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The stress system in the Aohua dialect of Yilan Creole: with a special focus on weight-sensitivity

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Abstract The aim of the present study is to reveal the mechanism of the stress system of the Aohua dialect of Yilan Creole. Yilan Creole is a Japanese-based creole which imports features of Atayal, an Austronesian language. The Aohua dialect simultaneously has a fixed and weight-sensitive stress system. The former applies only to words of Atayal origin and non-disyllabic words of Japanese origin, while the latter applies only to disyllabic words of Japanese origin. The stress assignment of the weight-sensitive stress system follows the syllable weight hierarchy: VV > Vn > VG > V. This hierarchy follows the universal syllable weight hierarchy proposed by Gordon (2006): VV > VR > VO > V yet suggests that VR class can be further divided into Vn > VG.

Keywords: Yilan Creole, Taiwan, pidgin & creole studies, prosody, weight-sensitivity

1. Introduction

The aim of the present study is to give the first descriptive summary of the stress system of the Aohua dialect of Yilan Creole spoken in Taiwan. As a Japanese-based creole, Yilan Creole shares its basic typological features with Japanese (SOV, modifier-head, dependent-marking, etc.) but it also imports lexical, grammatical and phonological features of Atayal, an Austronesian language. Based on the field data collected by the present author, it will be shown that Aohua prosody is characterized by the following features.

(1) A fixed stress system and a weight-sensitive stress system coexist.
(2) Two factors determine which system operates: the origin and the number of syllables of the word in question.
(3) The weight-sensitive system operates on disyllabic words of Japanese origin, while the fixed stress system operates elsewhere.
(4) The weight-sensitive system is precisely analyzed if we assume the following hierarchy of syllable weight: **VV > Vn > VG > V** (VV: long vowel, Vn: V plus a nasal, VG: V plus a glide, V: a light syllable). For example, *kan**zyoo*** 'liver', *suy**ren*** 'paddy field', ***opay*** 'breast'.
(5) The language-particular hierarchy sheds light on the well-known universal hierarchy of weight suggested by Gordon (2006), which is schematized as **VV > VR > VO > V** (R: coda sonorant, O: coda obstruent). Depending on whether our VG is analyzed as a diphthong (subsumed under VV in Gordon's hierarchy) or a vowel plus a coda (VR in Gordon's), a minor or major revision will be required for this universal hierarchy.

2. Background of Yilan Creole

Yilan Creole was formed during the Japanese occupation in Taiwan between 1895 and 1945.The Japanese government's migration policy forced the Atayals and the Seediqs to move into the same place with no common language. They started to use Japanese as a lingua franca, which served as the basis on which Yilan Creole was

formed. Yilan Creole is currently spoken in four villages in Yilan county: Tongyueh, Hanhsi, Chinyang, and Aohua (Figure 1.). Each village has a distinct dialect (Sanada & Chien 2008). Our exclusive focus is on the Aohua dialect. All the data shown in the present study was collected from a female consultant in her 50s.

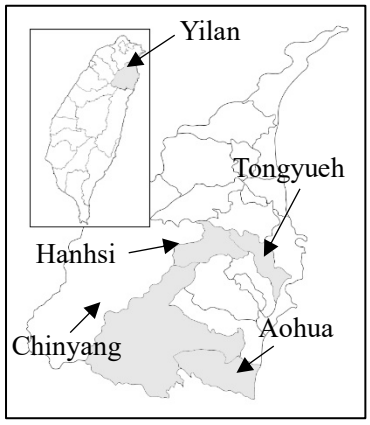

Figure 1. Geographic information of Yilan Creole

3. Phonology of Aohua

The phoneme inventory in the Aohua dialect is as shown in Table 1. The Aohua dialect has 17 consonants, 7 vowels, and 2 semi-vowels. All examples in the present study will be represented with phonemic transcription and by surface form.

Table 1. Phoneme inventory of the Aohua dialect

Consonants

	bilabial		alveolar		velar		glottal
stops	**p**	**b**	**t**	**d**	**k**	**g**	**ʔ**
fricatives			**s**	**z**	**x**		**h**
affricates			**c**				
nasals		**m**		**n**		**ŋ**	
taps				**r**			
lateral approximants				**l**			

Vowels

	front	central	back
high	**i**	**ɨ**	**u**
mid	**e**	**ə**	**o**
low			**a**

Semi-vowels

	bilabial	palatal
glides	**w**	**y**

The syllable structure of the Aohua dialect is as seen in (1). Note that the Japanese-originated words (Jp) and the Atayal-originated ones (Aty) may have different phonotactics.

(6) $((C_1)\ C_2)\ (G)\ V_1\ (V_1)\ (C_3)$

C_1 : Jp: Only /s, n, m/ can appear in this slot; Aty: None of the phonemes can appear here

C_2 : Jp, Aty: All consonant phonemes can appear.

G : Jp, Aty: Only semi-vowel phonemes /w, y/ can appear.

V_1 : Jp: All vowel phonemes can appear. Long vowels /ee/, /oo/ may appear.
Aty: Long vowels and diphthongs are not allowed.

C_3 : Jp: /(w), y, n/ can appear in this slot, yet /w/ is not attested; Aty: /w, y, x, n, k, s, h/ can be seen.

4. Stress system of the Aohua dialect

The stress system in the Aohua dialect can be divided into two types, i.e. fixed stress (I)-(III) and weight-sensitive stress (IV) as shown in Figure 2.

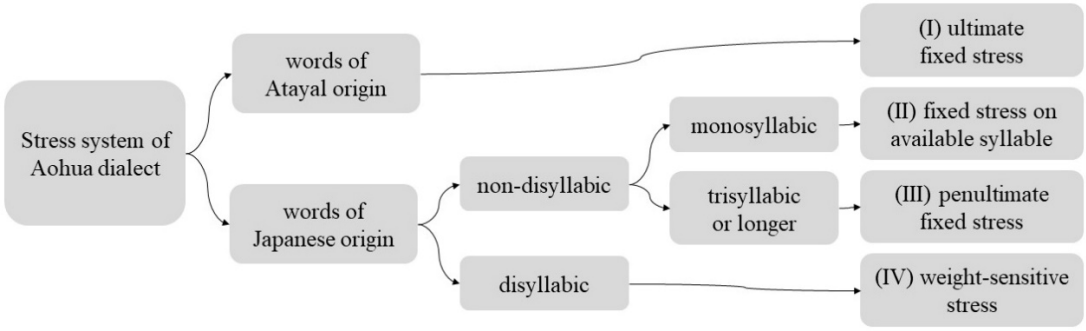

Figure 2. Stress system of Aohua dialect

Two factors play a key role in the description of the stress system: the origin and the number of syllables of the word in question. Atayal-originated words of any length have ultimate fixed stress (I). Japanese-originated words have different stress positions depending on the number of syllables, as summarized in (II) to (IV).

4.1. Fixed stress

Atayal has an ultimate fixed stress system. In the Aohua dialect, words originating from Atayal, will retain the stress system of Atayal, as seen in (7). Boldface characters indicate the stressed syllable.

(7)	a.	*pa**pak***	‘ear’	b.	*lu**kus***	‘clothes’
	c.	*ta**hi***	‘ant’	d.	*ku**leh***	‘fish’

As for words originating from Japanese, the fixed stress system appears only with the non-disyllabic ones, and the stress location depends on the number of syllables of the word. If a word originates from Japanese, and has only one syllable, the stress will be on the available syllable, i.e. the whole word is stressed.

(8)	a.	***te***	‘hand’	b.	***san***	‘three’
	c.	***hi***	‘fire’	d.	***ka***	‘mosquito’

If a word originates from Japanese, and has three or more syllables, the stress will be on the penultimate syllable. Examples of trisyllabic word are shown as (9), tetrasyllabic words are shown as (10). I did not find any word that has five or more syllables so far.

(9)	a.	*ka**ra**ra*	‘body’	b.	*sanzikan*	‘three hours’
	c.	*ku**ru**ma*	‘car’	d.	*zi**den**sya*	‘bicycle’
(10)	a.	*kuci**bi**ru*	‘lips’	b.	*icizikan*	‘an/one hour’

4.2. Weight-sensitive stress

Disyllabic words of Japanese origin have a weight-sensitive stress system. The system is precisely analyzed if we assume the following hierarchy of syllable weight, where VV represents a long vowel, Vn represents a vowel plus a nasal, VG represents a vowel plus a glide (/w/ or /y/) and V represents a light syllable. Onsets do not have weight

(11) Weight hierarchy in Aohua: **VV > Vn > VG > V**

Weight decreases from left to right on the hierarchy. The stress appears on the heavier syllable of a disyllabic word. If both syllables have the same syllable weight, the stress can appear on either, or is lexically determined.

Table 2 supports the claim that different types of syllable have a different weight following the above hierarchy. It lists all logically possible combinations of syllable structures of a disyllabic word of Japanese origin. There are a couple of accidental gaps in the table, simply due to the lack of my field data.

Table 2. Possible syllable combinations & possible stress patterns

		Syll. 2			
		VV	Vn	VG	V
Syll.1	VV		**CVV**.CVn		**CVV**.CV
	Vn	CVn.**CVV**	CVn.**CVn**	**CVn**.CVG	**CVn**.CV
	VG	CVG.**CVV**	CVG.**CVn**		
	V	CV.**CVV**	CV.**CVn**	CV.**CVG**	**CV**.CV CV.**CV**

If a disyllabic word consist of a CVV syllable structure and another syllable with a different structure, the stress always appears on the CVV syllable (12), leading us to the analysis that CVV is the heaviest of all syllable types.

(12) a. **CVV**.CVn ***see****nen* 'youth'
b. **CVV**.CV ***see****ri* 'sort out'
c. CVn.**CVV** *sin****zyoo*** 'heart' *kan****zyoo*** 'liver'
d. CVG.**CVV** *tay****yoo*** 'sun'
e. CV.**CVV** *ho****cyoo*** 'kitchen knife'

If a disyllabic word consist of a CVn syllable with a syllable other than a CVV syllable, stress appears on the CVn syllable (13), demonstrating that the CVn syllable is the second heaviest.

(13) a. **CVn**.CVG ***nan****say* 'how old'
b. CVG.**CVn** *suy****ren*** 'paddy field'
c. **CVn**.CV ***san****ko* 'three (iuantifier)' ***zen****bu* 'all'
d. CV.**CVn** *ka****ban*** 'bag' *ko****kan*** 'exchange'

If a disyllabic word consists of a CVG and a CV syllable, stress appears on the CVG syllable (14), demonstrating that the CVG syllable is heavier than CV, a fact which concludes the validity of the hierarchy VV > Vn > VG > V.

(14) CV.**CVG** ***opay*** 'breast' ***niyoy*** 'taste; smell'

For a disyllabic word which consists of two syllables with the same structure, i.e. has the same weight, it is difficult to make a clear generalization due to a lack of the relevant data. However, the available data suggests that in such a case, either syllable may be stressed (15) or is lexically determined (16). A further investigation should be made in order to verify the proposal of the present study.

(15) a. ***ha***ri~ha***ri*** 'needle' b. ***u***mi~u***mi*** 'sea' c. ***mi***zyu~mi***zyu*** 'water'

(16)

a.	**CV**.CV	***ne***ko	'cat'	***yu***ki	'snow'
b.	CV.**CV**	ku***sa***	'grass'	ka***wa***	'river'
c.	CVn.**CVn**	nin***gen***	'human'	han***bun***	'half'

4.3. VG (vowel + glide) revisited

The VG syllable structure (17a), may alternatively be analyzed as a diphthong (17b), as long as the phonetic characteristics are concerned. In the latter analysis, the structure would be VV as in the case of a long vowel.

(17)

a.	ya***say***	'vegetable'	***nan***say	'how old'	suy***ren***	'paddy field'
b.	ya***sai***	'vegetable'	***nan***sai	'how old'	sui***ren***	'paddy field'

So far, I have not found language-internal evidence which argues for one analysis over the other. The VG analysis would be preferred if there is a restriction on the sequence *VGC but not on a long vowel plus a coda (VVC), a situation which would indicate that G functions as a coda rather than a V and that the GC sequence is a prohibited coda cluster. In fact, the sequence VGC is totally absent in my data, but VVC is also lacking, so I cannot decide whether the G should be treated as a coda or should be reanalyzed as a vowel. The VV analysis would be preferred if we can find the following situation, for which I could not get the relevant data either.

The only argument I can make at the present stage is that the VG analysis allows a simpler generalization than the VV analysis about the suggested hierarchy of weight (VV > Vn > VG > V). The two different analyses, schematized in (17), yield two different generalizations about the suggested hierarchy: in the VG analysis, which is adopted in the present talk, the simple generalization is made that VV is heavier than VC (i.e. Vn and VG), which is in turn heavier than V. This view makes it clear that what contributes to the weight calculation is the structural position and the quality of a segment: a segment which belongs to the nucleus is heavier than one which belongs to the coda, and the nasal coda is heavier than the glide coda.

In the alternative V_1V_2 analysis, on the other hand, no straightforward generalization can be made.

(18) Aohua hierarchy of weight:

a.	**Current analysis**	**VV > Vn > VG > V**
b.	Alternative analysis	V_1V_1 > Vn > V_1V_2 > V

4.4. Stress systems of neighboring dialects

As discussed above, we know that the Aohua dialect has a fixed stress system and a weight-sensitive stress system. However, the weight-sensitive stress system has not been discussed in previous works. In the Tongyueh dialect, according to Sanada (2013), stress may appear on the last syllable or penultimate syllable, and this feature derives from Atayal, which has fixed stress on ultimate, and Seediq, which has fixed stress on the penultimate. However, Sanada (2013) does not show any examples of the stress pattern. As for the Hanhsi dialect, it is said that stress normally falls on the last syllable (21), which is a feature derived from Atayal (Qiu 2015).

(19) Hanhsi dialect: *wa**ha*** 'I' *la**laŋ*** 'before' (Qiu 2015: 39)

There may be a possibility that the Tongyueh dialect and the Hanhis dialect also have a weight-sensitive stress system. Moreover, the factors that determine the stress system has not been considered as well. Based on the above, the stress system of other dialects need further investigation and should be reconsidered.

5. Weight-sensitivity in Aohua in a typological perspective

5.1. Typology of weight

Gordon (2006) proposes a universal hierarchy of weight in weight-sensitive stress systems across languages (Figure 3). Here, four syllable types are ordered from heavy to light: CVV(C) (VV includes long vowels and diphthongs), CVR (R indicates a sonorant coda), CVO (O indicates a obstruent coda) and CV.

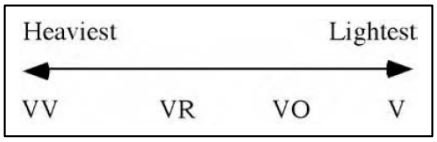

Figure 3. Hierarchy of weight for stress (Gordon 2006: 127)

In Gordon (2006)'s survey, most weight-sensitive stress languages have a binary weight distinction, whereby a cut-off point divides the hierarchy into two categories, Heavy and Light. Few languages make a more complex distinction like a ternary distinction (e.g. Klamath) or quatery distinction (e.g. Kobon). According to this typology, the Aohua dialect should be classified as one of the very few languages with the quatery distinction.

5.2. The Aohua hierarchy in comparison with Gordon's (2006) hierarchy

As mentioned in Section 4.3, I have suggested the language-particular hierarchy of weight (see (20) above), which has two different versions depending on whether VG is reanalyzed as a diphthong.

To integrate the Aohua hierarchy of the current version, Gordon's hierarchy needs to have a minor modification with regard to the treatment of the sonorant category (R). In Gordon's hierarchy the category makes no distinction between nasals and others, but the Aohua fact does indicate that a language like Aohua may distinguish between the nasal coda (n) and the glide coda (G) within the R category.

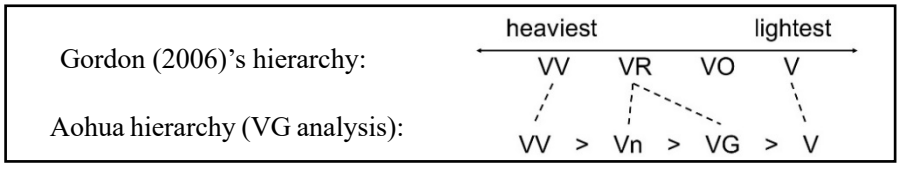

Figure 4. Comparison of the Aohua dialect to universal hierarchy

On the other hand, if we adopt the alternative analysis of Aohua hierarchy of weight, where VG is now reanalyzed

as VV (diphthong), a more substantial modification would be required for Gordon's universal hierarchy. Gordon (2006: 131) mentions that within the VV category, a further distinction can be made between long vowels (V_1V_1) and diphthongs (V_1V_2) as the latter can count as lighter in some languages. However, this view cannot be supported in the case of Aohua, as diphthongs are lighter than not only long vowels but also the syllables with 'n' coda.

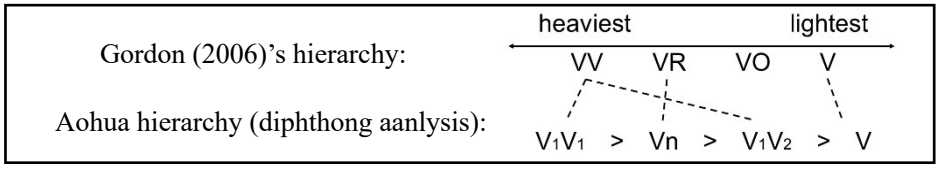

Figure 5. Comparison of the Aohua dialect to universal hierarchy

To sum up, the Aohua hierarchy of the current version is not an exception to Gordon's (2006) hierarchy in the sense that the order of the category needs no modification, even though Aohua data is an important empirical basis for a further division of the R category. By contrast, the Aohua hierarchy of the alternative version is definitely a serious exception to Gordon's hierarchy, making the universal super category VV (which may further divide into V_1V_1 and V_1V_2 in this order) doubtful.

6. Conclusion

In the present study I have shown that Aohua prosody is characterized by the coexistence of a fixed stress system and a weight-sensitive stress system. Of typological and theoretical significance is the weight-sensitive system of this language, with the hierarchical organization of weight sensitivity:

(20) **VV > Vn > VG > V** (VV: long vowel, Vn: V plus a nasal, VG: V plus a glide, V: a light syllable).

A comparison with Gordon's (2006) universal hierarchy of weight, **VV > VR > VO > V** (R: sonorant, O: obstruent), revealed that a minor modification is required to integrate Aohua facts into the cross-linguisic generalization of weight, in such a way that the R category makes a further distinction between the nasal coda and others. A further investigation is required for a number of areas for which the relevant data is lacking at this stage. First, as mentioned in Section 4.2, more data are required for disyllabic words with the same weight. Second, the discussion on the treatment of VG (Section 4.3) should be based on the data on phonotactics and verb morphology.

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