Paraguayan Guarani progressive nasalization as phonologically conditioned allomorphy

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1 Introduction

- Most Tupi-Guarani languages show extensive nasalization processes.
- Some TG languages show both **regressive** and **progressive** nasal spread simultaneously.
- An example from Paraguayan Guarani:

(1) a. nᵈe-jagu**a**-ˈkuera
2SG-dog-PL
'your dogs'

b. n̂ẽ-mĩtã̂-ˈŋᵍuera
2SG-child-PL
'your children'

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

(1) a. nᵈe-jagu**a**-ˈkuera
2SG-dog-PL
'you dogs'

b. n̂ẽ-mĩtã̂-ˈŋᵍuera
2SG-child-PL
'your children'

(2) a. o-kar**u**-ˈpeve
3-eat-until
'until he eats'

b. ô-kõsĩnã̂-ˈmẽvẽ
3-cook-until
'until he cooks'

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

b. ô-kõsĩˈnã̂-ta
3-cook-FUT
'he will cook'

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

2 This talk

- First formal analysis of Guarani progressive nasalization as **phonologically conditioned suppletive allomorphy**
  - morphemes have different lexical specifications
  - predicts some productivity, given phonological conditioning
- Consequences for analyzing **exceptional causative constructions**
  - no straightforward analysis
  - mixed evidence on their productivity vs. lexical status (Russell 2021, Estigarribia 2021)

3 Roadmap

1. Background on Paraguayan Guarani
2. Empirical facts on progressive harmony
3. The analysis
4. Exceptional causative constructions
5. Conclusions and future directions

4 Background

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

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- Guarani and Spanish are the official languages of Paraguay (Guarani since 1992).
- Learned as a first language for many. Around 80% of the population speak Guarani at home (Estigarribia 2020).
- Guarani has been described for decades (Gregores & Suárez 1965) and has significantly contributed to phonological theory (Beckman 1998, Walker 1998, Piggott 2003).

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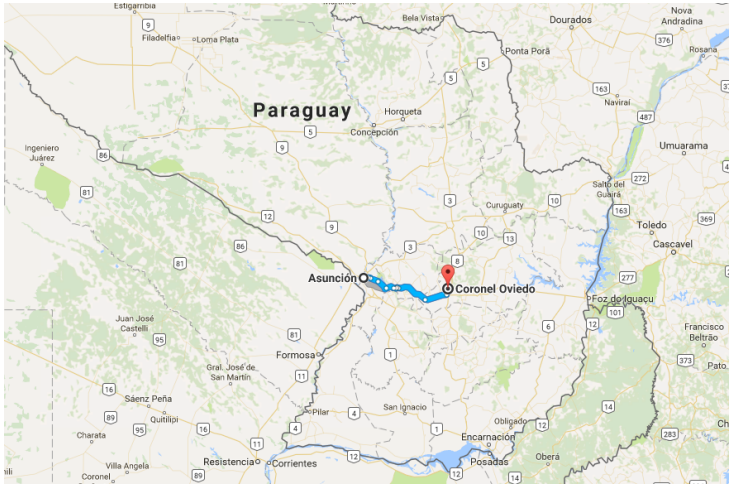
- All data collected in consultation with **8** native speakers.

  6: in-situ fieldwork in Coronel Oviedo, Paraguay

  2: virtual fieldwork; Asunción and Concepción

  Age range: 24 to 70 y.o.



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- 12 phonemic vowels of 6 qualities (i, ɨ, u, e, o, a), all contrasting in nasality.
- No voiced stops, instead has nasal-oral stops [m^b, n^d, $ŋ^g$]. All contrast with plain voiceless stops.

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

(4) a. -m͡ba b. -m͡ã (5) a. aˈj͡a b. ãˈñ͡ã
TOT CMPL ‘during’ ‘evil’

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- Extensive and exceptionless **regressive** (leftward) nasalization.

  → triggered by phonemic nasal vowels and nasal-oral stops

  → voiceless segments are transparent

(5) n͡da-j͡a-j͡o-haⁱˈhu-ⁱ
NEG-1PL.IN-REC-love-NEG
‘we don’t love each other’

(6) a. ←m͡ã-ñ͡ã-ñ͡õ-hẽˈnõ-ĩ
1PL.IN-REC-call-NEG
‘we don’t call e.o.’

b. ←m͡ã-ñ͡ã-ñ͡õ-hẽˈ**n͡d**u-ⁱ
NEG-1PL.IN-REC-listen-NEG
‘we don’t listen to e.o.’

* nasal consonants post-oralize before oral vowels (Stanton 2017).

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- Location of vowel contrast in nasality previously thought to be at the stressed syllable (Beckman 1998), but is recently challenged.

  * vowel nasality is specified at the right edges of words (Cabrera 2024).

- Some evidence from words with non-final stress:

(7) m͡ãˈmõm͡ẽ ‘papaya’ ˈm͡ãr̃ãm͡õ ‘never’
ˈm͡ẽn͡ã ‘husband’ m͡ãˈhãm̃ĩrĩ ‘nahaniri’

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- Roots and suffixes behave independently in regressive spread (Cabrera 2024).

(8) a. avati-mĩˈrĩ
corn-small
'wheat'

b. pɨʔa-põˈrã
heart-pretty
'kindness'

(9) a. che-sy-pe-ɡ̃ũãˈrã
1SG-mother-DOM-for
'for my mother'

b. õ-ñẽʔẽ-se-ˈm̃ᵇa-ta-mã
3-talk-DES-TOT-FUT-CMPL
'he will want to finish talking'

* suffixes (and roots) form their own prosodic domain.

5 Regressive vs. progressive nasalization

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- Regressive and progressive nasaliation and different mechanisms (Estigarribia 2020, Russell 2021, Cabrera 2024).

(10)

	regressive	progressive
triggers	rightmost nasal vowels, nasal-oral stops	root nasal vowels
targets	voiced segments	initial voiceless stops
locality	local	non-local
productivity	productive	lexically-specific

6 Progressive nasalization: the facts

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

(11) a. jagua-ˈkuera
dog-PL
'dogs'

b. m̃ĩtã-ˈŋguera
child-PL
'children'

(12) a. a-jeroˈky-ta
1SG-dance-FUT
'I will dance'

b. ãĩ-pɨ̃tɨ̃ˈṽõ-ta
1SG-help-FUT
'I will help'

(13) a. a-jeroˈky-mã
1SG-dance-CMPL
'I finished dancing'

b. ãĩ-pɨ̃tɨ̃ˈṽõ-mã
1SG-help-CMPL
'I finished helping'

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- Suffix targets are affected differently by progressive nasalization.

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

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

(15) a. che-ˈsi-pe
1SG-mother-DOM
'my mother'

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

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- Progressive nasalization triggered only by phonemic nasal vowels.

(16) pãnãᵐᵇi-ˈkuera *-ˈŋᵍuera
butterfly-PL
'butterflies'

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- Alternations may stack and occur non-locally.

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

b. õ-ñẽʔẽ-se-mᵇa-mᵇota-ˈmẽvẽ
3-talk-DES-TOT-INCIP-until
'until he is about to finish talking'

* across intervening suffixes (-se DES)

* across oral vowels of alternating suffixes

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

(18) a. o-ˈkɨ
3-rain
‘it rains’

(19) a. ãmã̃-ˈŋᵍɨ
rain-rain
‘rain’

b. hũ̃-ˈŋᵍɨ
black-rain
‘grey; brown’

c. h-ãsẽ̃-ˈŋᵍɨ
3POSS-cry-rain
‘weep’

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- List of stop-initial suffixes

(Estigarribia 2020, Russell 2021)

undergoing (T ~ N^{D})			**undergoing** (TV ~ NṼ)			**non-undergoing**	
ˈkuera	ˈŋᵍuera	PL	pe	me	LOC; DOM	ta	FUT
ˈpa	ˈmᵇa	TOT	ˈpeve	ˈmẽ̃ṽẽ	‘until’	pa	Q
poˈta	mᵇoˈta	INCIP				ke	FORCE
ˈtɨ	ˈnᵈɨ	COLL				mã	CMPL
						nã	REQ
						nẽ	DUB
						moˈʔa	NEG.FUT
						ˈmi	PLEA

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

* Lexical stress (or historical status; Russell 2021) doesn’t fully predict the pattern.

7 The analysis

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1. Lexical specificity

→ Morphemes differ in their lexical specification in three ways.

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

(19)

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

* post-oralization: N → N^{D} / __ V (Stanton 2017, Cabrera 2023)

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2. Phonological conditioning

(20) *[αNAS]]$_{ROOT}$ … [-αNAS] (PROGHARM)
Assign a violation to every non-local sequence of a rightmost [αNAS] segment in a root followed by a [-αNAS] segment in the output.

Root control (non-local)

(21) õ-ñẽ̃ʔẽ̃-se-mᵇa-mᵇoˈta
3-talk-DES-TOT-INCIP

Symmetric (α)

(22) *jagua-ˈŋᵍuera, *mĩtã̃-ˈkuera
dog-PL child-PL

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

(23) mĩtã-ˈŋ^{g}uera *-ˈkuera
child-PL

(24)

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

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

(25) jaɡua-ˈkuera *-ˈŋ^{g}uera
dog-PL

(26)

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

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

(27) kosiˈnã-mẽ *-pe
kitchen-LOC

(28)

/$\tilde{V}_{RT}$ - { 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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- Non-alternating morphemes violate PROGHARM optimally.

(29) ãĩ-pɨ̃tɨ̃ˈvõ-ta *-n^{d}a
1SG-dance-FUT

(30)

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

*similar analysis for oral roots and non-alternating nasal morphemes (o-jeroˈkɨ-mã)