------------------------|---|---|-------|
| (8) | (a) | -mir-a
-stand-FV
'stand' | → | -mi-s-a (-mir-y-a)
-stand- CAUS-FV
'cause to stand' | [-s-] |
| | (b) | -b-a
-steal-FV
'steal' | → | -bi-s-a (-bir-y-a)
-steal-CAUS-FV
'cause to steal' | [-s-] |

Example (8) illustrates the realisation of /s-/ as a short causative extension in ChiBarwe, derived through morphophonemic adjustments involving fricativisation. In both 8(a) and 8(b), the verb roots *-mir-* 'stand' and *-b-* 'steal' undergo phonological modification upon the addition of the causative morpheme. In 8(a), *-mir-a* becomes *-mi-s-a*, with the final consonant /r/ of the root disappearing and being replaced by the causative affix /s-/. This is a classic case of spirantisation, where the approximant /r/ is lost and the causative morpheme triggers the insertion of a voiceless alveolar fricative /s/ at the morpheme boundary. Similarly, in 8(b), *-b-a* 'steal' becomes *-bi-s-a* 'cause to steal'. The bilabial stop /b/ co-occurs with the underlying

causative *-y-* morpheme (hypothetically reconstructed as *-bir-y-a*), which leads to fricativisation and surface realisation as */s-/*. These examples provide compelling evidence for the operation of spirantisation in ChiBarwe and prove that this morphophonemic process is a key characteristic of short causatives in the language, and highlight the crucial role of phonological environment in shaping causative morphology.

Lastly, the short causative morpheme *-dz-* is used to show causative extension in ChiBarwe and is mainly associated with an initial vowel [e] or [i] to give the allomorphic variations */edz-/* and */idz-/*, which, depending on dialectal variation, can be realised as */z-*, *-ez-* or *-iz-* as in the examples (9), (10) and (11) below.

(9)	(a)	<i>-por-a</i> -cool down-FV 'cool down'	→	<i>-po-z-a / -po-dz-a (-por-y-a)</i> -cool down- CAUS-FV 'cause to cool down'	[<i>-z-/ -dz-</i>]
	(b)	<i>-rir-a</i> -cry-FV 'cry'	→	<i>-ri-z-a / -ri-dz-a (-rir-y-a)</i> -cry- CAUS-FV 'cause to cry'	[<i>-z-/ -dz-</i>]
(10)	(a)	<i>-rong-a</i> -arrange-FV 'arrange'	→	<i>-rong-ez-a / -rong-edz-a (-rong-y-a)</i> -arrange-CAUS-FV 'cause to be arranged'	[<i>-ez-/ -edz-</i>]
	(b)	<i>-pember-a</i> -celebrate-FV 'celebrate'	→	<i>pemb-ez-a / -pemb-edz-a (pemb-y-a)</i> -celebrate-CAUS-FV 'cause to celebrate'	[<i>-ez-/ -edz-</i>]
(11)	(a)	<i>-fuk-a</i> -cover-FV 'cover'	→	<i>-fuk-iz-a / -fuk-idz-a (-fuk-y-a)</i> -cover- CAUS-FV 'cause to cover'	[<i>-iz-/ -idz-</i>]
	(b)	<i>-svip-a</i> -dirty-FV 'dirty'	→	<i>-svip-iz-a / -svip-idz-a (-svip-y-a)</i> -dirty- CAUS-FV 'cause to be dirty'	[<i>-iz-/ -idz-</i>]

Examples (9) to (11), illustrate how the causative meaning is consistently expressed through a set of spirantised and affricated allomorphs derived from an underlying causative morpheme commonly reconstructed in Bantu linguistics as *-i-* or *-y-*. In example (9), the verb roots *-por-* 'cool down' and *-rir-* 'cry' yield causative forms *-poz-a / -podz-a* 'cause to cool down' and *-riz-a / -ridz-a* 'cause to cry' respectively. Here, the presence of the causative morpheme triggers spirantisation or affrication of the final consonant */r/*, resulting in its transformation into either the voiced fricative */z/* or the voiced affricate */dz/*. These surface forms are phonologically motivated, arising from the fusion of the final consonant with the abstract causative *-y-* element, a process known as *-y-* absorption. This absorption initiates a morphophonemic reaction, where the glide coalesces with the root-final consonant to produce a new phoneme that satisfies both phonotactic constraints and the causative semantic function.

Further examples are found in (10), where verb roots ending in velar nasals and approximants, such as *-rong-* 'arrange' and *-pember-* 'celebrate', produce causative forms such as *-rong-ez-a / -rong-edz-a* 'cause to arrange' and *-pemb-ez-a / -pemb-edz-a* 'cause to celebrate'. These outputs demonstrate the sound change of nasals and their compatibility with vowel-initial causative suffixes. The emergence of */ez-/* and */edz-/* in these environments suggests that the nasal consonants weaken or assimilate into the causative morpheme, leading to the surfacing of fricative or affricate allomorphs. These outcomes are characteristic of spirantisation processes, especially in cases where the root ends in a segment that facilitates co-articulatory transitions with a following high front vowel or glide.

Example (11) extends the analysis to voiceless stops, with roots such as *-fuk-* 'cover' and *-svip-* 'dirty' forming *-fuk-iz-a / -fuk-idz-a* 'cause to cover' and *-svip-iz-a / -svip-idz-* 'cause to be dirty'. The alternation

between /-iz-/ and /-idz-/ again reflects a spirantisation process conditioned by the root-final consonants. When the abstract causative -y- attaches to voiceless stops like /k/ and /p/, affrication occurs as an intermediate stage, followed in some dialects by further changes to voiced forms. The choice between /-iz-/ and /-idz-/ appears to be governed by dialectal variation or speech rate, yet in all cases the causative meaning remains constant, reinforcing the notion that the variation is phonological rather than morphological.

These examples collectively illustrate that the morphological causative construction in ChiBarwe is underpinned by regular, phonologically governed processes, rather than arbitrary or lexically determined affixation. The abstract causative morpheme -y-, though not directly realised, exerts a consistent morphophonemic influence on root-final consonants, yielding surface forms that conform to patterns observed across Bantu languages. As Bostoen and Downing (2017) argue, spirantisation in Bantu languages is not merely a historical relic but a synchronically active and rule-governed phonological process. In ChiBarwe, this process operates predictably in the formation of short causatives, resulting in a diverse but explainable array of allomorphic extensions such as /-s-/ , /-z-/ , /-ts-/ , /-dz-/ , /-iz-/ , /-ez-/ , all traceable to a unified underlying morphological mechanism. These findings further demonstrate how phonological structure interacts with morphological derivation to produce the observed variation in causative constructions, affirming the centrality of spirantisation in understanding Bantu verbal extension systems.

Conclusion

This study examined morphological causatives in ChiBarwe, focusing on the form and distribution of long and short causative morphemes. Findings reveal that ChiBarwe, like many Bantu languages, expresses causation through the affixation of -is- and -es-, classified as long, regular causatives. These morphemes show phonologically conditioned allomorphy, influenced by vowel harmony and the phonetic shape of the verb root. Additionally, the language exhibits a range of short causative forms such as -edz-, -idz-, -dz-, -ts-, -s-, and -nz-, which arise through morphophonemic processes at the root-extension boundary. These short forms under the abstract causative -y-, do not appear phonetically but trigger systematic consonant alternations. This aligns with spirantisation, where root-final consonants such as /t/, /k/, /b/, and /r/ undergo spirantisation or affrication due to Y-absorption. The result is a productive set of phonologically driven causative allomorphs.

Declaration of conflicting interests

The author declares no conflict of interest regarding the research, authorship, or publication of this paper.

Funding

The author declares that he received no financial support from any organisation for conducting the research and writing this article.

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Author Biography

Mr Tendai Chirimaunga is a Language Researcher and Lecturer at the Midlands State University in Zimbabwe. He is a holder of a Master of Arts in African Languages and Culture Degree as well as a Bachelor of Arts in African Languages and Culture Degree from Midlands State University. Currently, he is pursuing doctoral studies in African Languages, Linguistics and Culture with University of South Africa. He has great research interests in the areas of languages, linguistics, translation, terminology, and lexicography. Chirimaunga is the Chairperson of the ChiBarwe Language and Culture Association (BLCA) and a member of the National Language Advisory Committee (NALACO) in Zimbabwe.