Convergence and divergence in Eastern Cham language contact

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Claims

• Eastern Cham ‘monosyllabization’ involves multiple processes
  • Some do not seem to be due to language contact
  • Others may have arisen as follows:

• Eastern Cham and Vietnamese have convergent phonetic processes:
  a) In the environment of a sonorant:
    Unstressed syllable > homorganic sonorant
  b) In the environment of an obstruent:
    Unstressed syllable > homorganic nasal

• Eastern Cham phonologizes these processes, resulting in phonological divergence
  • Contrastive sonorant length
  • Novel consonant clusters: nasal + stop
Outline

1. Previous literature
   • What is monosyllabization, and is it a contact effect?

2. Descriptive account of Eastern Cham monosyllabization
   • Results of a sociolinguistic survey (n = 28)

3. Monosyllabization as language contact
   • Closer look at Vietnamese phonotactics

4. Nasalization as the phonologization of phonetic processes
1. What is monosyllabization?

- Eastern Cham (Austronesian: Vietnam) is spoken by about 120,000 people in south-central Vietnam.
- Likely every speaker is bilingual with Vietnamese, the dominant sociopolitical language (Brunelle 2008).
- Eastern Cham is in a quasi-diglossic situation: (Brunelle 2005, 2009a; Brunelle & Phú forthcoming)
  - H (formal): largely preserves classical Cham script from several centuries ago \( \rightarrow \) disyllabic roots.
  - L (colloquial): casual speech, subsequent sound changes \( \rightarrow \) monosyllabic roots.

<table>
<thead>
<tr>
<th>Proto-Chamic (Thurgood 1999)</th>
<th>Cham script (Akhăr Thrah)</th>
<th>H (formal)</th>
<th>L (colloquial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*măta ‘eye’</td>
<td>ꨠꨒ &lt; ma-ta &gt;</td>
<td>măta</td>
<td>pta ~ mta ~ nta</td>
</tr>
</tbody>
</table>
1. What is monosyllabization?

• Eastern Cham is an SVO language with no bound morphology in the L (colloquial) variety

• Historically, many roots were sesquisyllabic:
  • **Presyllable**: minor, unstressed, reduced syllable
  • **Main syllable**: major, stressed, full length syllable

• ‘**Monosyllabization**’: Deletion or reduction of presyllables

\[ \text{mă.ta} \]
1. Previous literature

• Some monosyllabization is evident in classical Cham script
  • Increasing contact with Vietnam in this period (e.g. Po 1994)
  • Presyllable deletion (a–b: Aymonier & Cabaton 1906)
  • Vowel elision, between stop + sonorant (c: Brunelle & Pittayaporn 2012: 417)

(3) a. \(<ikan> \sim <kan>\) ‘fish’
  b. \(<hadaḥ> \sim <daḥ>\) ‘gleam’
  c. \(<palăj> \sim <plăj>\) ‘village’

• This results in no new consonant clusters
  • Cf. *pluh > plŭh ‘ten’

* \(<x>\) brackets indicate orthography of the respective linguist.
1. Previous literature

• A new kind of monosyllabization is seen in the 1960’s (David Blood 1967: 24)
  • Nasalization to $m$ (a–b)
  • Nasalization to homorganic nasal (c–d)

(4)  
  a. $<\text{lip}\text{e}w>$ $\sim$ $<\text{mp}\text{e}w>$ ‘wash hair’
  b. $<\text{m}\text{a}t\text{a}>$ $\sim$ $<\text{m}\text{ta}>$ ‘eye’
  c. $<\text{rit}\text{u}h>$ $\sim$ $<\text{n}\text{tu}h>$ ‘hundred’
  d. $<\text{lik}\text{e}y>$ $\sim$ $<\text{n}\text{k}\text{e}y>$ ‘male’

* $<x>$ brackets indicate orthography of the respective linguist.
1. Previous literature

- Alieva (1991: 223) reports variation between syllable deletion and vowel elision
  - Presyllable deletion (a–d)
  - Vowel elision, anywhere (a–d)

\[(5)\]

a. `<kopaw> ~ <kpaw> ~ <paw>` ‘water buffalo’

b. `<lipow> ~ <lpow> ~ <pow>` ‘thousand’

c. `<lomuʔ> ~ <lmuʔ> ~ <muʔ>` ‘fat’

d. `<poriaʔ> ~ <priaʔ> ~ <riaʔ>` ‘silver’

* `<x>` brackets indicate orthography of the respective linguist.
1. Previous literature

Summary

- There are at least three mechanisms of monosyllabization:
  
  1. **Syllable deletion** (Classical Cham script)
     - \(<ikan> \sim <kan>\) ‘fish’
  
  2. **Vowel elision** (Alieva 1991)
     - \(<paläj> \sim <pläj>\) ‘village’
  
  3. **Nasalization** (David Blood 1967)
     - \(<lipəw> \sim <mpəw>\) ‘wash hair’

- All are attested in contemporary Eastern Cham
  (Bùi 1996: 34, 49; Brunelle & Phú forthcoming)

* \(<x>\) brackets indicate orthography of the respective linguist.
1. Is it a language contact effect?

- There are many contact effects from VN > Eastern Cham
  - Borrowings, functional words, phonotactics
- Monosyllabization is often considered to be one such contact effect, due to the monosyllabicity of Vietnamese (Alieva 1991, 1994; Thurgood 1996, 1999; contra Brunelle 2009a; Brunelle & Pittayaporn 2012; cf. discussion in Brunelle 2009a)

<table>
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<tr>
<th>Vietnamese</th>
<th>Eastern Cham</th>
</tr>
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<tbody>
<tr>
<td>phải [fǎj] ‘must’</td>
<td>phaj [pʰàj] ‘must’</td>
</tr>
<tr>
<td></td>
<td>(Brunelle 2008: 31)</td>
</tr>
<tr>
<td>là ‘COP’</td>
<td>la [là] ‘COP’</td>
</tr>
<tr>
<td></td>
<td>(Brunelle &amp; Phú forthcoming)</td>
</tr>
<tr>
<td>/ŋ/ → [ŋm] / V_{rd}</td>
<td>/ŋ/ → [ŋm] / V_{rd}</td>
</tr>
<tr>
<td></td>
<td>(Baclawski Jr. 2016)</td>
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<tr>
<td>Monosyllabic?</td>
<td>Monosyllabization?</td>
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</table>
1. Is it a language contact effect?

• But does monosyllabization stand up to scrutiny as a language contact effect? (Mougeon, et al 2005; Poplack & Levey 2010; a.o.)

1. Was the feature present in an earlier variety?
   • Deletion and vowel elision: Yes (cf. Cham script)
   • Nasalization: Unclear

2. Could the feature have evolved language-internally?
   • Deletion and vowel elision: Yes
     Brunelle & Pittayaporn (2012) argue for its typological naturalness
   • Nasalization: Unclear
1. Is it a language contact effect?

• But does monosyllabization stand up to scrutiny as a language contact effect?
  (Mougeon, et al 2005; Poplack & Levey 2010; a.o.)

3. Does degree of speaker contact correlate with use of the feature?
  • Deletion and vowel elision: No
    Brunelle (2005, 2009a) only finds correlation with quasi-diglossia
    But it could have arisen by contact, then attained social meaning
  • Nasalization: Not yet tested

4. Does degree of contact among varieties correlate with use of the feature?
  • Generally, yes:
    Châu Đốc Cham and Kompong Chhnang Cham have more disyllabic roots and are in contact with Khmer instead of Vietnamese
    (Brunelle 2009b)
1. Is it a language contact effect?

• But does monosyllabization stand up to scrutiny as a language contact effect? (Mougeon, et al 2005; Poplack & Levey 2010; a.o.)

5. Is the feature *identical* in both languages?
   • Most assume that Eastern Cham has replicated Vietnamese word structure
     • Proto-Chamic: Disyllabic > sesquisyllabic roots
     • Vietnamese: Monosyllabic roots
   • But it’s not so simple as that. See, Section 3...

*Both Eastern Cham and Vietnamese have some trisyllabic roots (~1% of each lexicon). Feel free to ask me how these roots fit in here.
1. Summary

- There is evidence to doubt that deletion/elision are due to contact with Vietnamese
  - It could still be a contact effect, but it would be difficult to prove so
- The status of nasalization is much less clear
  - Classical Cham script may not have marked syllabic nasals
  - Other studies have not focused on nasalization

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<th>Deletion/elision</th>
<th>Nasalization</th>
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<td>Yes</td>
<td>?</td>
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<td>No</td>
<td>Yes</td>
<td>?</td>
</tr>
<tr>
<td>3. Speaker contact?</td>
<td>Yes</td>
<td>No</td>
<td>?</td>
</tr>
<tr>
<td>4. Variety contact?</td>
<td>Yes</td>
<td>Yes</td>
<td>?</td>
</tr>
<tr>
<td>5. Identical feature?</td>
<td>Yes</td>
<td>?</td>
<td>?</td>
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</tbody>
</table>
2. Sociolinguistic survey

• “Without a full sociolinguistic survey, it is difficult to lay out precise rules [of monosyllabization]”
  (Brunelle & Phú forthcoming)

• We made first steps towards such a survey:
  • Core sample of 28 speakers, aged 18-37 (median: 22)
  • 16 identified as female, 12 as male
  • From the Cham villages of Ninh Thuận province
  • Interviewed in Ho Chi Minh City and the Cham villages (2015-6)

• Survey structure
  • Instructed to speak colloquially
  • Word list, followed by Sentence task with 50 words
    28 historically disyllabic roots
2. Sociolinguistic survey

- Forms were coded impressionistically (by author)
  - Disyllabic vs. monosyllabic
  - Identity of reduced presyllables
  - Due to recording conditions (loud cafes), acoustic measurements were infeasible

- Total: 1,252 tokens
  - 52 disyllabic (spread among 6 female, 7 male speakers)
  - 1,200 (96%) monosyllabic forms
2. Results: Mono- vs. disyllables

• Logistic mixed effects models with likelihood ratio tests (R environment, lme4, pwr packages)

• Fixed effects:
  • Age (18-37)
  • Gender (16 female, 12 male)
  • Village (10 from Palei Hamu Craok, 7 from Hamu Tanran, 6 from Palei Ram)*
  • Task (Word list, Sentence)

• Random effects:
  • Individual speaker
  • Location of interview (Ho Chi Minh City, Cham villages)
  • Lexical item
  • Order in interview

*Làng Bầu Trúc, làng Hữu Đức, làng Văn Lâm, respectively
2. Results: Mono- vs. disyllables

- Age, Gender, Task n.s.
- Village significant, such that Palei Hamu Craok uses fewer disyllabic roots
  (Observer effect: participants recruited by assistant from Hamu Craok)

| Fixed effects          | Estimate  | Std. Error | z value | Pr(>|z|)  |
|------------------------|-----------|------------|---------|-----------|
| Gender:M               | 0.008649  | 0.915453   | 0.009   | 0.992     |
| Task:Sentence          | 0.4896    | 0.3522     | 1.39    | 0.164     |
| Village:HAMU CRAOK     | 2.8966    | 1.4373     | 2.015   | 0.04387 * |
| Village:HAMU TANRAN    | -0.2374   | 1.196      | -0.198  | 0.84266   |
| Village:RAM            | 0.1833    | 1.1143     | 0.164   | 0.86937   |
2. Results: Mono- vs. disyllables

- Order of interview weakly significant, such that disyllabic roots were uttered earlier in the interview (Formality effect)

- Welch Two Sample t-test (unequal sample sizes): 
  \[ t(53) = 1.9, \ p = 0.06 \]

Inference:

- Monosyllabization is bound up with formality

- In line with its status as a shibboleth of diglossia (Brunelle 2005, 2009a; Baclawski Jr. 2016)
2. Results: Presyllable reduction

- Of the 28 disyllabic roots:
  - 13 involve syllable deletion (6)
  - 4 involve vowel elision (7)

(6)  
a. *ăsaw > thaw ‘dog’  
b. *ăpar > pan ‘to fly’  
c. *păpe > pe ‘goat’*  
d. *ăseh > theh ‘horse’  
e. *pĭʔar > ʔan ‘paper’  
f. *ăjun > jun ‘to rock’  
g. *tăpaj > paj ‘rabbit’  
h. *păpuŋ > pun ‘top of’  
i. *păplej > plej ‘sell’  
j. *ăŋĭn > ĭn ‘wind’  
k. *ăkhăn > khăn ‘word’  
l. *păproj > proj ‘yesterday’

(7)  
a. *hăla > hla ‘leaf’  
b. *hărej > harej ‘day’  
c. *pălej > plej ~ mlėj ‘village’**  
d. *mĭʔĭn > mĭn ~ ʔĭn ‘play’

*Open circles underneath consonants mark breathy register on the following vowel.  
**Feel free to ask me about the \( p \sim m \) alternation.
2. Results: Presyllable reduction

• Of the 28 disyllabic roots:
  • 6 involve deletion and compensatory lengthening
  • The following consonant must be a sonorant

(8)  
  a. *lĭmin > mːin 'elephant'
  b. *tăŋĭn > ŋːĭn 'fist'
  c. *t̥ăraʔ > r̥ːaʔ 'market'
  d. *c̥ămɔʔ > m̥ːɔʔ 'mosquito'
  e. *mănuijs > nːujh 'person'
      or: mnujh (vowel elision)
  f. *sănịŋ > nịŋ 'think'
      or: hniŋ (vowel elision + *s > th > h)

*Feel free to ask why I think sonorant length is contrastive.
2. Results: Presyllable reduction

- \(^*mi > mi\) ‘father’ [57ms] (*āmi in Proto-Chamic)
2. Results: Presyllable reduction

• *lĩ́mi > mì́ ‘five’ [128ms]
2. Results: Presyllable reduction

• \( ^*tǎmi > mɨ \) ‘enter’ [127ms]
2. Results: Presyllable reduction

- Of the 28 disyllabic roots:
  - 4 involve nasalization
  - The following consonant must be an obstruent
    - Impressionistically, similar phenomenon before k and p
  - Deletion and vowel elision with p are also possible

(9) a. *rāsa > mtha ~ ntha 'Sambhur deer'
    or: ptha (vowel elision), tha (deletion)

b. *māta > mta ~ nta 'eye'
    or: pta (vowel elision), ta (deletion)

c. *līsej > mthēj ~ nthēj 'cooked rice'
    or: pthēj (vowel elision), thēj (deletion)

d. *mātih > mṭih ~ nṭih 'wake up'
    or: pṭih (vowel elision), ṭih (deletion)
2. Results: Nasalization

- There is wide variation between m-, n-, p-, and ∅-
- 25 of 28 speakers used at least two forms during the interview

Analysis:
- Logistic mixed effects model, likelihood ratio tests
- Reduced to two categories:
  - Nasalization: m-, n-
  - Deletion/ellipsis: p-, ∅-
- Age, Gender, Task, Order in interview n.s.
  - However, according to a 2 sample, unequal size power test: Only expect significance for large effect sizes (h = 0.8; Cohen 1992)
2. Results: Nasalization

- Village significant, such that Palei Hamu Tanran predicts nasalization, Palei Ram predicts deletion/ellipsis ($\beta = 9.27, p < 0.01$)
2. Results: Nasalization

- Village significant, such that Palei Hamu Tanran predicts nasalization, Palei Ram predicts deletion/ellipsis \( (\beta = 9.27, p < 0.01) \)
- Palei Hamu Tanran lacks \( p \)- form
- Palei Ram lacks \( n \)-

Inference:
- Presyllable reduction is not bound up with formality, instead subject to micro-regional variation
2. Results: Nasalization

- Village robustly predicts a variety of other phenomena, but in inconsistent ways (Baclawski Jr. 2016)
- Future research is needed to understand why

Nasalization (novel form in blue)
Labiovelar nasal (contact form in red)
Pronunciation of /r/ (novel form in red)
2. Results: Summary

• Eastern Cham monosyllabization involves at least four processes:

1. Syllable deletion (lexically specified)
2. Vowel elision (lexically specified)
3. Deletion + lengthening (before sonorants)
4. Nasalization (before obstruents)
   • Alternates with vowel elision and deletion
   • Variation correlates with geography
3. Back to language contact...

1. Is the feature *identical* in both languages?
   • This is looking less likely...

A. Eastern Cham:
   • Deletion/elision $\rightarrow$ monosyllabic roots
   • Deletion + lengthening $\rightarrow$ geminate sonorants
   • Nasalization $\rightarrow$ nasal + stop consonant clusters

B. Vietnamese:
3. A closer look at Vietnamese

- Vietnamese does not only have monosyllabic roots
- ~50% of the lexicon is composed of opaque and transparent disyllabic compounds (Trần & Vallée 2009, 2017)

(10) bàn kết \(\rightarrow\) bán kết
sell conclude \(\rightarrow\) semifinal
‘semifinal’

- Word-medial consonants (i.e. -n-) have different properties than word-final (i.e. -t) (Trần & Vallée 2009, 2017)
  - Longer duration of internal nasals, most stops
  - Greater bursts of some internal stops
  - Greater amplitude of some internal stops
3. A closer look at Vietnamese

- Vietnamese does in fact exhibit geminate sonorants and clusters in fast speech
- Words can reduce to syllabic sonorant clitics in fast speech (Pham 2008)
  - Occurs if the word is unstressed
  - The reduced form retains its tone
  - Deletion + lengthening when adjacent to a sonorant

(11)  

\[
\begin{align*}
dịŋ^2 & \quad kɔ^3 & \quad la:m^2 \quad \rightarrow \quad dịŋ^2 = η^3 & \quad la:m^2 \\
\text{not} & \quad \text{have} & \quad \text{do} & \quad \text{not} = \text{have} & \quad \text{do}
\end{align*}
\]

‘Do not do [it]…’ (Pham 2008: (2c))
3. A closer look at Vietnamese

• Vietnamese does in fact exhibit geminate sonorants and clusters in fast speech

• Words can reduce to syllabic sonorant clitics in fast speech (Pham 2008)
  • Occurs if the word is unstressed
  • The reduced form retains its tone
  • Deletion + lengthening when adjacent to a sonorant
  • Reduced to homorganic nasal when adjacent to obstruent

(12) biết bao nhiêu
    bìɤt  bɔo  niɤw 7 1 1
    know how much
    ‘know how much…’ (Pham 2008: (1))
3. A closer look at Vietnamese

• Vietnamese does in fact exhibit geminate sonorants and clusters in fast speech

• Words can reduce to syllabic sonorant clitics in fast speech (Pham 2008)
  • Does occur if the unstressed word is phrase-initial
  • Furthermore, there is variation between m- and n-

(13) bài vở làm sao

study how

báj vɤ laːm saːw¹ →  baːj vɤ m² = saːw¹  ~  n² = saːw¹

‘How is (your) school going?’ (Pham 2008: (13c))
3. A closer look at Eastern Cham

- Like Vietnamese fast speech reduction, Eastern Cham nasalized presyllables retain their register
  - *রি‌amentos > মরোষ = modal nasal + breathy, falling vowel
3. Back to language contact...

1. Is the feature *identical* in both languages?
   - Deletion/elision: No
   - Nasalization: Yes

A. Eastern Cham:
   - Deletion/elision $\rightarrow$ monosyllabic roots
   - Deletion next to sonorants $\rightarrow$ geminate sonorants
   - Deletion next to stops $\rightarrow$ nasal + stop clusters

B. Vietnamese:
   - Monosyllabic or disyllabic roots
   - Fast speech next to sonorants $\rightarrow$ geminate sonorants
   - Fast speech next to stops $\rightarrow$ nasal + stop clusters
4. Convergence and divergence

- If Eastern Cham lengthening and nasalization are in fact comparable to Vietnamese fast speech reduction...

**Phonetic convergence:**

- Both languages predictably reduce unstressed syllables
  - Geminate sonorants in the environment of sonorants
  - Homorganic nasals in the environment of obstruents
4. Convergence and divergence

• If Eastern Cham lengthening and nasalization are in fact comparable to Vietnamese fast speech reduction...

Phonological divergence:

• In Vietnamese, this reflects the phonetics of fast speech
• In Eastern Cham, geminate sonorants are contrastive phonemes, so the phonological inventory diverges
  • E.g. /m/ contrasts with /mː/ in fast or slow speech
  • Consonant clusters can violate the sonority hierarchy (e.g. mt-)

→ Eastern Cham may have phonologized fast speech
  • (cf. perhaps English schwa reduction)
4. Conclusion

- Monosyllabization is not a monolithic phenomenon
- Is lengthening/nasalization a contact effect?
  - More research needed on speaker and variety contact
  - Are they typologically frequent?
  - The historical record may or may not be reliable

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</tr>
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<td>5. Identical feature?</td>
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</table>
4. Conclusion

• Finally, a question for future research:
  Are obstruents geminated in a similar manner to sonorants?

• Many speakers describe a difference between pairs like the following
  (Though this could also be an effect of homophone avoidance)
  a) *plɛj > plɛj 'buy'
  b) *pa-plej ‘CAUS-buy’ > plej 'sell' (possibly p:lej)
     (Metalinguistic commentary: “pressed” p)

• However, a pilot discrimination task does not suggest that these words are contrastive out of context

• More detailed acoustic and experimental work is needed
References


Thurgood, Graham (1999). *From Ancient Cham to modern dialects: Two thousand years of language contact and change*. University of Hawai‘i Press.


Thank you!

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Appendix: Trisyllabic roots

• Both Vietnamese and Eastern Cham have about 1% trisyllabic roots (Trần & Vallée 2009; Lee 1974)

• Eastern Cham trisyllabic roots have the general structure:
  • CV(C).C(V(C).CV(C)

• The middle presyllable is nasalized: (David Blood 1967: 16)
  • CVN.CV(C)

  → The only sonorants in coda position in both Eastern Cham and VN are nasals
  → Disyllabization brings Cham trisyllabic roots in line with VN disyllabic roots

<table>
<thead>
<tr>
<th>Eastern Cham trisyllabic &gt; disyllabic roots</th>
</tr>
</thead>
<tbody>
<tr>
<td>*tamăkaj</td>
</tr>
<tr>
<td>*çalîkɔ</td>
</tr>
<tr>
<td>*thalîpăn</td>
</tr>
</tbody>
</table>
Appendix: $p \sim m$

- Presyllables that reduce to $p$- can also be realized as $m$-
  - $\star p\text{âlɛj} > p\text{lɛj} \sim m\text{lɛj}$ ‘village’
  - $\star p\text{ilan} > p\text{lan} \sim m\text{lan}$ ‘month’
  - $\star p\text{ahrɔw} > p\text{raw} \sim m\text{raw}$ ‘just’

- …Except if the following consonant is also $p$-
  - $\star p\text{âpe} > p\text{e}$ (not $m\text{pɛ}$) ‘goat’

- Likewise, those that reduce to $m$- can be realized as $p$-
  - $\star l\text{ipej} > m\text{pej} \sim p\text{ej}$ ‘dream’
  - $\star r\text{iŋɔŋ} > m\text{ŋɔŋ} \sim p\text{ŋŋ}$ ‘ditch’
  - $\star m\text{ata} > m\text{ta} \sim p\text{ta} \sim n\text{ta}$ ‘eye’

- …Except if the following consonant is a nasal
  - $\star m\text{inujh} > m\text{nujh} \sim n\text{ujh}$ ‘person’ (not $p\text{nujh}$)
  - $\star l\text{imin} > m\text{in}$ ‘elephant’ (not $p\text{min}$)
Appendix: Sonorant length contrast

• Geminates reliably contrast with singleton sonorants in a pilot discrimination task

• Participants (n = 8) listened to audio recordings in a carrier sentence, chose gloss in a forced choice task

• Minimal pairs:
  a) *ǎmɨ > mɨ 'father’ vs. *lǐmɨ > mɨ ‘five’, *tǎmɨ > mɨ ‘enter’
  b) *naj > naj ‘come’ vs. *p̥naj > nːaj ‘woman’
  c) *āsaw > thaw ‘dog’, *thaw > thaw ‘know’

• Participants reliably distinguished length
  • 88% correct for (a), 100% correct for (b)

• Participants did not reliably distinguish between geminates
  • 43% correct for (a) ‘five’ vs. ‘enter’

• Sonorants are not geminated when V- is deleted
  • 36% correct for (c)
Appendix: Other ages/villages

• Additional 5 speakers for qualitative comparison:
  • 2 older men, 2 from Bình Thuận (more contact with VN), 1 from a Raglai village (less contact with VN)
  • Obviously not a large enough sample, but direction for future study

• Older male speakers
  • DV (52 y.o., farmer): 7% disyllabic roots, m- nasalizations (+p-)
    (cf. 4% disyllabic roots in larger sample)
  • DSK (79 y.o., scholar): 30% disyllabic roots, m- nasalizations (+p-)
    → Only speaker in survey to elide word in nasalization class:
    *lîthej > lthej 'cooked rice'

• Bình Thuận speakers (theoretically more VN contact)
  • 2 speakers: 1% disyllabic roots (1/78); m-, n- nasalizations (+p-)

• Speaker from Raglai village (higher indigenous population)
  • Speaker: 35% disyllabic roots (12/34); m-, n- nasalizations (+p-)