

Paraguayan Guaraní progressive nasalization as phonologically conditioned allomorphy

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mfm · May 31st 2025



handout



slides

Introduction

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* An example from Paraguayan Guarani:

(1) a. n^de-jagua-^h[k]uera
2SG-dog-PL
'your dogs'

b. [←]nẽ-mĩtã-^h[ŋ^g]uera
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- * often dismissed as **idiosyncratic** and **unproductive**
- * remains **understudied** compared to regressive nasalization

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Analysis can be extended to account for dialectal variation and other constructions (Appendix)

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2: virtual fieldwork; Asunción
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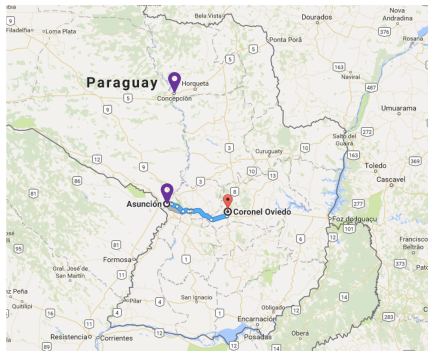
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Nasal-oral stops and full nasal consonants are in complementary distribution. Similarly, *j* [ɕ] and *ñ* [ɲ].

- (4) a. -m^ba b. -mã (5) a. a'ja b. ã'ñã
TOT CMPL 'during' 'evil'

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* no “bidirectional” nasalization

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NEG-1PL.IN-REC-love-NEG
'we don't love e.o.'

b. $\overleftarrow{\boxed{n}\tilde{a}\text{-}\boxed{n}\tilde{a}\text{-}\boxed{n}\tilde{o}\text{-}h\tilde{e}n^d}u\text{-}i$
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3-talk-DES-TOT-FUT-CMPL
'he will want to finish talking'

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(8) $[[[[[\overleftarrow{\text{prefix - root}}] - \text{suff}] - \overleftarrow{\text{suff}}] - \text{suff}] - \overleftarrow{\text{suff}}]$

Progressive nasalization: the facts

Only a handful of stop-initial morphemes undergo progressive nasal harmony alternations.

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dog-PL
'dogs'

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'I finished dancing'

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Suffix targets are affected differently by progressive nasalization.

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- (12) a. o-karu-pa
3-eat-TOT
'he ate (completely)'
- b. $\overleftarrow{\text{o-}\tilde{\text{n}}\tilde{\text{e}}\text{?}\tilde{\text{e}}}$ -m^ba
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- (13) a. che-'si-p̩e
1SG-mother-DOM
'my mother'

- b. $\overleftarrow{\text{chẽ-mĩ'tã-}}\text{'mẽ}$
1SG-child-DOM
'my child'

Progressive nasalization: the facts

Progressive nasalization triggered only by phonemic nasal vowels.

- (14) $\overleftarrow{\text{pãnãm}^{\text{b}}\text{i-}^{\text{h}}\text{k}^{\text{h}}\text{uera}}$ * $\text{-'}\eta^{\text{g}}\text{uera}$
butterfly-PL
'butterflies'

Progressive harmony: the facts

Alternations may stack and occur non-locally.

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- (15) a. o-karu-se-pa-pota-'peve
3-eat-DES-TOT-INCIP-until
'until he is about wanting to finish eating'

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- * across intervening suffixes (-se DES)
- * across oral vowels of alternating suffixes

Progressive nasalization: the facts

Verbal and nominal roots also show lexically-specific progressive alternations, as seen in compounds.

- (16) a. o-^hkĩ
3-rain
'it rained'

- (17) a. ^hāmā-^hĩĩĩ
rain-rain
'rain'

- b. ^hũ-^hĩĩĩ
black-rain
'grey; brown'

- c. ^hāsē-^hĩĩĩ
3POSS-cry-rain
'weep'

Progressive nasalization: summary

List of stop-initial morphemes

(Estigarribia 2020, Russell 2021)

undergoing (T ~ N ^D)			undergoing (full nas.)			non-undergoing	
'kuera	'ŋ ^g uera	PL	pe	mẽ	LOC;DOM	ta	FUT
'pa	'm ^b a	TOT	'peve	'mẽvẽ	'until'	pa	Q
po'ta	m ^b o'ta	INCIP				ke	FORCE
'ti	'n ^d i	COLL				mã	CMPL
(and roots)						nã	REQ
						nẽ	DUB
						mõ'ʔã	NEG.FUT
						'mĩ	PLEA;DIM

(T = voiceless stop; N^D = nasal-oral stop)

The analysis: broad strokes

1. Lexical specificity

Morphemes differ in their lexical specification in three ways.

(**T** = voiceless stop; **N^D** = nasal-oral stop)

undergoing 'kuera ~ 'ŋ^guera_{PL} {**TV**, **NV**}

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		mã CMPL	{ N[~]V }

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(19) $*[\alpha\text{NAS}]_{\text{ROOT}} \dots [-\alpha\text{NAS}, -\text{CONT}]$ (PROGHARM)

Assign a violation to every non-local sequence of a rightmost $[\alpha\text{NAS}]$ segment in a root followed by a $[-\alpha\text{NAS}]$ stop in the output.

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Root control (non-local)

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Symmetric (α)

(21) $*\text{jagua-}\overset{\leftarrow}{\text{ŋ}}^{\text{g}}\text{uera, } *\text{mĩtã-}\overset{\leftarrow}{\text{k}}\text{uera}$
dog-PL child-PL

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/ \tilde{V}_{RT} - { TV, NV }/		*NV	IDENT[NAS]	PROGHARM	*CONTOUR
(23)	a. \tilde{V} - TV			*!	
	b. V - TV		*!		
	c. \tilde{V} - NV	*!			
	 d. \tilde{V} - N ^D V				*

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
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/ Ñ _{RT} - { TV, NV } /		*NV	IDENT[NAS]	PROGHARM	*CONTOUR
(23)	a. Ñ - TV			*!	
	b. V - TV		*!		
	c. Ñ - NV	*!			
	 d. Ñ - N ^D V				*

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(25)	a. V - TV				
	b. V - NV	*!		*	
	c. V - N ^D V			*!	*
	d. \tilde{V} - N ^D V		*!		*

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	b. V - NV	*!		*	
	c. V - N ^D V			*!	*
	d. \tilde{V} - N ^D V		*!		*

The analysis

Similarly, oral-initial allomorphs are selected in the presence of an oral root.

(24) jagua-^hkuera *^h-^huɛra
dog-PL

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- (26) kosi'nã-mẽ *-pe
kitchen-LOC

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/Ṽ _{RT} - { TV, N [~] V }/		*NV	IDENT[NAS]	PROGHARM	*CONTOUR
(27)	a. Ṽ - TV			*!	
	 b. Ṽ - N [~] V				
	c. Ṽ - N ^D Ṽ				*!

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		$*/\tilde{V}_{RT} - \{TV, N\tilde{V}\}/$	$*NV$	IDENT[NAS]	PROGHARM
(27)	a.	$\tilde{V} - TV$			*!
	 b.	$\tilde{V} - N\tilde{V}$			
	c.	$\tilde{V} - N^D\tilde{V}$			*!

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/Ṽ _{RT} - { TV, ÑV }/		*NV	IDENT[NAS]	PROGHARM	*CONTOUR
(27)	a. Ṽ - TV			*!	
	 b. Ṽ - ÑV				
	c. Ṽ - N ^D Ṽ				*!

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/ \tilde{V}_{RT} - { TV, N \tilde{V} } /		*NV	IDENT[NAS]	PROGHARM	*CONTOUR
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	 b. \tilde{V} - N \tilde{V}				
	c. \tilde{V} - N ^D \tilde{V}				*!

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(27)	a. \tilde{V} - TV			*!	
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1SG-help-FUT

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(28) \tilde{a}^i -pĩtĩ'vĩõ-t̩a *-n^da
1SG-help-FUT

$/\tilde{V}_{RT} - \{TV\}/$		*NV	IDENT[NAS]	PROGHARM	*CONTOUR
(29)	a. $\tilde{V} - TV$			*	
	b. $\tilde{V} - N^DV$		*!		*
	c. $V - TV$		*!		

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(28) \tilde{a}^i - $p\tilde{t}t\tilde{i}$ $\tilde{v}\tilde{o}$ - $\tilde{t}a$ * $-n^da$
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$/\tilde{V}_{RT} - \{TV\}/$		*NV	IDENT[NAS]	PROGHARM	*CONTOUR
(29)	a. $\tilde{V} - TV$			*	
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/V _{RT} - { N [~] V }/		*NV	IDENT[NAS]	PROGHARM	*CONTOUR
(31)	a. V - N [~] V			*	
	b. V - T [~] V		*!		
	c. [~] V - N [~] V		*!		*

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Non-alternating morphemes violate PROGHARM optimally.


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(31)	a.  V - N \tilde{V}			*	
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	c. \tilde{V} - N \tilde{V}		*!		*

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	b. V - T \tilde{V}		*!		
	c. \tilde{V} - N \tilde{V}		*!		*

* suffixes fail to spread nasality to preceding suffixes and roots.

(Cabrera 2024)

The analysis

Accumulating violations of `PROGHARM` predict stacking of progressive alternations.

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child-PL-DOM

/ \tilde{V}_{RT} - { TV, NV } - { TV, $\tilde{N}\tilde{V}$ }/		*NV	IDENT[NAS]	PROGHARM	*CONTOUR
(33)	a. V - TV - TV			**!	
	b. V - TV - $\tilde{N}\tilde{V}$			*!	
	c. V - NV - $\tilde{N}\tilde{V}$	*!			
	 d. V - $\text{N}^{\text{D}}\text{V}$ - $\tilde{N}\tilde{V}$				*

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 3-talk-DES-TOT-INCIP-until

$/\tilde{V}_{\text{RT}} - \{ \text{TV}, \text{NV} \} - \{ \text{TV}, \text{N}\tilde{V} \} /$		*NV	IDENT[NAS]	PROGHARM	*CONTOUR
(33)	a. V - TV - TV			**!	
	b. V - TV - N \tilde{V}			*!	
	c. V - NV - N \tilde{V}	*!			
	 d. V - N ^D V - N \tilde{V}				*

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(33)	a. V - TV - TV			**!	
	b. V - TV - N \tilde{V}			*!	
	c. V - NV - N \tilde{V}	*!			
	 d. V - N ^D V - N \tilde{V}				*

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I argued that Paraguayan Guaraní progressive nasalization is a case of **phonologically conditioned suppletive allomorphy**.

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→ differences in lexical spec. predicts variation across suffixes
(Tranel 1990, et seq.)

(34)	undergoing	'kuera ~ 'ɲ ^g uera PL	{ TV , NV } N^DV
	undergoing	pe ~ mẽ LOC; DOM	{ TV , NṼ }
	non-undergoing	ta FUT	{ TV }
		mã CMPL	{ NṼ }

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- (35) a. ka'ʔu
 'drunk'
- b. ãkã-ŋ^ga'ʔu
 head-drunk
 'dizzy'
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 CAUS-drunk
 'to inebriate'

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- * mixed evidence showing productivity vs. lexicalization

Dialectal variation might point to a more complex allomorphy selection process.

Aguyjevete!

Thank you!

A huge thank you to the native speakers of Paraguayan Guaraní for sharing their language with me: Irma Ovelar, María Gómez, Laure Galeano, Elvira Martínez, Alfredo Almirón, Armando, and Analía García. Thank you to Claire Moore-Cantwell, Ben Eischens, Harold Torrence, Kie Zuraw, Sam Zukoff, Bruce Hayes, Jian-Leat Siah, Hunter Johnson, and members of the UCLA Phonology Seminar. All errors are my own.

Dialectal variation

All data previously discussed is from Coronel Oviedo speakers.

* Asunción and Concepción speakers show **optional** progressive nasalization.

Coronel Oviedo speakers:

- (36) a. $\overset{\leftarrow}{\text{õ-ñẽ?ẽ-se-}}\boxed{\text{m}^{\text{b}}}\text{a-}\boxed{\text{m}^{\text{b}}}\text{ota-}'\boxed{\text{mẽ}}\text{ẽ}$
3-talk-DES-TOT-INCIP-until
'until he is about wanting to finish talking'

Asunción, Concepción speakers:

- (37) a. $\overset{\leftarrow}{\text{õ-ñẽ?ẽ-se-}}\boxed{\text{p}}\text{a-}\boxed{\text{p}}\text{ota-}'\boxed{\text{pe}}\text{ve}$
3-eat-DES-TOT-INCIP-until
'until he is about wanting to finish eating'

Dialectal variation

* Optionality is **asymmetric**: nasal-initial suffixes cannot occur with oral roots

Asunción, Concepción speakers:

(38) a. $\overleftarrow{\text{mĩtã}}$ -^hkuera
child-PL
'children'

b. ***jagua**-^h**uera**
dog-PL
'dogs'

(39) a. $\overleftarrow{\text{chẽ-mĩtã}}$ -pe
1SG-child-DOM
'my child'

b. ***che**-^h**si-mẽ**
1SG-mother-DOM
'my mother'

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Dialectal variation: relative ranking of **PRIORITY** and **PROGHARM**

→ competing pressures of lexical preference for orality and phonological optimization

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Asunción, Concepción speakers: variable ranking of PRIORITY and PROGHARM

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$/\tilde{V}_{RT} - \{TV, NV\}/$		*NV	IDENT[NAS]	PRIORITY	PROGHARM	*CONTOUR
(41)	a. $\tilde{V} - TV$				*	
	b. $V - TV$		*!			
	c. $\tilde{V} - N^DV$			*!		*

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Asunción, Concepción speakers: variable ranking of PRIORITY and PROGHARM

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(41)	a. $\tilde{V} - TV$				*	
	b. $V - TV$		*!			
	c. $\tilde{V} - N^DV$			*!		*

Dialectal variation

Coronel Oviedo speakers: strict ranking of PROGHARM over PRIORITY

$/\tilde{V}_{RT} - \{TV, NV\}/$		*NV	IDENT[NAS]	PROGHARM	PRIORITY	*CONTOUR
(42)	a. $\tilde{V} - TV$			*!		
	b. $V - TV$		*!			
	 c. $\tilde{V} - N^DV$				*	*

Dialectal variation

Non-undergoing nasal morphemes are still predicted under
 PRIORITY \gg PROGHARM.

/V _{RT} - { N \tilde V }/		*NV	IDENT[NAS]	PRIORITY	PROGHARM	*CONTOUR
(43)	a. V - N \tilde V			*	*	
	b. V - T \tilde V		*!			
	c. \tilde V - N \tilde V		*!	*		

Dialectal variation

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(43)	a. V - N \tilde V			*	*	
	b. V - T \tilde V		*!			
	c. \tilde V - N \tilde V		*!	*		

Roots in progressive nasalization

Recall: roots undergo progressive nasalization.

* examples from compounds:

(44) a. o-[←]kĩ
3-rain
'it rains'

(45) a. [←]ãmã-[←]ĩĩĩ
rain-rain
'rain'

b. [←]hũ-[←]ĩĩĩ
black-rain
'grey; brown'

c. [←]h-ãse-[←]ĩĩĩ
3POSS-cry-rain
'weep'

Roots in progressive nasalization

Roots also alternate in **exceptional causative constructions**

(Estigarribia 2020, Russell 2021, Estigarribia 2021).

(45) a. o-**p̥**ai
3-wake.up
'he woke up'

b. ã-**mõ**-**m̥**ai diego-pe
3-CAUS-wake.up diego-DOM
'he woke up Diego'

(46) a. che-**k̥**ai'gue
1SG-bore
'I'm bored'

b. n^de chẽ-**mõ**-**ŋ̥**ai'gue
2SG 1SG-CAUS-bore
'you bored me'

Roots in progressive nasalization

Exceptional: otherwise, causatives follow the expected regressive nasalization pattern.

(47) a. $\overset{\leftarrow}{\text{ã-m}}^{\text{b}}\text{o-pu'pu} \text{ ?i}$
1SG-CAUS-hot water
'I boiled water'

b. $\text{n}^{\text{d}}\text{e} \overset{\leftarrow}{\text{ã-mõ-kãñẽ' ?õ}}$
2SG 1SG-CAUS-tired
'I tired you'

Roots in progressive nasalization

* At the surface, exceptional causatives have **two possible analyses**.

Analysis 1: root is exceptionally nasal-initial

(48) $\overleftarrow{\text{õ-mõ-}}\text{'m}^{\text{b}}\text{ai}$ → root not phon. conditioned
3-CAUS-wake.up

Analysis 2: causative prefix is exceptionally nasal

(49) $\overleftarrow{\text{õ-mõ}}\text{'m}^{\text{b}}\text{ai}$ → root is phon. conditioned
3-CAUS-wake.up

* **Analysis 2** in line with current analysis

Roots in progressive nasalization

Crucially, there's mixed evidence for **productivity** vs. **lexicalization** of exceptional causatives:

Productive

- consistent allomorphs across compounds and causatives
- speakers generalize to new constructions

Lexicalized

- exceptional cnstr. have idiomatic meanings
- judgments vary across constructions/contexts

Roots in progressive nasalization

Productive: roots that show progressive nasalization in compounds also show progressive harmony in causatives.

- (50) a. ka'ʔu
 'drunk'
- b. ãkã-ŋ^ga'ʔu
 head-drunk
 'dizzy'
- c. mō-ŋ^ga'ʔu
 CAUS-drunk
 'to inebriate'
- (51) a. ti'ki
 'drop; to drip'
- b. ãmã-ŋ^gi'ki
 rain-to.drip
 'rainwater'
- c. mō-ŋ^gi'ki
 CAUS-to.drip
 'to
 squeeze/distill'

Roots in progressive nasalization

Productive: speakers generalize progressive nasalization to new constructions/environments.

- (52) a. o-'k̥i b. hũ-'ŋ̃i c. h̃-āsẽ-'ŋ̃i
3-rain black-rain 3POSS-cry-rain
'it rains' 'grey; brown' 'weep'

Context: *Imagine you don't want to go to work because you're sick. You pray to the gods that it rains so you don't have to work. It finally starts to rain - your prayers worked! How do you say "I made it rain"?*

- (52) che ã-mõ-'ŋ̃i, *ã-m^bo-'ki
1SG 1SG-CAUS-rain
'I made it rain'

Roots in progressive nasalization

Lexicalized: exceptional causatives have **idiomatic** meanings, while non-exceptional causatives have **compositional** meanings

- (53) a. ã-mõ-ŋ^gara'i pe mĩ'tã-mẽ
 3-CAUS-man DEM child-DOM

‘he **baptized** the child’ (Russell 2021)

- b. pe i-vi'gote ã-m^bo-kara'i pe mĩ'tã-mẽ
 DEM 3-mustache 3-CAUS-man DEM child-DOM

‘The mustache **makes** the child look **like a man**’ (Russell 2021)

Roots in progressive nasalization

Lexicalized: exceptional causatives have **idiomatic** meanings, while non-exceptional causatives have **compositional** meanings

- (54) a. che n-ã-m^bo-m^bu-i pe bomba
1SG NEG-1SG-CAUS-sound-NEG DEM balloon
'I didn't **pop/explode** the balloon'
- b. che n-ã-m^bo-p^bu-i pe i-m^bara'ka
1SG NEG-1SG-CAUS-sound-NEG DEM 3-guitar
'I didn't **sound** the guitar'

Roots in progressive nasalization

Lexicalized: variable use of exceptional causatives across constructions/contexts

(55) a. n^de chẽ-**mõ**-[ŋ^g]ai'gue
2SG 1SG-CAUS-bored
'you bored me'

b. n^de nã-chẽ-**m^bo**-[k]aigue-i
2SG NEG-1SG-CAUS-bored-NEG
'you didn't bore me'

(56) a. che rĩ-**mõ**-[m^b]i'ta
1SG 1/2-CAUS-stop
'I stopped you'

b. che nõ-rĩ-**m^bo**-[p]i'ta-i
1SG NEG-1/2-CAUS-stop-NEG
'I didn't stop you'

Roots in progressive nasalization

Should only extend proposed analysis to exceptional causatives if they show the same productivity (phonological conditioning) as suffixes.