An Experimental Study on Syllable Structure in Amis

In this study, two experiments were conducted to examine whether word-medial consonant clusters were the result of unstressed schwa deletion or were true consonant clusters in Amis. The results which had reached the significance level argue that surface clusters not beginning with nasal/glide are caused by schwa deletion. Amis is an Austronesian language spoken mainly in the eastern coastal area of Taiwan. In Amis, it can be observed that a word-medial consonant cluster which does not begin with a nasal/glide has another variation containing a schwa within cluster. Contrarily, clusters beginning with nasals/glides do not have forms with an intervening schwa, as shown in (1-2).

The previous researches that had referred to Amis syllable structure showed ambiguity. Wang (1976), He et al (1986) and Zeng (1991) mainly focused on word-initial consonant clusters and considered those as the outcome of schwa deletion. Feng (1986) mentioned the ambiguous status between consonant cluster and schwa though she recorded schwa as underlying segment. Chen (1987) and Yeh (2003) held an opposite view that schwa is inserted to avoid cluster, rather then deleted. To clarify the role of surface word-medial consonant cluster, two experiments were conducted in this study to find out whether CVCCVC words are two-syllable (indicating true clusters CV**C**.**C**VC) or three-syllable (indicating schwa deletion CV.**Cə**.**C**VC).

The first experiment is the Syllable Inversion task, in which five voluntary Amis speakers aged from 50 to 80 were asked to pronounce the stimuli in a reveres way: saying [ta.ma] while hearing *mata* “eyes”. Thirty-eight control items and sixty test items were randomized in this experiment. In the responses to the word *kahmaw* “light”, [ka.hə.maw] was categorized as three-syllable word and [kah.maw] as two-syllable. As shown in (3), the results identified as 3-syllable-word were much more than 2-syllable-words; the correlation between them was significance by using Chi-square. However, due to some flaws we did another loose analysis which was not significant as in (4).

The second one is the Stress Shift Experiment. The same group of subjects was asked to change the general final stress to the penultimate syllable, for example, saying [má.ta] while the stimulus was *matá* “eyes”. Twenty-six control items plus thrity-six test items were randomized. The response [ka.hə́.maw] was coded as three-syllable type and [káh.maw] as two-syllable type while the stimulus was *kahmaw* “light”. The result was significant as in (5); three-syllable words were much more than two-syllable words.

Although the two experiments showed the significance of three-syllable words, the responses arguing for cluster can unquestionably be found. The assumption that Amis has no medial-cluster except those beginning with nasal/glide may in a process of phonologization: clusters derived form schwa deletion gradually become true consonant clusters. Further researches considering generation as a main factor may helpful clarifying the possibility of phonologization.

(1) Consonant cluster and variation in Amis

	Cluster	*With schwa*	*gloss*
a.	ʔatkák	ʔatəkák	'expensive'
b.	kihpi͡ts	kihəpi͡ts	'thin'
c.	t͡surnúh	t͡surənúh	'bristled'
d.	t͡saklis	t͡sakəlis	'adze'
e.	kuhtiŋ	kuhətiŋ	'black'
f.	lalt͡sáɬ	lalət͡sáɬ	'same'

(2) Cluster begins with nasal/glide

	Cluster	*With schwa*	*gloss*
a.	faŋt͡sál	*faŋət͡sál	'good'
b.	mantúʔ	*manətúʔ	'steamed bread'
c.	pajsuʔ	*pajəsúʔ	'money'
d.	pawliʔ	*pawəlíʔ	'banana'

(3) The Syllable Inversion Experiment (the strict analysis)

	Observed num.	Expected num.	(O-E)	$(O-E)^2$	$(O-E)^2/E$	Result
2-syllable-word	49	64	-15	225	3.52	Chi-square=7
3-syllable-word	79	64	15	225	3.52	(df=1, p=.01=6.635, ∴p<.01)

(4) The loose analysis in the Syllable Inversion Experiment

	Observed num.	Expected num.	(O-E)	$(O-E)^2$	$(O-E)^2/E$	Result
2-syllable-word	84	91.5	-7.5	56.25	0.61	Chi-square=1.22
3-syllable-word	99	91.5	7.5	56.25	0.61	(df=1, p=.10=2.706, ∴p>.01)

(5) The Stress Shift Experiment

	Observed num.	Expected num.	(O-E)	$(O-E)^2$	$(O-E)^2/E$	Result
2-syllable-word	27	73	-46	2116	28.99	Chi-square=57.98
3-syllable-wird	119	73	46	2116	28.99	(df=1,p=.001=10.83,∴p<.001)

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