

Paraguayan Guaraní reduplication: a novel prosodic analysis

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1 Introduction

In contexts of reduplication in Paraguayan Guaraní [gug, Tupí-Guaraní, Paraguay], two syllables are copied. The position of the reduplicant is variable, but morphophonologically conditioned. With data from apparent base-reduplicant mismatches, I evaluate three possible analyses of reduplication. Contrary to previous accounts of reduplication in Tupí-Guaraní (Everett & Seki, 1985; Rose, 2005; Hamidzadeh, 2013), I argue that the reduplicant in Paraguayan Guaraní is best analyzed as an infix: specifically, a suffix to the stressed vowel. Reduplication in Paraguayan Guaraní is sensitive to stress assignment, which is determined by the prosodic structure, and the reduplicant is a disyllabic suffix to a stressed vowel. The vowel to which the reduplicant attaches may lie within any prosodic word: therefore, both attested and unattested types of variability in reduplicant position fall out from this account. I additionally propose that synchronic variation is evidence of an ongoing reanalysis of the position of the reduplicant in Paraguayan Guaraní from a suffix to the stressed vowel towards a suffix to the prosodic word, in line with free suffix order in the language.

In Section 2, I first provide brief background information on relevant aspects of the morphophonology of Paraguayan Guaraní, including syllable structure, stem structure, and stress assignment. I then describe the pattern of disyllabic reduplication and its interactions with morphology in Section 3. Next, in Section 4, I provide evidence of apparent base-reduplicant mismatches, and in Section 5 show that they prove to be important tools for evaluating several different possible analyses of reduplication in the language. In Section 6, I argue that reduplication in Paraguayan Guaraní is best analyzed as an infix: specifically, a suffix to a stressed vowel. I discuss the implications of my analysis and briefly conclude in Section 7.

2 Language background

Paraguayan Guaraní is a Tupí-Guaraní language spoken by approximately 6.5 million people, primarily in Paraguay (Eberhard et al., 2021). All data presented here comes from elicitation over Zoom with two native speakers of Paraguayan Guaraní conducted as part of the 2020-21 Field Methods course at UC Berkeley. Examples are cited with codes which make reference to the consultant and elicitation date, and can be found in the California Language Archive at <http://dx.doi.org/doi:10.7297/X2PR7TNF> (Gómez et al., 2020). I use a modified version of the Guaraní orthography here.¹

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¹ In the standard Guaraní orthography, nasality is indicated only for certain consonants and for stressed vowels: here, I write nasality on all vowels. Stress is typically indicated only on non-final stressed vowels, but I write it here on all stressed vowels. Additionally, I write unstressed vowels as glides, in line with how they are pronounced. Finally, I write the digraph *ku* as *k^w* here for clarity. Graphemes correspond to their IPA equivalents, with some exceptions: <ch> = [ʃ]; <g> = [ɥ]; <ñ> = [ɲ]; <r> = [r]; <u> = [w]; <v> = [v]; <y> = [i]; <'> = [ʔ]; <ġ> = [ŋ], <ng> = [ŋg].

2.1 Morphophonology background

2.1.1 Syllable structure There are four surface syllable structures in Paraguayan Guaraní²: V, CV, CVJ, and CJa, in which J represents a glide. The minimal syllable consists of a single vowel, V. This syllable shape is found only in root- or suffix-final position, as exemplified by the underlined syllables in (1). Some word-initial syllables appear to be of the shape V, like the agreement prefixes in all examples in (1). However, due to a systematic process of epenthesis, all morpheme-initial vowels are actually preceded by a glottal stop (Estigarribia, 2020) (1a).

- (1) a. *o-kak^w aá*
 [ʔo.kak^wa.'a]
 3.A-grow
 'He is growing.' mcg_20210419
- b. *a-wata-reí*
 1SG.A-walk-in.vain
 'I am walking for no reason.' mcg_20210419
- c. *a-há parawayé=pe*
 1SG.A-go Asunción=LOC
 'I went to Asunción.' mcg_20201112

Most commonly, syllables have the shape CV, like all of the syllables within the examples in (2).³

- (2) a. *che chē=māndu'á-ta nde=rehe*
 1SG 1SG.B=remember-FUT 2SG=about
 'I will remember you.' ixo_20210505
- b. *řō-mō-pū'á*
 1>2-CAUS-get.up
 'I made you get up.'
- c. *ha'e chē=mō-tř-mbá chéve*
 3 1SG.B=CAUS-shame-TOTAL 1SG.ACC
 'He totally embarrassed me.'

Syllables may have the shape CVJ, where J represents a glide: [j], [w] or the glide counterpart of /i/ (orthographic <y>) (3). When a glide follows a nasal vowel within the same syllable, the glide surfaces as nasal (3d). There are phonotactic restrictions on which vowels may appear within the same syllable as glides: any vowel except for /i/ may appear before [j], while only /a/ may appear before [w] or [i] (orthographic <y>) (Estigarribia, 2020). I assume that these coda glides are underlyingly vocalic, and become glides in the process of syllabification.

- (3) a. *amandáw h-o'á*
 hail 3-fall
 'It hailed.' mcg_20210412
- b. *yvá háj*
 fruit bitter
 'The fruit is bitter.' mcg_20210419

² Other syllable structures, like CCV and CCCV, are attested within morphemes borrowed from Spanish: however, I will not discuss those further here.

³ Following Stanton (2017) and Russell (2022), among others, I assume that segments with mixed oral and nasal articulation, like *nd* in (2a) and *mb* in (2c), are post-oralized allophones of nasal stops. Although they may look on the surface like nasal-stop clusters, they are in fact single segments: the verb in (2a) is syllabified as *chē.mā.ndu.'*a.ta.

- c. *a-páy*
1SG.A-wake.up
'I woke up.' mcg_20210412
- d. *ã-ñẽ-řãj̃-johéi*
1SG.A-AGD-tooth-wash
'I brushed my teeth.' mcg_20210301

Finally, syllables may have the shape CJa, where J represents the glide [j] or [i] (orthographic <y>). The glide [w] may not appear in this position.⁴ The only vowel that may occur within this syllable context is /a/. Both possible combinations of glide and /a/ are attested in the sentence in (4). This syllable structure appears infrequently in Paraguayan Guaraní.

- (4) *a-topá-ta k^watjá pya'é*
1SG.A-find-FUT paper quickly
'I will find the paper soon.' mcg_20210308

2.1.2 Stem structure Paraguayan Guaraní is an agglutinative language; many different morphemes are expressed as prefixes or suffixes within the verbal complex (Hamidzadeh & Russell, 2014). The full verbal complex is as follows (Table 1):

optative prefix	<i>t(V)-</i>
negative prefix	<i>n(V)-</i>
agreement prefix(es)	
voice prefixes	AGD <i>je-</i> , RECIP <i>jo-</i> , CAUS <i>mo-</i>
incorporated noun	
ROOT	
derivational suffixes	ATTEN <i>-vy</i> , TRANS <i>-ka</i> , etc.
control predicate suffixes	DESID <i>-se</i> , TOTAL <i>-pa</i> , etc.
magnitude suffixes	INTENS <i>-ite</i> , DIM <i>-i</i> , etc.
mood suffixes	FUT <i>-ta</i> , FRUS <i>-mo'ã</i> , etc.
various other suffixes	'in vain' <i>-rei</i> , 'pretend' <i>-wa'u</i> , etc.
negative enclitic	NEG <i>=(r)i</i>
various enclitics	Q <i>=pa</i> , COND <i>=rãmõ</i> , etc.

Table 1: Full verbal complex (elaborated from Hamidzadeh & Russell (2014))

This order of elements within the verbal complex interacts with morphophonological processes in the language. For instance, the domain of regressive nasal harmony is typically assumed to be the root and its prefixes (Lapierre & Michael, 2017). Additionally, Dąbkowski (2022) shows evidence that the root and its prefixes form a prosodic word, and that suffixes within a certain domain each form their own prosodic words, which in turn prosodify together into a single prosodic word. Prosodic wordhood is closely associated with stress assignment.

2.1.3 Stress Primary stress is systematically assigned to the final syllable of the prosodic word, with a few lexical exceptions (Gregores & Suárez, 1967). Stress assignment is not sensitive to syllable weight: for instance, the root 'love' in (5) is composed of two syllables, *haj.hu*. Although the initial syllable contains a coda glide, and is therefore heavier, the final syllable receives predictable ultimate stress.

- (5) *a-hajhú chẽ=ãŋãj̃řũ*
1SG.A-love 1SG.B=friend
'I love my friend.' mcg_20210315

⁴ The labialized velar [k^w] does appear, as in the initial segment of 'paper' in (4). This could be analyzed as the sequence of the stop /k/ and the glide /w/: however, I consider this to be a single segment for independent reasons.

Suffixes in Paraguayan Guaraní fall within one of two domains: some suffixes can bear stress, while others never do. The ability to bear stress is not strictly conditioned by semantics.⁵ For instance, there is a close relationship between the future modal suffix *-ta* and the frustrative suffix *-mō'ã*: the frustrative is employed to express negative future meanings (6c). Despite this close semantic connection, the frustrative is stress-bearing while the future is not. It is not accurate to say that the suffixes within the verb complex presented in Table 1 can be neatly divided into stress-bearing and non-stress-bearing domains based on semantics. It is the case, however, that all stress-bearing suffixes always precede all non-stress-bearing-suffixes and enclitics.

- (6) a. *ro-japó-ta*
 IPL.EXCL-do-FUT
 'We will do it.' ixo_20201103
- b. *ro-japo-mō'ã*
 IPL.EXCL-do-FRUS
 'We were going to do it, but it did not happen.'
- c. *ndo-ro-japo-mō'ã=j*
 NEG-1PL.EXCL-do-FRUS=NEG
 'We will not do it.'
- d. **ndo-ro-japó-ta=j*
 NEG-1PL.EXCL-do-FUT=NEG
 intended: 'We will not do it.'

Primary stress is assigned to the final syllable within the domain of stress-bearing suffixes. This pattern is exemplified in (7): the totalitive and intensive suffixes are stress-bearing, while the future suffix is not.

- (7) a. *óga o-kaj-pá*
 house 3-burn-TOTAL
 'The house burned down.' mcg_20201105
- b. *óga o-kaj-pá-ta*
 house 3-burn-TOTAL-FUT
 'The house will burn down.'
- c. *óga o-kaj-pa-jté*
 house 3-burn-TOTAL-INTENS
 'The house completely burned down.'
- d. *óga o-kaj-pa-jté-ta*
 house 3-burn-TOTAL-INTENS-FUT
 'The house will completely burn down.'

Suffix order is relatively free within each domain of suffixes, with no difference in meaning (8). Stress always falls on the final suffix within the stressable domain. Dąbkowski (2022) proposes that stress-bearing suffixes are prosodified, while non-stress-bearing suffixes are not, and that free suffix order is derived from the requirement that suffixes subcategorize for a prosodic word.⁶ In the case of a verb with two prosodified suffixes, one suffix attaches to the verb first. The second suffix, which subcategorizes for a prosodic word, then has two options: it can attach directly to the prosodic word which is comprised of the verb and suffix, or it can infix by attaching to the prosodic verb which includes only the verb: thus, variable suffix order obtains.

- (8) a. *ã-ñẽ'ẽ-mba-sé* ~ *ã-ñẽ'ẽ-se-mbá*
 1SG.A-talk-TOTAL-DESID ~ 1SG.A-talk-DESID-TOTAL
 'I want to finish talking.' mcg_20210412

⁵ Whether or not a suffix bears stress is actually attributable mainly to historical origin: stress-bearing suffixes can be reconstructed as having coda consonants in Proto-Tupí-Guaraní, while non-stress-bearing suffixes had open syllables (Jensen, 1998).

⁶ See Figure 1 for a visualization of this prosodic structure.

- b. *a-watá-va=ríre* ~ *a-watá=ríre-va*
 1 SG.A-walk-REL=after ~ 1 SG.A-walk=after-REL
 ‘after I walked’

mcg_20210503

Primary stress is assigned to the final syllable of each prosodic word; though more prosodic structure may be created, the assignment of stress to each prosodic word is still perceptible as secondary stress. These stresses persist on the surface even when they result in surface stress clashes (9).

- (9) *a-hà-k^waà-sè-jevý*
 1 SG.A-go-know-DESID-again
 ‘I want to know how to go again.’ (Gregores & Suárez, 1967:p. 106)

3 Reduplication

Reduplication in Paraguayan Guaraní can have several different interpretations, conditioned by the lexical semantics of the root. In general, the reduplication of an active root has a continuative reading, while the reduplication of an inactive root has a distributive or intensive reading. Reduplication copies two syllables from the right: this size constraint is visible from the observation of reduplication with roots of different syllable counts. First, reduplicating a monosyllabic root results in reduplication of the root and one syllable of a prefix (10b). The syllable preceding the reduplicant surfaces with secondary stress. Throughout, I indicate reduplication with a tilde and mark the reduplicant in bold.

- (10) a. *a-ké*
 1 SG.A-sleep
 ‘I slept.’
 b. *a-kè~**aké***
 1 SG.A-sleep~RED
 ‘I keep sleeping.’

mcg_20210419

Reduplicating a disyllabic root results in copying of the two syllables of the root (11). The reduplicant is always a copy of two syllables, regardless of their shape.⁷

- (11) a. CV.V
 i. *a-haí*
 1 SG.A-write
 ‘I write.’
 ii. *a-haì~**haí***
 1 SG.A-write~RED
 ‘I keep writing.’
 b. CV.CV
 i. *ã-ñẽ’**é***
 1 SG.A-speak
 ‘I speak.’
 ii. *ã-ñẽ’**é**~**ñẽ’**é*****
 1 SG.A-speak~RED
 ‘I keep speaking.’

mcg_20210419

Reduplicating a trisyllabic root results in the copying of the last two syllables of the root, regardless of shape (12).

⁷ I address roots of the shape CVJ in Section 4.

- (12) a. CV.CV.V
 i. *o-kak^waá*
 3.A-grow
 ‘He grows.’ mcg_20210419
 ii. *o-kak^waà~k^waá*
 3.A-grow~RED
 ‘He keeps growing.’
 b. CV.CV.CV
 i. *chē=kānē’ó*
 1SG.B=tired
 ‘I am tired.’
 ii. *chē=kānē’ò~nē’ó*
 1SG.B=tired~RED
 ‘I am very tired.’

To summarize, the size of the reduplicant is two syllables, which may be of any shape. Copying appears to be aligned to the right: when reduplication targets trisyllabic roots, as in (12), the final two syllables of the root are copied.

3.1 Variability in reduplicant position When stress-bearing suffixes are present, the reduplicant may optionally contain syllables from those suffixes, with no change in meaning. For example, in (13) below, there are three possible sites for reduplication. Regardless of the location of the reduplicant, it always copies exactly two syllables. This could consist of the two syllables of the root (13a), one syllable of the root and one of a stress-bearing suffix (13b), or two syllables of stress-bearing suffixes (13c).

- (13) a. *ō-mỹāñā~mỹāñā-mbà-jté* *ij=aó kaha-riepýpe*
 3.A-push~RED-TOTAL-INTENS 3.B=clothes box-inside
 ‘She keeps pushing all of the clothes into the box.’ mcg_20210406
 b. *ō-mỹāñā-mbà~ñāmbà-jté* *ij=aó kaha-riepýpe*
 3.A-push-TOTAL~RED-INTENS 3.B=clothes box-inside
 ‘She keeps pushing all of the clothes into the box.’
 c. *ō-mỹāñā-mbà-jtè~mbajté* *ij=aó kaha-riepýpe*
 3.A-push-TOTAL-INTENS~RED 3.B=clothes box-inside
 ‘She keeps pushing all of the clothes into the box.’

Suffixes outside of the stressable domain, however, cannot form part of the reduplicant (14).

- (14) a. *re-karù~karú-ma=pa*
 2SG.A-eat~RED-already=Q
 ‘Have you eaten a little something already?’ mcg_20210412
 b. **re-karù-ma~rúma=pa*
 2SG.A-eat-already~RED=Q
 intended: ‘Have you eaten a little something already?’
 c. **re-karú-ma=pa~mapa*
 2SG.A-eat-already=Q~RED
 intended: ‘Have you eaten a little something already?’

In summary, stress-bearing suffixes can optionally participate in reduplication, while non-stress-bearing suffixes cannot. The rightmost syllable of the reduplicant always carries either primary or secondary stress.

4 Base-reduplicant mismatch

Mismatches between base and reduplicant often pose interesting theoretical puzzles, as accounting for them may seem to require some unorthodox assumptions, such as faithfulness between the underlying form of the base and the surface form of the reduplicant (Riggle, 2006). I present a case of an apparent mismatch between base and reduplicant in Paraguayan Guaraní here, in which a root-final glide only appears once even when that root is reduplicated.

As described in Section 2.1.1, a root may end in a syllable of the shape CVJ. When such a root is reduplicated, the base may appear either with or without the final glide (15).⁸ Regardless of which strategy is used, the glide always surfaces in the second copy. This pattern occurs with every possible combination of a vowel and final glide (provided in the appendix in Section 8).

- (15) a. *che=resaráj h=éra=gui*
 1SG.B=forget 3.B=name=from
 ‘I forget his name.’ mcg_20210419
- b. *che=resarà~saráj h=éra=gui*
 1SG.B=forget~RED 3.B=name=from
 ‘I keep forgetting his name.’
- c. *che=resaràj~saráj h=éra=gui*
 1SG.B=forget~RED 3.B=name=from
 ‘I keep forgetting his name.’

In Sections 4 and 5, I focus on the pattern exemplified in (15b), in which the root-final glide appears only once. I return to address the pattern in (15c) and the variation between the two possible forms in Section 6.

5 Evaluating possible analyses

There are several different conceivable ways of analyzing the Paraguayan Guaraní reduplication pattern: I now detour to briefly survey the prior claims that have been made about reduplication across Tupí-Guaraní, in order to assess whether those claims are able to account for the Paraguayan Guaraní patterns.

5.1 Looking across Tupí-Guaraní Paraguayan Guaraní is part of the Tupí-Guaraní language family, which has members across much of eastern South America. All languages of the Tupí-Guaraní family make use of reduplication. Dietrich (2014) proposes that Proto-Tupí-Guaraní had two productive processes of reduplication which involved reduplicants of different sizes: monosyllabic reduplication to indicate event-internal plurality and disyllabic reduplication to indicate event-external plurality. In many daughter languages, including Paraguayan Guaraní, the process of monosyllabic reduplication is no longer productive. The phonological form of (event-external) reduplication is remarkably consistent across Tupí-Guaraní: the reduplicant is comprised of two syllables, generally aligned to the right of the word. One key difference between Paraguayan Guaraní and many other Tupí-Guaraní languages lies in the presence of coda consonants. The proto-language is reconstructed with coda consonants, which were lost in several subgroups, including the one to which Paraguayan Guaraní belongs (Rodrigues, 1984). In languages which retained coda consonants, like Tupínambá [tpn, Tupí-Guaraní, Brazil], we observe a familiar base-reduplicant mismatch in contexts of reduplication (16). The coda consonant, here the nasal [n], appears only in the second copy of the verb: this pattern exactly parallels the distribution of coda glides in Paraguayan Guaraní.

- (16) Tupínambá [tpn, Tupí-Guaraní, Brazil]
 a. *a-i-mokón*
 1SG-3-swallow
 ‘I swallowed it.’ (Jensen, 1990:p. 538)

⁸ This terminology assumes that the correct analysis of base and reduplicant is as I have glossed it here: this analysis will be critically evaluated in Section 5, but I maintain it here for explanatory purposes.

- b. *a-i-mokó~mokón*
 1SG-3-swallow~swallow
 ‘I swallowed them repeatedly.’ (my segmentation)

This same pattern of a mismatch between base and reduplicant is consistent across all Tupí-Guaraní languages with coda consonants. In their work on Kamaiurá [kay, Tupí-Guaraní, Brazil], Everett & Seki (1985) analyze reduplication as a disyllabic suffix to the word (17); this analysis has been suggested for Paraguayan Guaraní as well (Hamidzadeh, 2013). Everett and Seki explain that the coda consonant of the root has been deleted as part of a phonotactic restriction on consonant clusters. Simply reduplicating the root with the coda consonant intact would produce the illicit sequence *nm, and so the final consonant of the root deletes instead.

- (17) Kamaiurá [kay, Tupí-Guaraní, Brazil]
o-moko~mokon
 3-swallow~RED
 ‘He swallowed it repeatedly.’ (Everett & Seki, 1985:p. 327) (my segmentation)

Alternatively, Rose (2005), in her work on Emerillon [eme, Tupí-Guaraní, French Guiana], has analyzed Tupí-Guaraní reduplication as prefixal (18). She assumes that the first copy is actually the reduplicant. Explaining away the absence of the coda consonant in the reduplicant, then, is trivial: the reduplicant is simply specified as having a bimoraic template. Since a coda consonant is a mora of its own, it cannot be included within the reduplicant due to the size restriction.

- (18) Emerillon [eme, Tupí-Guaraní, French Guiana]
a-iju~ijunη zebi?a
 1SG-RED~put music
 ‘I am always listening to music.’ (Rose, 2005:p. 361)

In summary, there are two predominant analyses of reduplication in Tupí-Guaraní. One assumes that the reduplicant is a disyllabic suffix to the word, and that coda consonants delete due to independent phonotactic restrictions. The other assumes that the reduplicant is a bimoraic prefix, and that coda consonants are excluded by virtue of the size of the template.

5.2 Application to Paraguayan Guaraní I argue that neither analysis is tenable for the Paraguayan Guaraní facts. First, an analysis in which the reduplicant is a disyllabic suffix to the word relies crucially on the assumption that deletion of the final consonant in the base occurs due to a phonotactic restriction on consonant clusters. In the underlying form — *mokón~mokón* for the Tupínambá example — the base-final consonant is underlyingly present, but is deleted due to a surface restriction on adjacent consonants. However, there is no evidence for any phonotactic restriction in Paraguayan Guaraní that would prevent a glide from immediately preceding another consonant. In fact, this very sequence occurs quite frequently in the language, both within morphemes and across morpheme boundaries (19).

- (19) a. *ã-mõ-majteí* *che=familia-k^wéra=pe*
 1SG.A-CAUS-greeting 1SG.B=family-COLL=LOC
 ‘I greeted my family.’ mcg_20210419
- b. *óga o-kaj-pa-jté*
 house 3.A-burn-TOTAL-INTENS
 ‘The house burned down.’ ixo_20201201

Incidentally, Everett and Seki’s analysis, which hinges on the assumption that coda consonant deletion results from surface markedness constraints, does not even account for all of the Kamaiurá data (20). Their analysis would incorrectly predict the surface form of (20b) to be **apot~apot*, since no sequence of adjacent consonants would be created through reduplication.

- (20) Kamaiurá [kay, Tupí-Guaraní, Brazil]
- a. *a-pot*
1SG-jump
'I jump.' (Everett & Seki, 1985:p. 328)
- b. *a-po~apot*
1SG-jump~RED
'I jump repeatedly.' (my segmentation)

Additionally, in Paraguayan Guaraní, a root-final coda glide may be absent in reduplication contexts, even when no consonant cluster would have ever been created. For instance, in (21), below, the absence of the glide [i] (orthographic <y>) in the surface form cannot be attributed to any restriction on consonant clusters, since the glide would not have preceded a consonant in the output anyway.

- (21) *a-pà~apáy*
1SG.A-wake.up~RED
'I keep waking up.' mcg_20210503

An analysis in which the reduplicant is a disyllabic suffix to the word is inadequate in accounting for the facts of reduplication across Tupí-Guaraní, not just in Paraguayan Guaraní.

Next, I argue that an analysis in which the reduplicant is a bimoraic prefix to the penultimate syllable is flawed for multiple reasons. First, this analysis relies on the reduplicant being specified as bimoraic in order to constrain the amount of material copied, and thereby avoid copying a root-final consonant. However, this size restriction does not accurately describe the Paraguayan Guaraní facts, as glides in non-final syllables are never deleted in reduplication (22).

- (22) a. *a-hajhù~hajhú chupé*
1SG.A-RED~love DOM
'I keep loving him.' mcg_20210503
- b. **a-hahù~hajhú chupé*
1SG.A-RED~love DOM
intended: 'I keep loving him.'

Additionally, this analysis takes reduplication to be an infix: more specifically, a prefix to the penultimate syllable. Prior literature has found that infixation sites are limited to edges and prominent positions (Yu, 2007): the penultimate syllable is clearly not an edge, and it cannot be considered a prominent position in Paraguayan Guaraní, nor in most Tupí-Guaraní languages.

For these reasons, I have shown that neither prior analysis of reduplication in Tupí-Guaraní is able to account for the facts of reduplication in Paraguayan Guaraní. Instead, a novel approach is needed.

6 Proposal

I propose that reduplication in Paraguayan Guaraní is instead best analyzed as an infix: specifically, a suffix to a stressed vowel, as in the segmentation given in (23). The final glide is extrametrical: it does not form part of the base nor the reduplicant, and therefore it is not necessary to posit any process of deletion. This account is more appropriate for the data than either analysis covered in Section 5, as my proposal has further advantages beyond simply accounting for the facts. This analysis also gives us insight into the mechanisms behind reduplication in Paraguayan Guaraní and is neatly able to account for both attested and unattested types of variability.

- (23) *o-sapukà~puká~j*
3.A-shout~RED~shout
'He keeps shouting.' mcg_20210406

6.1 Variability in position I have defined the reduplicant as a suffix to a stressed vowel. One of the major benefits of this analysis relates to the attested variability in the position of the reduplicant: I reproduce data previously shown in (13) below in (24) in order to illustrate this variable position of reduplication.

- (24) a. \tilde{o} - $m\tilde{y}\tilde{a}\tilde{n}\tilde{a}$ ~ $m\tilde{y}\tilde{a}\tilde{n}\tilde{a}$ - $mb\grave{a}$ - $jt\acute{e}$ $ij=a\acute{o}$ $kaha$ - $riep\acute{y}pe$
 3.A-push~RED-TOTAL-INTENS 3.B=clothes box-inside
 ‘She keeps pushing all of the clothes into the box.’ mcg_20210406
- b. \tilde{o} - $m\tilde{y}\tilde{a}\tilde{n}\tilde{a}$ - $mb\grave{a}$ ~ $\tilde{n}\tilde{a}mb\grave{a}$ - $jt\acute{e}$ $ij=a\acute{o}$ $kaha$ - $riep\acute{y}pe$
 3.A-push-TOTAL~RED-INTENS 3.B=clothes box-inside
 ‘She keeps pushing all of the clothes into the box.’
- c. \tilde{o} - $m\tilde{y}\tilde{a}\tilde{n}\tilde{a}$ - $mb\grave{a}$ - $jt\grave{e}$ ~ $mbaj\acute{t}\acute{e}$ $ij=a\acute{o}$ $kaha$ - $riep\acute{y}pe$
 3.A-push-TOTAL-INTENS~RED 3.B=clothes box-inside
 ‘She keeps pushing all of the clothes into the box.’

Under an account in which the reduplicant is a disyllabic suffix to the entire word (or, alternatively, a bimoraic prefix to the penultimate syllable), these facts are incredibly difficult, if not impossible, to explain. However, I argue that this variability in position falls out neatly from my proposal in which the reduplicant is a suffix to a stressed vowel. The connection between stress and position originates from the prosodic structure. As represented in the diagram in Figure 1,⁹ each prosodic word receives default final stress, represented here as S. Primary stress falls on the last syllable of the prosodic word: all other prosodic-word-final syllables receive secondary stress. The reduplicant is composed of two syllables that are not underlyingly associated with any segmental material. The reduplicant can attach to any stressed vowel, within any prosodic word, thus accounting for the variability in its position and closely paralleling the free suffix order observed in the language.

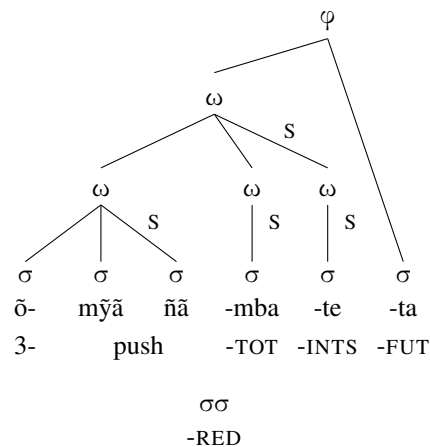


Figure 1: Proposed prosodic structure of Paraguayan Guaraní (adapted from Dąbkowski (2022))

6.2 Variability in glide presence The analysis I have laid out for reduplication in Paraguayan Guaraní can now straightforwardly account for examples like (25a). Nevertheless, examples like (25b) are also readily produced and accepted by native speakers, so any analysis of reduplication in Paraguayan Guaraní must be able to account for them as well. However, if the reduplicant is a suffix to a stressed vowel, then it stands to reason that the coda glide should not be visible to reduplication at all, therefore incorrectly predicting that forms like (25b) should be unattested.

⁹ In this diagram, I ignore the initial vowel of the intensifier suffix for clarity. Since primary stress is assigned to the final syllable of each prosodic word — in this case *-ité* — that leaves the initial vowel of the intensifier unstressed, which feeds glide formation.

- (25) a. *o-sapukà~puká~j*
 3.A-shout~RED~shout
 ‘He keeps shouting.’
- b. *o-sapukàj~pukáj*
 3.A-shout~RED
 ‘He keeps shouting.’

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I propose that the observed variation can actually be attributed to reanalysis. While all other Tupí-Guaraní languages with attested patterns of reduplication have forms like (25a), I am aware of no Tupí-Guaraní language with a possible pattern of reduplication like (25b), in which a root-final coda consonant or glide is present in both base and reduplicant: therefore, it stands to reason that the form in (25b) has in fact been innovated in Paraguayan Guaraní. I therefore assume that the two analyses of reduplication in Paraguayan Guaraní — one of the reduplication as a suffix to a stressed vowel, and one of reduplication as a suffix to a prosodic word — are in competition in the grammars of Paraguayan Guaraní speakers. Interestingly, the implication of the analysis of the innovative pattern is that the reduplicant has been reanalyzed as sharing the same subcategorization frame as other stress-bearing suffixes: namely, that it subcategorizes for a prosodic word. In essence, I assume that the synchronic variation between (25a) and (25b) results from competition between the analysis of the reduplicant as a disyllabic suffix to a stressed vowel versus the analysis of the reduplicant as a disyllabic suffix to a prosodic word. Diachronically, all coda consonants apart from glides were lost in the precursor to Paraguayan Guaraní: as a result, this is the only environment in which the two analyses can be teased apart.

7 Conclusions

Reduplication in Paraguayan Guaraní is sensitive to stress assignment, which is determined by the prosodic structure. I argue that the reduplicant is a disyllabic suffix to a stressed vowel, accounting for forms in which a root-final glide appears only once in reduplication. In my analysis, the vowel to which the reduplicant attaches may lie within any prosodic word, thereby accounting for both attested and unattested types of variability in the position of the reduplicant. I have shown that an apparent base-reduplicant mismatch does not hold up upon further scrutiny: instead, reanalysis of the position of the reduplicant leads to a more economical and more appropriate account of the data, following work like Riggle (2006) and Mellesmoen (2017). Prior analyses of reduplication in Tupí-Guaraní come with unnecessary theoretical complications, such as having to explain deletion from the base without correspondence in the reduplicant or having to propose a typologically unusual infix position. Variability in the position of the reduplicant, as well as the inclusion or exclusion of a root-final glide, falls out from this analysis together with the proposed prosodic structure. Finally, I propose that observed variation in Paraguayan Guaraní reduplication in cases involving root-final glides may lend support for an ongoing reanalysis of the reduplication pattern, from one in which the edge of the reduplicant is aligned with a stressed vowel towards one in which the edge of the reduplicant is aligned with a prosodic word.

8 Appendix

Abbreviations used throughout include 1: first person, 2: second person, 3: third person, A: Set A agreement, ACC: accusative, AGD: agent demoter, ATTN: attenuative, B: Set B agreement, CAUS: causative, COLL: collective, COND: conditional, DESID: desiderative, DIM: diminutive, DOM: differential object marking, EXCL: exclusive, FRUS: frustrative, FUT: future, INTENS: intensive, NEG: negative, Q: question, RECIP: reciprocal, RED: reduplication, REL: relativizer, SG: singular, TOTAL: totalitive, TRANS: transitivizer.

8.1 Examples of glide-final root reduplication Examples (26 – 30) demonstrate that variability is attested for reduplication of all combinations of stressed vowel plus coda glide.

- (26) a. *a-purahéj*
 1SG.A-sing
 ‘I sing.’

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- b. *a-purahè~rahéj*
1SG.A-sing~RED
'I keep singing.'
- c. *a-purahèj~rahéj*
1SG.A-sing~RED
'I keep singing.'
- (27) a. *řō-hěňóĵ*
1>2-call
'I called you.' mcg_20210419
- b. *řō-hěňò~hěňóĵ*
1>2-call~RED
'I keep calling you.'
- c. *řō-hěňóĵ~hěňóĵ*
1>2-call~RED
'I keep calling you.'
- (28) a. *ko káha i=vevúj*
DEM box 3.B=light
'The box is light.' mcg_20210426
- b. *ko káha i=vevù~vevúj*
DEM box 3.B=light~RED
'The box is very light.'
- c. *ko káha i=vevúj~vevúj*
DEM box 3.B=light~RED
'The box is very light.'
- (29) a. *ha'e chē=mō-ndýj*
3 1SG.B=CAUS-fear
'He scared me.' mcg_20210419
- b. *ha'e chē=mō-ndý~mōndýj*
3 1SG.B=CAUS-fear~RED
'He keeps scaring me.'
- c. *ha'e chē=mō-ndýj~mōndýj*
3 1SG.B=CAUS-fear~RED
'He keeps scaring me.'
- (30) a. *che a-páy*
1SG 1SG.A-wake.up
'I woke up.' mcg_20210412, mcg_20210419
- b. *che a-pà~apáy*
1SG 1SG.A-wake.up~RED
'I keep waking up.'
- c. *che a-pày~apáy*
1SG 1SG.A-wake.up~RED
'I keep waking up.'

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