Vowel quality and stress in African tone languages: The case of Babanki

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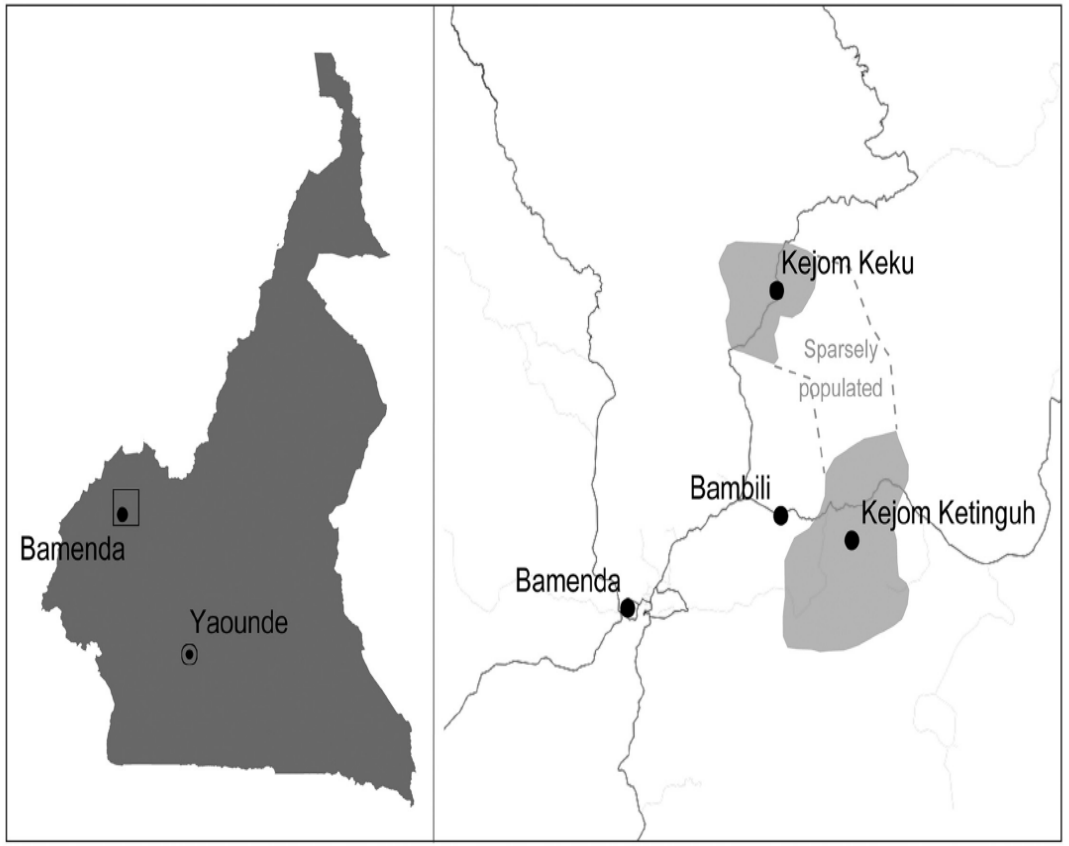
Introduction

- Considering Dimmendaal (2012) this study examines the relationship between vowel quality and stress in Babanki
- Babanki schwa, with respect to other vowel qualities
- Over proportionate representation of schwa in affixes
- Under representation of schwa in roots
- Lower intensity of affixes containing schwa
- What relationship with stress?

Babanki

A Central Ring Grassfields Bantu language of Northwest Cameroon

39,000 speakers (Eberhard, Simons & Fennig (2021)



Methodology

- Recordings of the singular and plural forms of eight representative nouns
- One male and one female speaker
- Nouns from gender 5/6, 7/6a, and 9/10
- Two basic tone patterns: High and Low to ensure that tone is not the determining factor
- Since each speaker produced a word three times, 192 tokens were recorded and analyzed in Praat (Boersma & Weenink 2016)
- More data for illustration came from secondary sources, including a lexical database of 2,005 entries (Akumbu 2008)
- Author's native speech

Morphophonology

Eight vowel phonemes: i, ɨ, ʉ, u, e, o, ə, a (Akumbu & Chibaka 2012, Faytak & Akumbu 2020)

Schwa is the most versatile capable of occupying the initial, medial and final positions of words, as shown in (1)

(1)

Initial	Gloss	Medial	Gloss	Final	Gloss
àfwín	‘leg’	àkàʔ	‘face’	àfyà	‘cave’
àwúm	‘egg’	àŋgàŋ	‘house’	àɣómá	‘boundary’
á↓lɨ́f	‘to hurry’	ábyàf	‘to belch’	á˗tétá	‘to select’
á↓dʉ́s	‘to escape’	ádàm	‘to grunt’	ágyàmtà	‘to help’

Morphophonology

Word-initial vowels: /ə/ and /a/

Root-final vowels: all vowels except /a/ in verbs, as in (2)

(2) Root-final vowels

Verb root	Gloss	Noun root	Gloss
vì	‘come’	byí	‘goat’
kɨ́	‘know’	ʃɨ	‘hoe’
tʃʉ́	‘spit’	gwʉ̀	‘skin’
kú	‘give’	ʒù	snake
té	‘insult’	mbé	‘chisel’
ʃə́	‘cut’	gə̀	‘bundle’
ló	‘lick’	mó	‘lake’
		dà	‘jug’

Morphophonology

V of –CV extensions: /ə/

(3) /ə/ in extensions

Root	Gloss	Stem	Gloss
sɬʔ	‘provoke’	sɬʔ-lə	‘provoke several times’
ɣáʔ	‘hold’	ɣáʔ-tá	‘hold repeatedly’
kúʔ	‘climb’	kúʔ-sə́	‘cause to go up’
tʃò	‘pass’	tʃò-mə̀	‘pass many times’
bɔ̀ʔ	‘open’	bɔ̀ʔ-kə̀	‘open in several places’

Morphophonology

Noun classes: 12 morphological classes, marked either by a *Ø,* V–, CV– prefix or a –CV suffix.

(4) Adnominal noun class markers

class	Affix	Example	Gloss	class	Affix	Example	Gloss
1	*Ø-*	*wàyn*	‘child’	2	*və-*	*vúnə*	‘children’
3	*ə-*	*ə-kúʔ*	‘ladder’	13	*tə-*	*ə-kúʔ*	‘ladders’
5	*ə-*	*ə-ləm*	‘yam’	6	*ə-*	*ə-ləm*	‘yams’
7	*kə-*	*kə-káŋ*	‘dish’	8	*ə-*	*ə-káŋ*	‘dishes’
9	*Ø-*	*ndzàm*	‘axe’	10	*-sə*	*ndzàm-sə*	‘axes’
19	*fə-*	*fə-ɲín*	‘bird’	6a	*mə-*	*mə-ɲín*	‘birds’

Morphosyntax

Tenses: Babanki distinguishes four present/past and three future tenses, referred to as P0–P3 and F1–F3 (Akumbu, Hyman & Kießling 2020)

(5) Tense distinctions

Tense	AUX	Approximate time period
P0	`	present, a few minutes ago
P1	*yì*	today
P2	*tə*	yesterday to about 2 weeks ago
P3	*ə N-*	more than 2 weeks ago
F1	*à*	not longer than in a few minutes
F2	*nè*	later today
F3	*lù*	from tomorrow on

Functional load and frequency of schwa

- appears sometimes as a morpheme, as part of a morpheme or as a bearer of tone
- Appears in nine of the ten adnominal noun class markers
- Appears in all but class 6 concordial noun class markers
- Dominates in verbal affixes, including in the tense, aspect and mood system where it appears more frequently than the rest of the vowels
- On the other hand, schwa is less frequent in roots, being the 5th most used vowel in noun roots and the 6th in verb roots

Schwa as (part of) a morpheme

Schwa in the nominal system

(6)

Context	ə	Cə
Adnominal noun class marking	+	+
Concordial noun class marking	+	+

Adnominal noun class markers

(7)

class	marker	class	marker
1	*Ø-*	7	*kà-*
2	*và-*	8	*à-*
3	*à-*	9	*Ø-*
5	*à-*	10	*-sá*
6	*à-*	13	*tà-*
6a	*mà-*	19	*fà-*

Concordial noun class markers

(8)

class	marker	class	marker
1	*à-*	7	*kà-*
2	*và-*	8	*à-*
3	*à-*	9	*à-*
5	*à-*	10	*-sá*
6	*à-*	13	*tá-*
6a	*mà-*	19	*fá-*

Schwa in adjective concords

(9)

class	/fi/ 'new'	/mu/ 'old'	/dʒuŋə/ 'good'	/ku/ 'raw'	/ʒi/ 'open'
1	á-fí	á-mú	á-dʒùŋá	á-kú	á-ʒî
2	và-fí vá	và-mú vá	và-dʒúŋá vá	và-kú vá	và-ʒî vá
3	à-fí ɣá	à-mú ɣá	à-dʒúŋá ɣá	à-kú ɣá	à-ʒî ɣá
5	à-fí ɣá	à-mú ɣá	à-dʒúŋá ɣá	à-kú ɣá	à-ʒî ɣá
6	à-fí ɣá	à-mú ɣá	à-dʒúŋá ɣá	à-kú ɣá	à-ʒî ɣá
6a	má-m-fí mà	má-m-mú mà	má-n-dʒùŋá mà	má-ŋ-kú mà	má-n-ʒî mà
7	kà-fí ká	kà-mú ká	kà-dʒúŋá ká	kà-kú ká	kà-ʒî ká
8	à-fí vá	à-mú vá	à-dʒúŋá vá	à-kú vá	à-ʒî vá
9	á-fí	á-mú	á-dʒùŋá	á-kú	á-ʒî
10	sà-fí sá	sà-mú sá	sà-dʒúŋá sá	sà-kú sá	sà-ʒî sá
13	tà-fí tá	tà-mú tá	tà-dʒúŋá tá	tà-kú tá	tà-ʒî tá
19	fà-fí fá	fà-mú fá	fà-dʒúŋá fá	fà-kú fá	fà-ʒî fá

Schwa as (part of) a morpheme

In verbal affixes

(10)

Context	ə	Cə	plus other markers
Consecutives	+		
Verb repetition	+		
Subject verb agreement	+	+	
Remote past (P2)		+	
Distant past	+		+
Infinitive	+		+
Perfective	+		+
Progressive	+		+

Schwa alone in consecutive constructions

(11) a.

Búŋ	*tə*	*fʉ́*	*ə*	*dì*
Bung	P2	exit	CON	cry

‘Bung went out and cried.’

b.

Búŋ	*tə*	*kú?*	*ə*	*fəŋ*	*ə*	*pfʉ́*
Bung	P2	climb	CON	fall	CON	die

‘Bung went up, fell and died.’

Schwa alone or part of subject markers

(12)

class	SM		class	SM
1	∅		7	*kə́*
2	*ə́*		8	*ə́*
3	*ə́*		9	∅
5	*ə́*		10	*sə́*
6	*ə́*		13	*tə́*
6a	∅		19	*fə́*

13 (a)	*fə̀-ɲín*	*fə́*	*yǐ*	*tàn*	‘A bird flew.’
	19-bird	19.SM	P3	fly	
(b)	*à-sáŋ*	*ə́*	*yǐ*	*fə́ŋ*	‘The corn fell.’
	6-corn	6.SM	P3	fall	

Schwa as part of tense markers

(14) a.

wìʔ	*tà*	*ʒɬ*	*kābáyn*
1.person	P2	eat	7-fufu

‘A person ate fufu (yesterday).’

b.

wìʔ	*à*	*n-ʒɬ*	*kābáyn*
1.person	P3	N-eat	7-fufu

‘A person ate fufu (a long time ago).’

Schwa as a carrier of tone: Imperative

(15) H tone verbs

a.	*ʒɨ́*	*kə́-báyn*	‘eat fufu!’
	eat.IMP	7-fufu	
b.	*lám*	*kə́báyn*	‘cook fufu!’
	cook.IMP	7-fufu	

(16) L tone verbs

a.	*kùm-á*	*kə́-báyn*	‘touch fufu!’
	touch-IMP	7-fufu	
b.	*sàŋ-á*	*kə́-báyn*	‘dry fufu!’
	dry-IMP	7-fufu	

Stress and schwa

- Schwa is the most dominant vowel in grammatical markers, i.e. in unstressed syllables
- Schwa is less frequent than a majority of vowels in both nominal and verbal roots, i.e. in stressed syllables

Schwa in stressed syllables

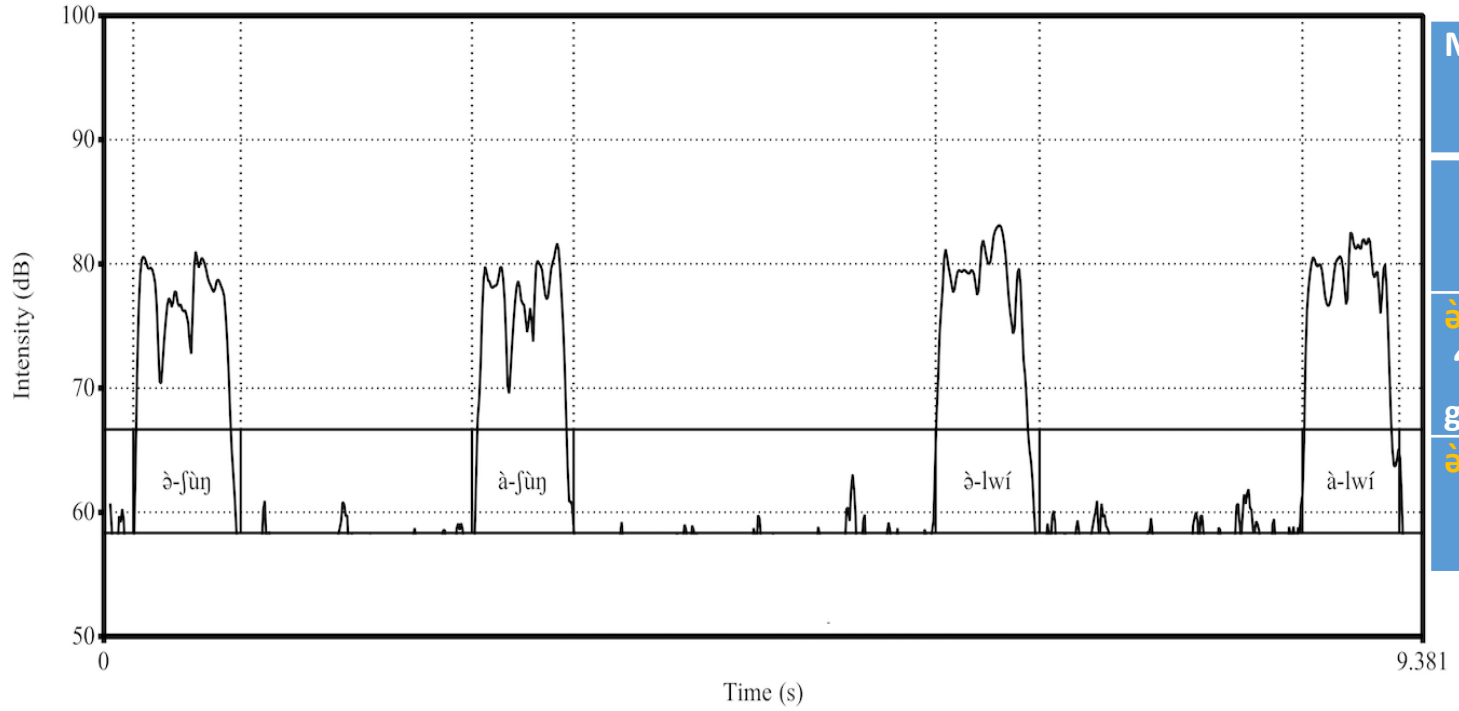
(17) Schwa in noun and verb roots

Vowel	Noun root	Verb root	Total
a	271	159	430
o	253	131	384
i	216	92	308
u	154	72	226
e	123	102	225
ə	135	66	201
ʉ	138	57	195
ɨ	118	73	191
Total	**1,408**	**752**	**2,160**

Does Babanki schwa represent vowel quality reduction under the influence of stress?

A comparison of nouns with the /a–/ prefix and those with a /ə–/ prefix shows that the schwa prefix has a lower intensity.

(18)

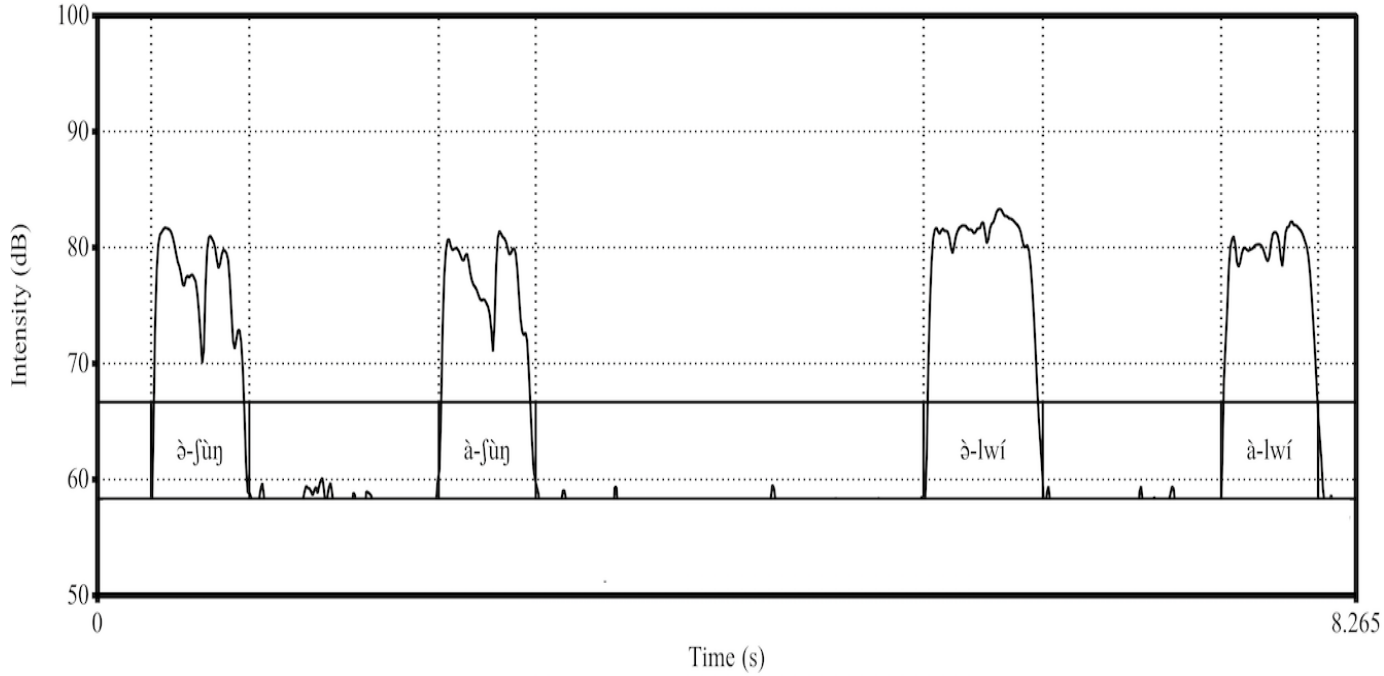


MALE SPEAKER			
	/ə/		/a/
ə-ʃùŋ 'elephant grass'	76.90 dB	à-ʃùŋ 'elephant grass'(PL)	77.05 dB
ə-lwî 'nose'	76.69 dB	à-lwî 'nose'	77.80 dB

Male: 'elephant grass' 'elephant grass (PL)' 'nose' 'noses'

Lower intensity of schwa prefix: Female speaker

(19)



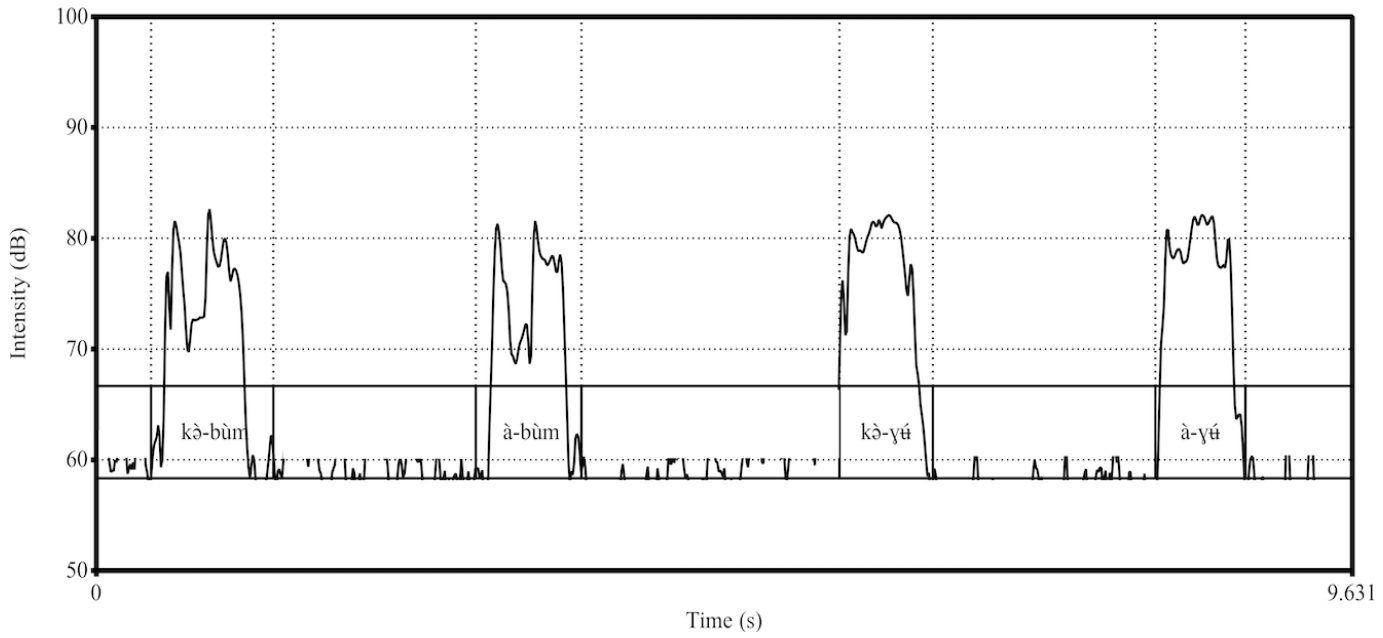
FEMALE SPEAKER			
	/ə/		/a/
ə-ʃùŋ ‘elephant grass’	77.73 dB	à-ʃùŋ ‘elephant grass’(PL)	79.12 dB
ə-lwĩ ‘nose’	78.48 dB	à-lwĩ ‘nose’	79.08 dB

Female: ‘elephant grass’ ‘elephant grass (PL)’ ‘nose’ ‘noses’

Intensity of prefixes vs. roots

A comparison of noun class affixes (unstressed syllables) and noun roots (stressed syllables) also shows that affixes have a lower intensity than roots.

(20)

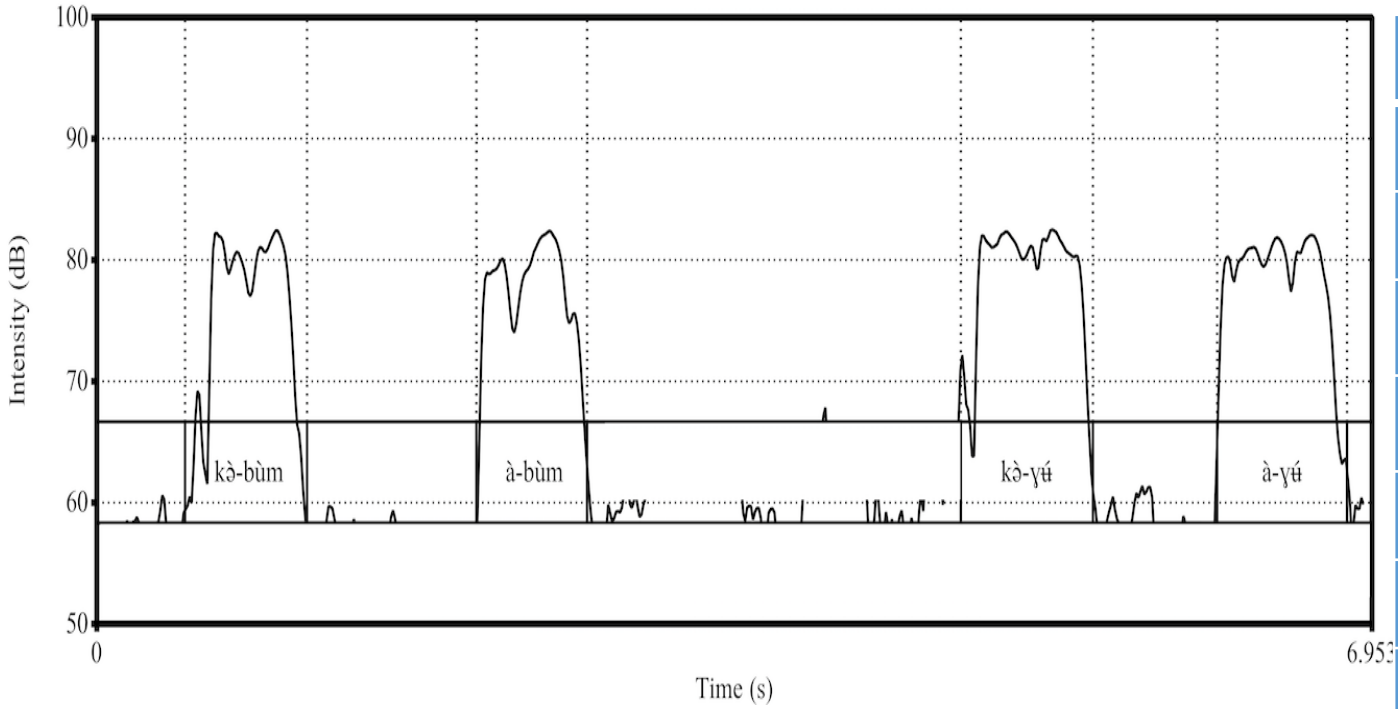


Male: ‘mucus’ ‘mucus’ ‘foot’ ‘feet’

MALE SPEAKER			
Prefix			
	/ə/		/a/
kə-bùm ‘mucus’	76.92 dB	à-bùm ‘mucus(PL)’	77.07 dB
kə-ɣʉ́ ‘foot’	76.92 dB	à-ɣʉ́ ‘feet’	77.31 dB
Root			
	/ə/		/a/
kə-bùm ‘mucus’	78.12 dB	à-bùm ‘mucus(PL)’	78.30 dB
kə-ɣʉ́ ‘foot’	78.72 dB	à-ɣʉ́ ‘feet’	78.90 dB

Lower intensity of prefixes: Female speaker

(21)

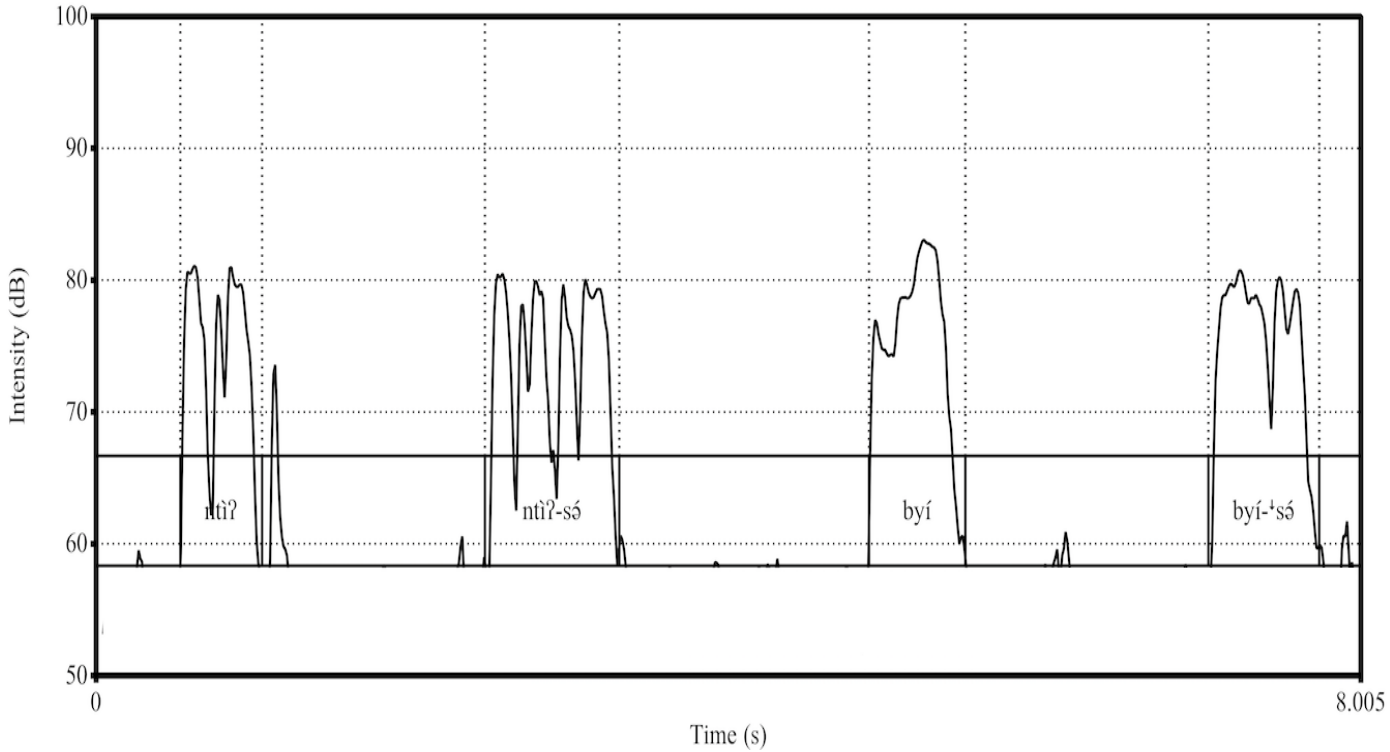


Female: ‘mucus’ ‘mucus’ ‘foot’ ‘feet’

FEMALE SPEAKER			
Prefix			
	/ə/		/a/
kə-bùm ‘mucus’	78.90 dB	à-bùm ‘mucus(PL)’	79.11 dB
kə-ɣʉ́ ‘foot’	78.79 dB	à-ɣʉ́ ‘feet’	79.24 dB
Root			
	/ə/		/a/
kə-bùm ‘mucus’	80.08 dB	à-bùm ‘mucus(PL)’	80.21 dB
kə-ɣʉ́ ‘foot’	80.69 dB	à-ɣʉ́ ‘feet’	80.87 dB

Lower intensity of suffixes: Male speaker

(22)

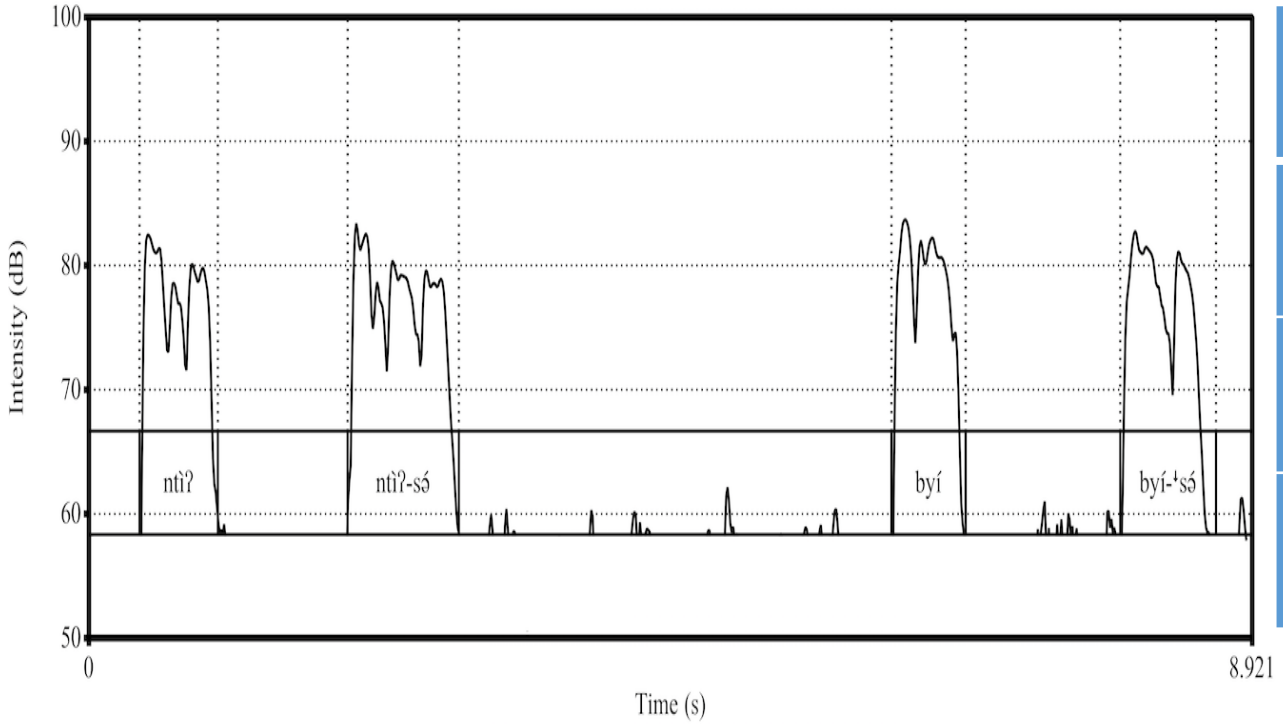


Male: ‘buck’ ‘bucks’ ‘goat’ ‘goats’

MALE SPEAKER			
	/ə/		/a/
ntì?-sə́ ‘bucks’	77.62 dB	byí-↓sə́ ‘goats’	78.00 dB
ntì?-sə́ ‘bucks’	76.60 dB	byí-↓sə́ ‘goats’	76.80 dB

Lower intensity of suffixes: Female speaker

(23)



FEMALE SPEAKER			
	/ə/		/a/
ntì?-sə́ ‘bucks’	79.12 dB	byí-↓sə́ ‘goats’	80.07 dB
ntì?-sə́ ‘bucks’	77.22 dB	byí-↓sə́ ‘goats’	77.80 dB

Female: ‘buck’ ‘bucks’ ‘goat’ ‘goats’

Conclusion

- Babanki grammatical markers use schwa more frequently. The only other vowel found in a few markers is /a/ while the rest of the vowels are largely neglected. Each of the following four vowels /i, u, e, o/ appears once in verb inflection while /ɨ, ʉ/ do not occur at all.

- It has been illustrated that the frequency of schwa is related to “stress” in Babanki.

Conclusion

Dramatic evidence has not been found in this pioneer study but the minute differences are consistent with the speakers examined. No clear conclusion has been drawn because there are unknown interactions with other factors such as tone. Even though Babanki schwa occurs in what might be considered unstressed or less prominent position there is need to examine the properties of stress-accent systems listed in Hyman (2014: 57-58) to determine whether Babanki ‘cares’ about stress the way other languages such as English do.

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Thank you