

CONNECTED SPEECH PROCESSES IN VIETNAMESE-AUSTRALIAN

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ABSTRACT - Changes to connected speech processes characterising four Vietnamese-English speakers are examined, shortly after their arrival in Australia, and one to one and a half years later.

INTRODUCTION

This paper presents data from an ongoing longitudinal study concerned with phonological and social influences on the acquisition of English by Vietnamese refugees. Specifically, the present study examined the connected speech processes that characterised four Vietnamese-English speakers, and how those processes changed over time. A secondary aim of the study was to illustrate sections of the speech analysis and data management programs developed at the University of Queensland, and described elsewhere in these proceedings (Ingram, Pittam, & Hay, 1990).

Connected speech processes observed in the speech of second language (L2) learners may be influenced by the phonology of the first language (L1), and, therefore, should more properly be classed as interference or transfer effects. Alternatively, they may be influenced by the social and linguistic context in which the word or phrase was first acquired. In the latter case, they may be seen as examples of lexically governed phonetic variation. This often gives rise to particular vowels being pronounced differently in different lexical items. A word acquired early, even before the L2 learner arrives in the new country, may show evidence of L1 phonology. A word containing the same vowel, but acquired after several months or years in the new country, may be characterised by the pronunciation heard at that time. In such cases, the two pronunciations seem able to coexist.

While we cannot describe fully Vietnamese phonology, it would be useful to examine three types of feature common in our data set and which may represent transfer effects.

Consonants and consonant clusters appearing in syllable final position are few in Vietnamese (Nguyen, 1970). As a result, cluster reduction coupled with consonant deletion are very common features of Vietnamese-English, particularly in the early stages of learning the language.

The second feature concerns the long-short distinction in vowels. While there is agreement that Vietnamese has two such pairs: mid-central and mid-low, there is disagreement about the distinction on high vowels (Seitz, 1986). Certainly, our subjects had problems with this on high vowels. The result is a shortened or checked quality.

Finally, prosodic features are also potential and important transfer effects. There are ill-defined but recognised rhythmic differences between English and Vietnamese, for example. These are sometimes summarised by classifying English as a stress-timed language, and Vietnamese as syllable-timed. The implication is that there is less temporal variability in syllable duration in connected Vietnamese speech. In addition, as a tonal language, Vietnamese does not possess a system of word stress, providing Vietnamese-English speakers with additional prosodic difficulties.

All three of these types of feature characterised the speech of our subjects to a greater or lesser extent.

METHOD

Four subjects from the longitudinal study were analysed: two pairs of male/female siblings. The males were 28 and 25 years old when we started working with them shortly after their arrival in Australia. Both were unemployed for about six months. During this period both attended migrant education classes for one month, but their general use of English was virtually nil. They had each received minimal training in English in the refugee camp. The two females were both 14 years old, and had also received minimal training in English in the camps. On arrival in Australia, both started high school, where they attended special English classes before being placed into mainstream classes.

Recording sessions took place in subjects' homes. The material presented is taken from conversations held between the researchers and the subjects in a family group setting. The speech samples used were taken from the first or second session, and from sessions recorded one to one and a half years later.

Subjects' speech was analysed using the speech analysis program Ultrasound. Blocks of one to seven seconds of connected speech were digitised. Duration was governed by whether the sample formed a semantically and syntactically complete unit. Auditory analysis by the two researchers then followed in which each digitised sample was annotated with a phonemic representation and the observed phonetic processes. Both researchers annotated all samples. Differences were reconciled after consultation.

RESULTS AND DISCUSSION

We would first like to make a few general statements about the processes that characterised all four subjects, then look at changes that occurred across the sessions for individual speakers.

Subject Session	1		2		3		4	
	1	2	1	2	1	2	1	2
Del	11	17	16	12	14	19	7	8
Clrd	7	10	10	5	11	11	9	7
Stress	11	7	18	5				
Sh/Chk	3	8	14	4			3	7
Front			16	5				
Alv			12	1				
Spir			8	10				
Dvcd			6	6				
Unred			10	9				
Epen			6	5				
Glott					1	11		
Voc					4	7		

Table 1: Count of Major Phonetic Processes Observed for all Subjects and Both Sessions

Del=Deletion; Clrd=Cluster Reduction; Stress=Word Stress; Sh/Chk=Vowel Shortening and Checking; Frt=Vowel Fronting; Alv=Alveolarisation; Spir=Spirantisation; Dvcd=Devoicing; Unred=Unreduced Vowel; Epen=Epenthesis; Glott=Glottalisation; Voc=Vocalisation.

Table 1 lists the most frequently observed processes for each subject and each session. The proportion of these processes to each individual's total syllable count is significant, while in most cases accounting for less than 50%: Subject 1 - .36 and .37 (for session 1 and 2, respectively); Subject 2 - .53 and .44; Subject 3 - .24 and .18; Subject 4 - .38 and .29. The 'foreign accent' of all four speakers is quite marked, and while the less frequently observed processes do add to this effect, the perception of 'Vietnamese-English-ness' does seem to be produced by relatively few processes.

Two processes stand out as occurring most frequently: consonant cluster reduction and consonant deletion. Mostly, as indicated above, these went together, the second being a consequence of the first. Out of a total observed process count of 606, deletion accounted for 104 (17.2%), and cluster reduction accounted for 70 (11.6%). For all four speakers, these were either the most frequent, or were close to being the most frequent processes.

Deletion and cluster reduction occurred in a number of environments. Mostly, the last consonant in a syllable final cluster was deleted, although this was not always the case. Plural and possessive markers, where they formed part of a cluster, also tended to be deleted. Given that Vietnamese marks neither plurals nor possessives as English does, it is not clear which transfer effect resulted in the deletion: the phonological cluster reduction or the morphological plural/possessive deletion. Occasionally, consonants in syllable initial position were also deleted. Thus, the /t/ of 'Australia'; and the /g/ of 'English' were targets for these processes.

Single consonants in final position were also deleted. Usually, these can be explained by a simple transfer effect from Vietnamese. No voiced obstruents can appear in this position in Vietnamese. So, the loss of final /v/ in 'five', and /z/ in 'cause' and 'highs', are readily interpretable. Less so is the deletion of /k/ from 'work' and 'bake', and /t/ from 'about' and 'it'. Both of these consonants appear in syllable final position in Vietnamese. Codas generally, however, are somewhat marginal, resulting in weakening of even voiceless obstruents. The above examples, therefore, could be an extension of this.

One vowel process (raising) also appeared in the speech of all speakers, but was low in frequency. As a result, it does not appear in Table 1, but is of marginal interest. Of the 10 instances observed in the males' speech, eight concerned the vowel /ʌ/. Vietnamese has no /ʌ/, so it is not surprising to see some evidence of it shifting. That said, it was for only one male speaker that the process seemed to occur with consistency: subject 1 - five out of six occurrences of this vowel.

Two other vowel processes that seem to be linked in as yet unclear ways, and which together were observed quite frequently, are shortening and checking. Both refer to the duration of the vowel, and appear combined in Table 1. Values for Subject 3 do not appear in the table, as the frequency was low. We have observed that Vietnamese-English speakers have a tendency to shorten their vowels. Sometimes, this is perceived to be rather abrupt, giving the impression of being checked.

As one might expect, shortening occurred on long vowels, mostly in mono-syllabic forms. An exception was /a/. Shortening on this vowel was observed in both mono- and poly-syllabic items. While high vowels seemed prone to attract this feature, we observed shortening on vowels from around the entire vowel space. The syllables affected were both closed and open. Checking, however, always occurred on final syllables and, apart from two exceptions, on open syllables. The vowels involved with this process were both long and short.

Prosodic features are harder to capture than segmental features using the software we have developed. We are able to describe within-word prosody, however. This is manifested in two ways: segmentally, following failure to reduce vowels, and placement of primary word stress on an unexpected syllable. In our data, unreduced vowels were particularly prominent in the speech of Subject 2, and to a lesser extent in Subject 3. These speakers are siblings. Inappropriate word stress was quite common in the two male speakers, but not in the females' speech. The prosody of Subject 2, then, was marked by both features and, as a result, was quite noticeably non-Australian.

We have as yet been unable to capture the rhythmic structure of the sentence adequately. As indicated above, Vietnamese

has been called a syllable-timed language. This appears to have influenced our subjects' speech, with a tendency towards isochrony of syllables for all speakers. While there are possibilities for greater-than-word-length features to be marked using the current programs, we have not worked this problem through to an operational level.

Changes Across the Sessions

All four subjects showed some improvement across the two sessions, although for Subject 1 this applied only to specific processes. His overall performance worsened. Table 2 represents overall performance across the two sessions. Values given in the table are proportions of total syllable count.

Subject Session	1		2		3		4	
	1	2	1	2	1	2	1	2
Total Number of Processes	.59	.80	.73	.63	.69	.32	.69	.67
Number of Different Processes	.18	.20	.15	.21	.21	.07	.29	.23

Table 2: Proportion of Processes to Syllables

As can be seen from Table 2, only Subject 3 showed any real progress across the two sessions. The lower proportions in session 2 for this speaker indicate both fewer observed processes and fewer different processes.

Subject 1 improved in only two major respects. Firstly, a significant lessening of inappropriate word stress. The proportion of instances of this process to its possible frequency (i.e., the number of times when inappropriate word stress could have occurred) was .69 for session 1 and .28 for session 2. There was a predominance of mono-syllabic words. Subject 1's speech was never marked by failure to reduce vowels. Across the two sessions, then, he had lost most of his prosodic problems. Consonant deletion, cluster reduction and vowel shortening remained characteristic of his speech, however. The proportion of reductions to possible reductions were .50 and 1.00; and for shortening on high vowels, 1.00 and .44. The latter represents the second improvement. Neither his work as a metalwork labourer, nor his homelife afforded Subject 1 much opportunity to speak English. He remained hesitant in the language, therefore.

The second male speaker, Subject 2, also showed lessened use of inappropriate word stress. The proportion of actual to possible instances were .69 and .29. He, too, however, showed few other improvements. Like Subject 1, he had little opportunity to speak English across the period measured. Unlike Subject 1, however, he became quite fluent, but could be very difficult to understand. The considerable number of phonetic processes shown in Table 1

for this speaker may explain this difficulty to a large extent. In particular, his speech was marked by lexically governed phonetic variation. For example, the diphthong /eɪ/ was pronounced with a higher nucleus and reduced offglide (typical of Vietnamese-English speakers) on words that he seemed to have acquired early. On some more recently acquired words such as 'baker', however, the diphthong was produced with the retracted nucleus typical of Broad Australian English.

Subject 3 is both fluent and easy to understand. The processes most characteristic of her speech lessened over the two sessions. Proportion of actual to possible reductions were .85 and .22; the analogous figures for vocalisation of /l/ were 1.00 and .70. The latter shows only slight improvement, but the frequency of this process was quite low. Her improvement also came from the loss of many less frequently observed processes.

Finally, Subject 4 is also fluent and reasonably easy to understand, although she is less confident in speaking English than Subject 3. Her minor improvements came from slight lessening of cluster reduction - the proportions of actual to possible were .75 and .54; and a loss of less frequently observed processes. The proportions of actual to possible shortening of high vowels were .50 and .58, a slight worsening.

CONCLUSIONS

The speech analysis and data management programs have allowed us to capture many of the segmental and some of the prosodic characteristics of Vietnamese-English speech. Relatively few phonetic processes seem to be the major factors influencing perception of foreign accent. Non-linguistic as well as linguistic contexts seem to have influenced the changes to the speech of our four subjects, with the females improving to a greater extent than the males, due no doubt to using English on a daily basis at school.

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