Paraguayan Guarani progressive nasalization as phonologically conditioned allomorphy

Marisabel (Isa) Cabrera
isacabrera@ucla.edu

University of California, Los Angeles (USA)

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handout

slides

Introduction

Most Tupi-Guarani languages show extensive nasalization processes.

Some show both regressive and "progressive" nasal spread simultaneously (Lapierre & Michael 2018).

* An example from Paraguayan Guarani:

(1) a. $\mathrm{n^d}$e-jagu**a**-'k**u**era
2SG-dog-PL
'your dogs'

b. nẽ-mĩt**ã**-'ŋ$^{\mathrm{g}}$uera
2SG-child-PL
'your children'

Introduction

Although regressive nasalization in Guarani is exceptionless, progressive nasalization is morpheme-specific.

(1) a. nᵈe-jagu**a**-ˈ[k]uera
2SG-dog-PL
'you dogs'

b. ←nẽ-mĩtã-ˈ[ŋᵍ]uera
2SG-child-PL
'your children'

(2) a. o-kar**u**-ˈ[peve]
3-eat-until
'until he eats'

b. ←õ-kõsĩnã-ˈ[mẽvẽ]
3-cook-until
'until he cooks'

(3) a. o-kaˈr**u**-[ta]
3-eat-FUT
'he will eat'

b. ←õ-kõsĩˈnã-[ta]
3-cook-FUT
'he will cook'

* often dismissed as idiosyncratic and unproductive
* remains understudied compared to regressive nasalization

This talk

First formal analysis of Guarani progressive nasalization as **phonologically conditioned suppletive allomorphy** (PCSA).

(Carstairs 1988, Paster 2006)

→ morphemes have different lexical specifications (Tranel 1990, et seq.)

→ predicts differential behavior of suffixes in progressive nasalization

Alternative analyses are possible but more complex (Russell 2021)

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

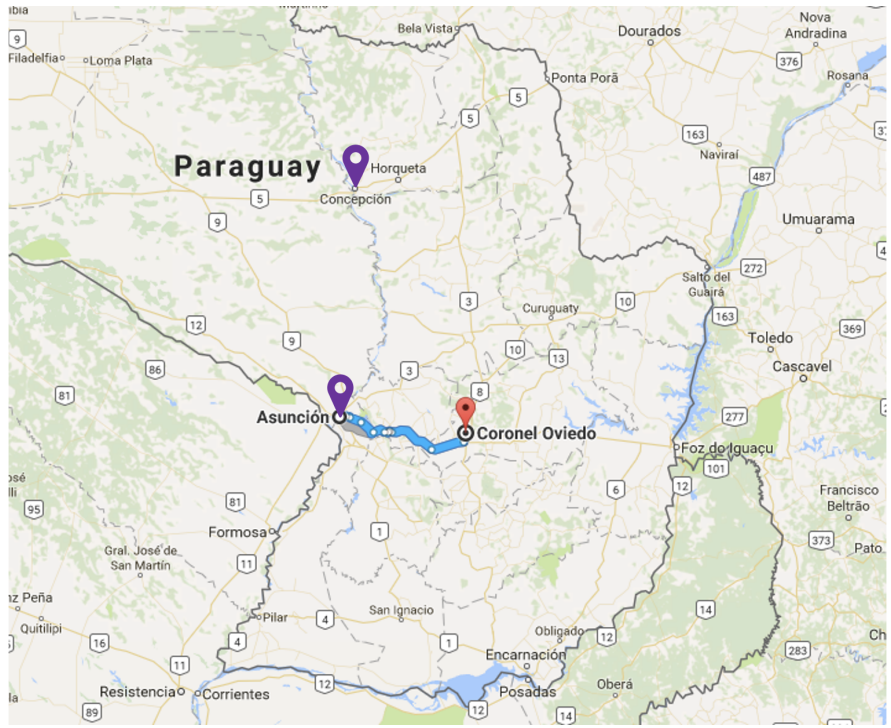
Background

Paraguayan Guarani (Tupian) spoken by 5-6 million in Paraguay and neighboring areas of Argentina and Brazil.

All data collected in consultation with **8** native speakers.

6: in-situ fieldwork in Coronel Oviedo, Paraguay.

2: virtual fieldwork; Asunción and Concepción.



Background

12 phonemic vowels of 6 qualities (i, ɨ, u, e, o, a), all contrasting in nasality.

No voiced stops, instead has nasal-oral contour stops [m^{b}, n^{d}, $\mathrm{ŋ}^{\mathrm{g}}$]. All contrast with plain voiceless stops.

Nasal-oral stops and full nasal consonants are in complementary distribution. Similarly, *j* [ʤ] and *ñ* [ɲ].

(4) a. -m$^{\mathrm{b}}$a
TOT

b. -mã
CMPL

(5) a. aˈja
'during'

b. ãˈñã
'evil'

Background

Regressive and "progressive" nasalization are different mechanisms.

(Lapierre & Michael 2018, Russell 2021, Cabrera 2024)

(5)

	regressive	**progressive**
triggers	rightmost nasal vowels, nasal-oral stops	root nasal vowels
targets	voiced segments	initial voiceless stops; or full suffixes
locality	local	non-local
productivity	productive	lexically specific
prosodic struc.	sensitive	insensitive

* no "bidirectional" nasalization

Background

Extensive and exceptionless regressive (leftward) nasalization.

→ triggered by phonemic nasal vowels and nasal-oral stops

→ suffixes and roots form their own prosodic domain (Cabrera 2024)

(6) a. [n^{d}]a-[j]a-[j]o-hai'hu-i
NEG-1PL.IN-REC-love-NEG
'we don't love e.o.'

b. ←——— [n]ã-[ñ]ã-[ñ]õ-hẽn^{d}u-i
NEG-1PL.IN-REC-listen-NEG
'we don't listen to e.o.'

(7) ←——— ←— ←—
õ-ñẽʔẽ-se-'m^{b}a-ta-mã
3-talk-DES-TOT-FUT-CMPL
'he will want to finish talking'

(8) [[[[[←———— prefix - root] - suff] - ←— suff] - suff] - ←— suff]

Progressive nasalization: the facts

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

(9) a. jagua-ˈ[k]uera
dog-PL
'dogs'

b. m̃ĩt̃ã-ˈ[ŋᵍ]uera
child-PL
'children'

(10) a. a-jeroˈkɨ-[ta]
1SG-dance-FUT
'I will dance'

b. ãĩ̃-pɨ̃tɨ̃ˈṽõ̃-[ta]
1SG-help-FUT
'I will help'

(11) a. a-jeroˈkɨ-[mã]
1SG-dance-CMPL
'I finished dancing'

b. ãĩ̃-pɨ̃tɨ̃ˈṽõ̃-[mã]
1SG-help-CMPL
'I finished helping'

Progressive nasalization: the facts

Suffix targets are affected differently by progressive nasalization.

(12) a. o-karu-ˈpa
3-eat-TOT
'he ate (completely)'

b. õ-ñẽʔẽ-ˈmᵇa
3-talk-TOT
'he talked (completely)'

(13) a. che-ˈsɨ-pe
1SG-mother-DOM
'my mother'

b. chẽ-mĩˈtã-mẽ
1SG-child-DOM
'my child'

Progressive nasalization: the facts

Progressive nasalization triggered only by phonemic nasal vowels.

(14) p̃ãnãm͡bi-ˈ[k]uera *-ˈŋᵍuera

butterfly-PL

'butterflies'

Progressive harmony: the facts

Alternations may stack and occur non-locally.

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

b. õ-ñẽʔẽ-se-m^ba-m^bota-ˈmẽ̃ṽẽ
3-talk-DES-TOT-INCIP-until
'until he is about wanting to finish talking'

* 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-ˈk̃ɨ̃
3-rain
'it rained'

(17) a. ãmã̃-ˈŋ̃gɨ̃
rain-rain
'rain'

b. hũ̃-ˈŋ̃gɨ̃
black-rain
'grey; brown'

c. h-ãsẽ̃-ˈŋ̃gɨ̃
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**	
ˈkuera	ˈŋᵍuera	PL	pe	mẽ	LOC;DOM	ta	FUT
ˈpa	ˈmᵇa	TOT	ˈpeve	ˈmẽṽẽ	‘until’	pa	Q
poˈta	mᵇoˈta	INCIP				ke	FORCE
ˈtɨ	ˈnᵈɨ	COLL				mã	CMPL
						nã	REQ
(and roots)						nẽ	DUB
						mõˈʔã	NEG.FUT
						ˈmĩ	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.

(18)

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

undergoing	ˈkuera ∼ ˈŋgˠuera PL	{**TV, NV**} **N^DV**
undergoing	pe ∼ mẽ LOC; DOM	{**TV, NṼ**}
non-undergoing	ta FUT	{**TV**}
	mã CMPL	{**NṼ**}

The analysis: broad strokes

2. Phonological conditioning

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

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

Root control (non-local)

(20) õ-ñẽʔẽ-se-mᵇa-mᵇoˈta
3-talk-DES-TOT-INCIP

Symmetric (α)

(21) *jagua-ˈŋᵍuera, *mĩtã-ˈkuera
dog-PL child-PL

The analysis

ProgHarm selects nasal-initial allomorphs in the presence of nasal roots.

(22) mĩtã-ˈŋ͡ɡuera *-ˈkuera
child-PL

(23)

/$\tilde{V}_{RT}$- { TV, NV }/	*NV	Ident[nas]	ProgHarm	*Contour
a. $\tilde{V}$ - TV			*!	
b. V - TV		*!		
c. $\tilde{V}$ - NV	*!			
☞ d. $\tilde{V}$ - $N^{D}V$				*

The analysis

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(22) mĩtã-ˈŋᵍuera *-ˈkuera
child-PL

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/Ṽ$_{RT}$- { TV, NV }/	*NV	Ident[nas]	ProgHarm	*Contour
a. Ṽ - TV			*!	
b. V - TV		*!		
c. Ṽ - NV	*!			
☞ d. Ṽ - N^{D}V				*

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a. Ṽ - TV			*!	
b. V - TV		*!		
c. Ṽ - NV	*!			
☞ d. Ṽ - N^{D}V				*

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a. $\tilde{V}$ - TV			*!	
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c. $\tilde{V}$ - NV	*!			
☞ d. $\tilde{V}$ - $N^{D}V$				*

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

The analysis

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

(24) jagua-ˈ[k]uera *-ˈŋᵍuera
dog-PL

(25)

/V_{RT} - { TV, NV }/	*NV	IDENT[NAS]	PROGHARM	*CONTOUR
☞ a. V - TV				
b. V - NV	*!		*	
c. V - N^DV			*!	*
d. $\tilde{V}$ - N^DV		*!		*

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☞ a. V - TV				
b. V - NV	*!		*	
c. V - N^DV			*!	*
d. $\tilde{V}$ - N^DV		*!		*

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☞ a. V - TV				
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c. V - N^DV			*!	*
d. $\tilde{V}$ - N^DV		*!		*

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d. $\tilde{V}$ - N^DV		*!		*

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

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dog-PL

(25)

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☞ a. V - TV				
b. V - NV	*!		*	
c. V - N^DV			*!	*
d. $\tilde{V}$ - N^DV		*!		*

The analysis

Suffixes with full nasalization have a nasal vowel in their nasal allomorph.

(26) kosi'n**ã-**mẽ *-pe
kitchen-LOC

(27)

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

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

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a. $\tilde{V}$ - TV			*!	
☞ b. $\tilde{V}$ - N$\tilde{V}$				
c. $\tilde{V}$ - N$^{D}\tilde{V}$				*!

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a. $\tilde{V}$ - TV			*!	
☞ b. $\tilde{V}$ - N$\tilde{V}$				
c. $\tilde{V}$ - N$^{D}\tilde{V}$				*!

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

The analysis

Non-alternating morphemes violate ProgHarm optimally.

(28) ãⁱ̃-pɨ̃tɨ̃ˈṽõ-t͡a *-n^{d}a
1SG-help-FUT

(29)

/Ṽ$_{RT}$ - { TV }/	*NV	Ident[nas]	ProgHarm	*Contour
☞ a. Ṽ - TV			*	
b. Ṽ - N^{D}V		*!		*
c. V - TV		*!		

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1SG-help-FUT

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/Ṽ$_{RT}$ - { TV }/	*NV	Ident[nas]	ProgHarm	*Contour
☞ a. Ṽ - TV			*	
b. Ṽ - N^{D}V		*!		*
c. V - TV		*!		

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/Ṽ$_{RT}$ - { TV }/	*NV	Ident[nas]	ProgHarm	*Contour
☞ a. Ṽ - TV			*	
b. Ṽ - N^{D}V		*!		*
c. V - TV		*!		

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Non-alternating morphemes violate ProgHarm optimally.

(28) ãⁱ̃-pɨ̃tɨ̃ˈṽõ-ta *-n^{d}a

1SG-help-FUT

(29)

/Ṽ$_{RT}$ - { TV }/	*NV	Ident[nas]	ProgHarm	*Contour
☞ a. Ṽ - TV			*	
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c. V - TV		*!		

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/Ṽ$_{RT}$ - { TV }/	*NV	IDENT[NAS]	PROGHARM	*CONTOUR
☞ a. Ṽ - TV			*	
b. Ṽ - N^{D}V		*!		*
c. V - TV		*!		

The analysis

Non-alternating morphemes violate PROGHARM optimally.

(30) a. o-jero'ki-$\overleftarrow{\text{mã}}$
3-dance-CMPL

(31)

/V_{RT} - { N$\tilde{V}$ }/	*NV	IDENT[NAS]	PROGHARM	*CONTOUR
☞ a. V - N$\tilde{V}$			*	
b. V - T$\tilde{V}$		*!		
c. $\tilde{V}$ - N$\tilde{V}$		*!		*

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/V_{RT} - { N$\tilde{V}$ }/	*NV	IDENT[NAS]	PROGHARM	*CONTOUR
☞ a. V - N$\tilde{V}$			*	
b. V - T$\tilde{V}$		*!		
c. $\tilde{V}$ - N$\tilde{V}$		*!		*

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☞ a. V - N$\tilde{V}$			*	
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☞ a. V - N$\tilde{V}$			*	
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c. $\tilde{V}$ - N$\tilde{V}$		*!		*

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/V_{RT} - { N$\tilde{V}$ }/	*NV	Ident[nas]	ProgHarm	*Contour
☞ a. V - N$\tilde{V}$			*	
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.

(32) a. mĩtã-ˈŋᵍuera-mẽ
child-PL-DOM

(33)

/Ṽ$_{RT}$ - { TV, NV } - { TV, NṼ }/	*NV	IDENT[NAS]	PROGHARM	*CONTOUR
a. V - TV - TV			**!	
b. V - TV - NṼ			*!	
c. V - NV - NṼ	*!			
☞ d. V - N^{D}V - NṼ				*

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child-PL-DOM

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/Ṽ$_{RT}$ - { TV, NV } - { TV, NṼ }/	*NV	IDENT[NAS]	PROGHARM	*CONTOUR
a. V - TV - TV			**!	
b. V - TV - NṼ			*!	
c. V - NV - NṼ	*!			
☞ d. V - N^{D}V - NṼ				*

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(33)

/$\tilde{V}_{RT}$ - { TV, NV } - { TV, N$\tilde{V}$ }/	*NV	IDENT[NAS]	PROGHARM	*CONTOUR
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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Accumulating violations of PROGHARM predict stacking of progressive alternations.

(32) a. mĩtã̀-ˈŋᵍuera-mẽ
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/Ṽ$_{RT}$ - { TV, NV } - { TV, NṼ }/	*NV	IDENT[NAS]	PROGHARM	*CONTOUR
a. V - TV - TV			**!	
b. V - TV - NṼ			*!	
c. V - NV - NṼ	*!			
☞ d. V - N^{D}V - NṼ				*

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Accumulating violations of PROGHARM predict stacking of progressive alternations.

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child-PL-DOM

(33)

/$\tilde{V}_{RT}$ - { TV, NV } - { TV, N$\tilde{V}$ }/	*NV	IDENT[NAS]	PROGHARM	*CONTOUR
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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Accumulating violations of PROGHARM predict stacking of progressive alternations.

(32) a. mĩtã-ˈŋᵍuera-mẽ
child-PL-DOM

(33)

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

Closing

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

→ no literal spread of nasality feature, nor bidirectional spread
(Lapierre & Michael 2018, Russell 2021, Cabrera 2024)

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

(34)

undergoing	ˈkuera ∼ ˈŋ^{g}uera PL	{**TV, ~~NV~~**} **N^{D}V**
undergoing	pe ∼ mẽ LOC; DOM	{**TV, NṼ**}
non-undergoing	ta FUT	{**TV**}
	mã CMPL	{**NṼ**}

Extensions

Alternative analyses possible but unfavorable.

* lexically-indexed constraints (Pater 2007)
* agreement by correspondence (Rose & Walker 2014)

Extend analysis to **root** alternations?

* compounds and exceptional causative constructions (Russell 2021, Estigarribia 2021)

(35)

	a.	b.	c.
	kaˈʔu	ãk**ã-**ŋ͡gaˈʔu	**mõ-**ŋ͡gaˈʔu
	‘drunk’	head-drunk	CAUS-drunk
		‘dizzy’	‘to inebriate’

* mixed evidence showing productivity vs. lexicalization

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

Aguyjevete!

Thank you!

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Dialectal variation

All data previously discussed is from Coronel Oviedo speakers.

* Asunción and Concepción speakers show optional progressive nasalization.

Coronel Oviedo speakers:

(36) a. õ̃-ñẽʔẽ̃-se-m^{b}a-m^{b}ota-ˈmẽ̃ṽẽ

3-talk-DES-TOT-INCIP-until

'until he is about wanting to finish talking'

Asunción, Concepción speakers:

(37) a. õ̃-ñẽʔẽ̃-se-pa-pota-ˈpeve

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. mĩtã̃-ˈkuera
child-PL
'children'

b. *jagua-ˈŋgᵘuera
dog-PL
'dogs'

(39) a. chẽ-mĩˈtã̃-pe
1SG-child-DOM
'my child'

b. *che-ˈsɨ-mẽ
1SG-mother-DOM
'my mother'

Dialectal variation

* Proposal: speakers regularize progressive nasalization, preferring oral allomorphs in general (Bonet et al. 2007)

(40) PRIORITY Given an input containing allomorphs, assign a violation mark to each morpheme that does not respect the lexical priority ordering or allomorphs. (Bonet et al. 2007)

Dialectal variation: relative ranking of PRIORITY and PROGHARM

→ competing pressures of lexical preference for orality and phonological optimization

Dialectal variation

Asunción, Concepción speakers: variable ranking of PRIORITY and PROGHARM

(41)

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

Dialectal variation

Asunción, Concepción speakers: variable ranking of PRIORITY and PROGHARM

(41)

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

Dialectal variation

Asunción, Concepción speakers: variable ranking of PRIORITY and PROGHARM

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☞ a. $\tilde{V}$ - TV				*	
b. V - TV		*!			
c. $\tilde{V}$ - $N^{D}V$			*!		*

Dialectal variation

Asunción, Concepción speakers: variable ranking of PRIORITY and PROGHARM

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☞ a. $\tilde{V}$ - TV				*	
b. V - TV		*!			
c. $\tilde{V}$ - $N^{D}V$			*!		*

Dialectal variation

Asunción, Concepción speakers: variable ranking of PRIORITY and PROGHARM

(41)

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

Dialectal variation

Coronel Oviedo speakers: strict ranking of PROGHARM over PRIORITY

(42)

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

Dialectal variation

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

(43)

/V_{RT} - { N$\tilde{V}$ }/	*NV	IDENT[NAS]	PRIORITY	PROGHARM	*CONTOUR
☞ a. V - N$\tilde{V}$			*	*	
b. V - T$\tilde{V}$		*!			
c. $\tilde{V}$ - N$\tilde{V}$		*!	*		

Dialectal variation

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

(43)

/V_{RT} - { N$\tilde{V}$ }/	*NV	IDENT[NAS]	PRIORITY	PROGHARM	*CONTOUR
☞ a. V - N$\tilde{V}$			*	*	
b. V - T$\tilde{V}$		*!			
c. $\tilde{V}$ - N$\tilde{V}$		*!	*		

Dialectal variation

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

(43)

/V_{RT} - { N$\tilde{V}$ }/	*NV	IDENT[NAS]	PRIORITY	PROGHARM	*CONTOUR
☞ a. V - N$\tilde{V}$			*	*	
b. V - T$\tilde{V}$		*!			
c. $\tilde{V}$ - N$\tilde{V}$		*!	*		

Dialectal variation

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

(43)

/V_{RT} - { N$\tilde{V}$ }/	*NV	IDENT[NAS]	PRIORITY	PROGHARM	*CONTOUR
☞ 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-'k̃i
3-rain
'it rains'

(45) a. ãmã̃-'ŋ̃gi
rain-rain
'rain'

b. hũ̃-'ŋ̃gi
black-rain
'grey; brown'

c. h-ãsẽ̃-'ŋ̃gi
3POSS-cry-rain
'weep'

Roots in progressive nasalization

Roots also alternate in **exceptional causative constructions** (Estigarriba 2020, Russell 2021, Estigarriba 2021).

(45) a. o-ˈ[p]aɨ
3-wake.up
'he woke up'

b. õ-**mõ**-ˈ[^{b}m]aɨ diego-pe
3-CAUS-wake.up diego-DOM
'he woke up Diego'

(46) a. che-[k]aiˈgue
1SG-bore
'I'm bored'

b. ^{d}ne chẽ-**mõ**-[^{g}ŋ]aiˈgue
2SG 1SG-CAUS-bore
'you bored me'

Roots in progressive nasalization

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

(47) a. ã̃-**m$^{\text{b}}$**o-pu'pu ʔɨ
1SG-CAUS-hot water
'I boiled water'

b. n$^{\text{d}}$e ã̃-mõ-kãnẽ'ʔ**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) õ-mõ-'**mᵇ**aɨ → root not phon. conditioned
3-CAUS-wake.up

Analysis 2: causative prefix is exceptionally nasal

(49) õ-m**õ**'[mᵇ]aɨ → root is phon. conditioned
3-CAUS-wake.up

* Analysis 2 in line with current analysis

Roots in progressive nasalization

Crucially, there's mized 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-ŋ͡ga'ʔu
head-drunk
'dizzy'

c. **mõ-**ŋ͡ga'ʔu
CAUS-drunk
'to inebriate'

(51) a. tɨ'kɨ
'drop; to drip'

b. ãmã-ŋ͡gɨ'kɨ
rain-to.drip
'rainwater'

c. **mõ-**ŋ͡gɨ'kɨ
CAUS-to.drip
'to squeeze/distill'

Roots in progressive nasalization

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

(52) a. o-ˈ[k]ɨ
3-rain
'it rains'

b. h̃ũ-ˈ[ŋᵍ]ɨ
black-rain
'grey; brown'

c. h̃-ãsẽ-ˈ[ŋᵍ]ɨ
3POSS-cry-rain
'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-ˈ[ŋᵍ]ɨ, *ã-mᵇo-ˈkɨ
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. õ-**mõ**-[ŋ^{g}]araˈi pe mĩˈtã-mẽ
3-CAUS-man DEM child-DOM
'he **baptized** the child' (Russell 2021)

b. pe i-viˈgote õ-**m^{b}o**-[k]araˈi pe mĩˈtã-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-**mõ**-$\boxed{\text{m}^{\text{b}}}$u-i pe bomba
1SG NEG-1SG-CAUS-sound-NEG DEM balloon
'I didn't **pop/explode** the balloon'

b. che n-ã-**m$^{\text{b}}$o**-'$\boxed{\text{p}}$u-i pe i-m$^{\text{b}}$ara'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. nᵈe chẽ-**mõ**-ŋᵍai'gue
2SG 1SG-CAUS-bored
'you bored me'

b. nᵈe nã-chẽ-**mᵇo**-kaigue-i
2SG NEG-1SG-CAUS-bored-NEG
'you didn't bore me'

(56) a. che rrõ-**mõ**-mᵇɨ'ta
1SG 1/2-CAUS-stop
'I stopped you'

b. che nõ-rrõ-**mᵇo**-pɨ'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.