

VOWEL CONTRASTS IN SAYSIYAT (SAISIYAT)

PETER ARA GUEKGUEZIAN
YUYI ZHOU

1 Introduction

In this paper, we investigate a set of vowel contrasts in the vowel system of SaySiyat (Saisiyat), a Formosan language, that is, an Austronesian language of Taiwan.

2 Vowel Systems in Formosan Languages

Formosan languages form several different branches of the Austronesian language family; all other Austronesian languages form a single branch, Malayo-Polynesian (Blust 1977, 1999, 2013, Ho 1998, Sagart 2004, Ross 1992). Proto-Austronesian is hypothesized to have the vowel system /i a u / (Ross 1992, Blust 2013). According to Blust, this vowel system is common in Formosan languages. Formosan languages “usually have ... four vowels (the vowel ‘triangle’ plus schwa)” (2013: 54) and “a number of Formosan vowel systems ... retain the PAN [= Proto-Austronesian] four-vowel system *i, *u, *a, *e (schwa)” (2013: 173). According to Becker-Kristal’s (2010) vowel inventory classification system, the inventory /i a u / is a TT4 1 Tf (JTj Eo

Li 1978, Yeh 1991, 2000, Hsieh 2008; c.f. Zeitoun & Wu 2005, discussed below). If schwa in SaySiyat is a full vowel, as Chen (2006) claims for the Formosan languages Paiwan and Budai

*W *H into SaySiyat / / and *s collapsed with PA *S * *H *x into SaySiyat /h/, which neutralized

the two vowels are close to each other in the acoustic space. However, they do not give any data to support this assertion; we provide data to investigate how close /æ ~ a/ and /œ ~ o/ are in the vowel space.

4 Present Study

The present study investigates the vowel system of SaySiyat through an acoustic analysis of the vowels of a single speaker of SaySiyat. We look at both the vowel system and the contrasts between /æ ~ a/ and /œ ~ o/.

4.1 Speaker

Our language consultant, ‘oemaw a ‘obay tawtawazay (Chao Shan-He), is a male native speaker of the northern (Taai) dialect of SaySiyat. ‘Oemaw was raised in a SaySiyat-speaking environment but has resided outside the community in Chinese-majority cities for several decades. He is active in maintaining SaySiyat language and culture and travels to his native village often. ‘Oemaw is multilingual, speaking Atayal (another Formosan language), Japanese and three Chinese languages Hakka, Minnan (Taiwanese) and Mandarin. The fact that he speaks several different languages and primarily uses either Mandarin or Minnan in everyday life, not SaySiyat, presents

4.3 Methods

F a a e f a e e e e c ded i P a a (e i 6.0.41; B e a & W e e i
2018) i g a c i f C h i i a D i C a i (

The distribution of the speaker's vowels in Table 1 and Figures 3-4 suggest that the vowel pairs /æ ~ a/ and /œ ~ o/ are close to one another in the vowel space, but still distinct. We performed T-tests on both of the pairs /æ ~ a/ and /œ ~ o/ using the measurements in Table 1, looking at differences in F2, the acoustic dimension of frontness, which distinguishes the vowels in these pairs. We found that the difference in F2 was highly significant between /æ ~ a/ (p value < .001), but was barely significant at the $p = .05$ level between /œ ~ o/ (p value = .046).

5.2 Vowel Contrasts: /a ~ æ/, /o ~ œ/

To examine the effects of context on the distribution, we now look at the two vowel pairs /a ~ æ/ and /o ~ œ/, and the effect of phonological environment on their F2 values. Recall that the vowels /a o/ may be conditioned by an adjacent glottal consonant [h] ((5-11); Tsuchida 1964, Li 1978, Hsieh 2008, ZCK), resulting in [æ œ]. Recall as well that lexical contrasts are found between /æ a/ and /œ o/ (1-4). Since front vowels have a higher F2 than central and back vowels, we are interested to see whether the central and back vowels /a o/ also have a higher F2 in the context of [h] than elsewhere, and whether the front vowels /æ œ/ have a higher F2 than the

Figure 4. /æ ~ a/: Means and SDs

Using the measurements in Table 2, we performed T-tests on pairs of

but only 37 Hz between the context of [h] and elsewhere. The difference in the mean of F2 of /œ/ in the context of [h] and of [] also 218 Hz. The difference in the mean of F2 of /o/ and of /œ/ in the context of [h] is 235 Hz and in the context of [] is 153 Hz.

Table 4. F2 values of /œ o/ in Different Contexts

Context	œ		o	
	F2 (Mean, SD)	# of Tokens	F2 (Mean, SD)	# of Tokens
[j]	1074	1	1360 (190)	11
[h]	1518 (88)	7	1283 (225)	7
[]	1300 (170)			

Table 5. χ^2 values for groups of /o ~ œ/ in different contexts

Group 1	Group 2	χ^2 -value
/o/ in [h] context	/œ/ in [h] context	0.024
/o/ in [h] context	/o/ elsewhere	0.683
/o/ in [] context	/œ/ in [] context	0.069
/o/ in [] context	/o/ elsewhere	0.290

Table 5 shows that $\chi^2 < .05$ for the pair /o ~ œ/ in the context of [h], that is, the two groups in

resulting from tongue fronting is the expected result of coarticulation, since [j]

- Hsieh, Fang-yin Freda. 2008.
PhD Dissertation, National Tsing Hua University.
- Hsin, Tien-Hsin. 2000.