

A prominence analysis of the Northern Mam weight hierarchy

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1 Introduction

- Mam (iso: mam) is a Mayan language spoken in Guatemala
- Three dialect areas: Northern, Western, and Southern (e.g. Pérez Vail 2004).
 - All areas assign stress differently.
 - Todos Santos Mam (henceforth Mam), is a Northern Mam dialect.



- Northern Mam stress assignment is sensitive to the following weight hierarchy:

VV > V? > VC > V

- Typologically unusual; coda type does not usually affect weight.

Goals: 1) analyze Mam stress within the prominence framework (Ryan 2019, 2020); 2) show that Mam's ranking of V? > VC results from language-specific phonetic realization of V?.

2 Mam stress assignment

- Generalizations from England (2017).
- Stress is placed on the **heaviest rime type**.

(1) VV > V?

V?.VV [kuʔ. 'wa:l] ku'waal 'child'
 VV.V?(C) ['ʔa:l.ɕaʔn] aalq'a'n 'robs'

(2) V? > VC

V?.VC ['xɪʔ. [s'ex] ji'tx'aj 'thin person'
 VC.V? [ʔax. 'b'eʔ] ajb'e' 'wants'

(3) VC > V

V.VC [ma. 'sath] masat 'deer'
 VC.V ['ʔox. [s'e] ojtxa 'after'

- Otherwise, stress is rightmost, but never falls on a final light syllable.

VC.VC [ʔax. 'lan] ajlan 'rests'
 VC.VC [man. maq^h] manmaq 'big'
 V.V ['me. b'e] meb'a 'orphan'
 V.V ['sɕɪ. ɕe] shbiq'a 'naked'

3 Theories of ternary weight: coercion vs. prominence

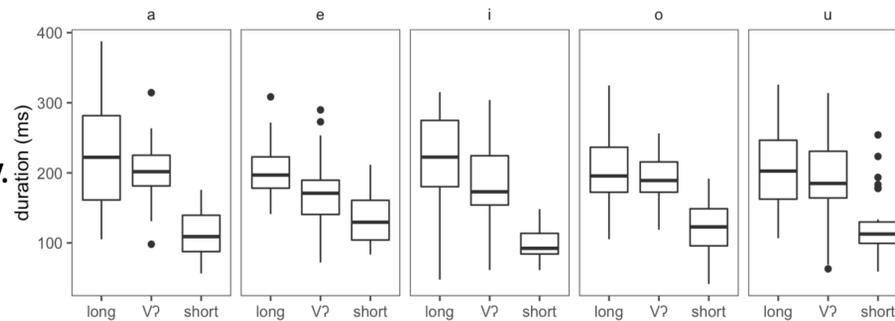
- Two frameworks for analyzing VV > VC > V weight scales: contextual coda moraicity (a.k.a. **coercion**; e.g. Morén 2000) or **vowel prominence** (Ryan 2019, 2020)
- Coercion**: VV is always bimoraic, VC is only bimoraic if stressed (in OT: WEIGHT-TO-STRESS >> WEIGHT-BY-POSITION). VC's "yield up" mora to VV if present.
 - Two major pathologies (Ryan 2019): it cannot handle when geminates contribute to stress (e.g. Kashmiri), or when secondary stress is sensitive to weight (e.g. Chickasaw).
- Vowel prominence** (Ryan 2019): Stress is attracted to perceptually salient syllables.
 - Enforced using **VV-TO-MAIN**, which is perceptually grounded (vowels are most perceptually salient, long vowels are even more salient)
 - Handles both pathologies.
- Mam is amenable to coercion or prominence, but phonetic data supports Ryan's vowel-prominence constraints.

4 Placing Mam within the prominence framework

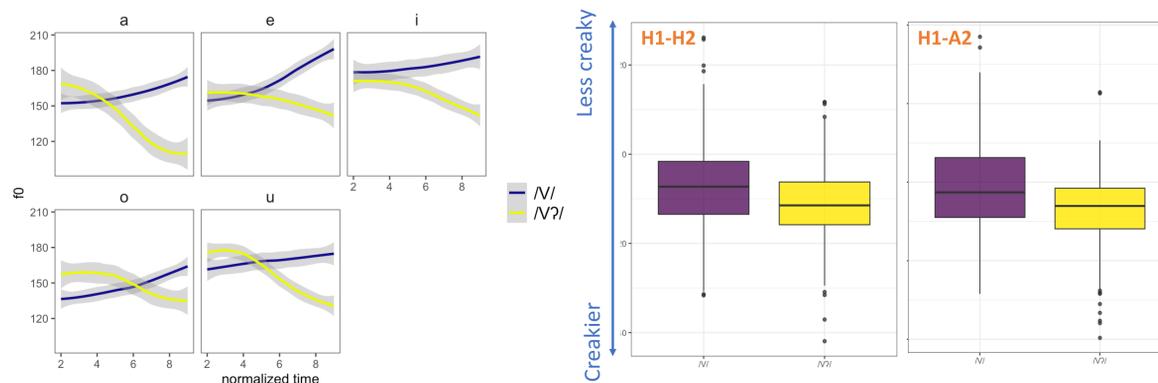
An acoustic study of a speaker of Todos Santos Mam

- Methodology: wordlist reading (128 items x 3 reps = 384 tokens)
- Measures: duration, f0 (10 timepoints), H1*-H2*, H1*-A2*
- Mixed effects models: measure ~ LENGTH + vowel + onsetPlace + codaPlace + (1 | stimulus)
- Key finding**: /V?/ is more acoustically prominent than V(C), in terms of vowel duration.
- realized as glottalized vowel, with duration *intermediate between VV and V(C)*

/V?/ duration is intermediate between V and VV.



/V?/ is realized as a glottalized vowel with no [ʔ] release



5 An OT analysis of Mam stress

- To Ryan's class of perceptually grounded constraints (e.g. VV-TO-MAIN), add **V?-TO-MAIN**
 - Penalizes V? syllables lacking primary stress.
 - Rooted in language-specific acoustic evidence.
 - The ranking VV-TO-MAIN >> V?-TO-MAIN falls out from the relative prominence of VV and V? syllables.

(1) VV > V?

/kuʔwa:l/ 'child'	VV-TO-MAIN	WTS	V?-TO-MAIN	ALIGN-R
a. [kuʔ _μ 'wa:l _μ		*	*	
b. 'kuʔ _μ wa:l _μ	*!	*		*

(2) V? > VC

/xɪʔts'ax/ 'thin person'	VV-TO-MAIN	WTS	V?-TO-MAIN	ALIGN-R
a. [xɪʔ _μ ts'ex _μ		*		*
b. xɪʔ _μ ts'ex _μ		*	*!	

(3) Else, stress on rightmost heavy

/manmaq/ 'big'	VV-TO-MAIN	WTS	V?-TO-MAIN	ALIGN-R
a. [man _μ 'maq ^h _μ		*		
b. 'man _μ maq ^h _μ		*		*!

A crosslinguistic outlook

- Language-specific weight hierarchies fall out from language-specific phonetic realizations.
 - Some languages (e.g. Hupa; Gordon 2005) have a weight hierarchy V? < V (reverse of Mam).
 - Likely reduced or "checked" syllables.
 - Realization of glottal rimes varies cross-linguistically, and can affect their ranking within a language's prominence hierarchy

References

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