Taiwan Journal of Linguistics
Vol. 10.1, 115-142, 2012
doi:10.6519/TJL.2012.10(1).3

A SOCIO-PHONOLOGICAL ANALYSIS OF TAIWAN ENGLISH FROM THE PERSPECTIVE OF WORLD ENGLISHES*

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ABSTRACT

A number of previous studies on the English pronunciation of native speakers of Mandarin have discovered many sound features distinct from Standard English, yet none of these analyse how frequently each of these features occurred in learners with different English proficiency levels (Chang, 1991; Chen, 1975; Chung, 2006; Gao, 1995; Lee, 1986). This study focuses on the frequency of such pronunciation features amongst intermediate-level learners of English. To this end, in this study ten Taiwan Mandarin speakers read 1,225 words commonly used in English, and the findings indicate that a total of 11 sound features regularly appeared in the pronunciation of the respondents. Among these, five features have not been described in prior research. In particular, three of these features are identified as those which make Taiwan Mandarin-accented English distinct from other varieties of English. This study details the results and concludes by discussing this Expanding-Circle variety of English from the perspective of World Englishes.

Keywords: English phonetics, graphic words, Taiwan English, World Englishes

* I'd like to express my gratitude to the two anonymous reviewers for their constructive suggestions that have substantially improved this paper, particularly with regard to the methodology and phonetic analyses. I also appreciate the editorial assistance of Yu-cheng and Po-wen. Finally, I would like to thank the National Science Council of Taiwan for supporting part of this research.

1. INTRODUCTION

During the 1990s the American Standards Association and the Acoustical Society of America designed three sets of English test words to evaluate the sound clarity of such oral communication equipment as broadcast systems, radiotelephones, and underwater telephones. The test words were used to investigate the degree of precision with which a given communication tool transmits both vowels and consonants. The first set of test materials consisted of 20 phonetically balanced lists, each containing 50 monosyllabic words; the second set consisted of 50 six-word lists of monosyllabic words; and the third set consisted of 192 common monosyllabic words arranged in 96 minimal pairs.

These assessment materials, however, might not be very suitable for diagnosing the pronunciation characteristics of nonnative speakers because some of the words are rare, such as *rut, vamp, teal*, and *daw*. English learners tend to mispronounce such uncommon words so that the deviation in their pronunciation might not reflect the sound system behind their pronunciation, but rather their lack of familiarity with the test words.

By contrast, Hillenbrand et al. (1995) placed eleven English vowels (/i, ɪ, e, ɛ, æ, ʌ, u, ʊ, o, ɔ, a) into an /hVd/ context as the test words, including *heed*, *hid*, *hayed*, *head*, *had*, *hud*, *who'd*, *hood*, *hoed*, *hawed*, and *hod*. Chen, Robb, Gilbert, and Lerman, (2001) employed this list of words to investigate the vowel pronunciation of native speakers of Mandarin. The informants read aloud from one of eleven randomized index cards containing the test words embedded in the carrier sentence: *Say* ____ *again*. The results indicate that the nonnative speakers' enunciation of the vowels was different from that of a control group composed of native speakers of English. However, some of the test words were uncommon and hence presumably would have been unfamiliar to the respondents, including such words as *hud*, *hoed*, *hawed*, and *hod*.

Additionally, Waters (2002) employed the minimal pairs *cap/cab*, *pick*/*pig*, *pot*/*pod*, and *beet*/*bead* to examine whether native speakers of Japanese and Mandarin could articulate English word-final consonants as

voiced or voiceless. His findings show that these nonnative speakers of English tend to devoice word-final consonants. He therefore suggested that pronunciation practice needs to include articulating and distinguishing words with word-final voiced/voiceless consonants. Nevertheless, he only investigated the pronunciation of word-final stops, disregarding other consonants and vowels. In addition, it is possible that the informants were unfamiliar with the uncommon minimal pair *beet*/*bead*. Moreover, because only a small number of minimal pairs were used to examine word-final devoicing, his study has little to offer in the way of quantitative results.

Because uncommon words might result in spelling-dependent pronunciation, researchers need to exclude such words from their word lists to circumvent the problem of orthographic pronunciation. Furthermore, a comprehensive analysis of the sound patterns underlying the pronunciation of nonnative speakers requires a sufficient number of stimulus words that are common in colloquial speech.

2. DATA ELICITATION TECHNIQUES

To avoid spelling-driven pronunciation in a speech production experiment, Rogers (1997) provided definitions and demonstrated pronunciations for her informants who had difficulty understanding any of the test words. Her word list contained 190 minimal pairs and covered all of the consonants and vowels in the English phonemic inventory, enabling her to investigate whether nonnative speakers of English could articulate each of the phonemes in English. However, because the test words were mainly selected for the linguistic balance of their syllable structures, some of the words on Rogers' list are rarely used in everyday spoken English, such as *wren*, *dune*, *ladle*, and *verve*.

Furthermore, although Rogers pronounced the test words that her informants pointed out as new, it does not suffice to merely articulate unfamiliar words for L2 learners, because mishearing might occur and hence affect learners' enunciation (Ohala, 2000; Riney & Flege, 1998; Yang, 2004).

This problem can be rectified by providing a phonetic transcription as well as a definition for each new word, enabling learners to pronounce it based on their phonological understanding of the phonemes appearing in the given word. Additionally, the informants should be told which variety of English is being used for the English transcription.

Weinberger (2006) did not use word lists, but rather a short paragraph to elicit utterances for sound analysis, as exhibited below:[1]

> *Please call Stella. Ask her to bring these things with her from the store: Six spoons of fresh snow peas, five thick slabs of blue cheese, and maybe a snack for her brother Bob. We also need a small plastic snake and a big toy frog for the kids. She can scoop these things into three red bags, and we will go meet her Wednesday at the train station.*

English speakers, native and nonnative alike, volunteered to read the same paragraph, which was then transcribed by ear for research on sound variation. The Speech Accent Archive provides a large set of speech samples from a variety of language backgrounds, allowing online users to explore the relationship between accent and sociolinguistic background.

Weinberger's paragraph, however, contains some seldom-used or culturally specific words that may be unfamiliar to nonnative speakers of English. For instance, the word *slab* is less common than such measure words as *piece* and *slice*. Moreover, the phrase *five thick slabs of blue cheese* might puzzle nonnative speakers of English who come from countries where cheese is not usually eaten.

Nonnative speakers may also have difficulty comprehending the sentence *She can scoop these things into three red bags*, because it is unusual to use the verb *scoop* in such a way; ordinarily, *put*, *pack*, or *place* would be used in this context. The verb *scoop* is more often used in such expressions as *She scooped the ice cream into a delicate sundae glass.*

[1] Weinberger's Speech Accent Archive is available on the Internet at http://accent.gmu.edu/.

It is also noteworthy that two equally important English phonemes are missing from the elicitation paragraph: the lax, back, round vowel /ʊ/ and the voiced, post-alveolar affricate /dʒ/. This omission consequently makes it impossible to investigate whether these two phonemes would be preserved or substituted by another sound. Although the Speech Accent Archive provides comparable data to analyse the utterances spoken by a wide range of speakers, the problems as discussed above are likely to have a confounding influence on the pronunciation of at least some nonnative participants.

Taking a different approach, Chung (2006, p. 16) examined the sound features that exhibit "a considerable degree of consistency" in the way nonnative speakers pronounce English words. Instead of merely examining the acquisition of individual phonemes like /ɚ/ (e.g., Chang, 2004), certain sound sequences like the word-final consonant cluster in *fast* (e.g., Gao, 1995; S.W. Chen, 2006), or part-of-speech effects (e.g., Matsui, 2000; Trofimovich & Baker, 2006), she explored all the possible sound patterns observable in her informants' articulation of the test words.

To present a preliminary phonetic and phonological description of the English pronunciation of native speakers of Taiwan Mandarin, Chung (2006) employed a list of 351 English words and phrases which are "often mispronounced, confused, or merged in Taiwan English" (Chung, 2006, p. 1). Most of the test words were minimal pairs, enabling the researcher to examine whether the target phonemic contrasts were produced accurately by the respondents. In the experiment, Chung noted that the sequence in which the minimal pairs are presented might confuse readers, leading them to pronounce each of the contrastive phonemes in the same way. As Chung states (2006, p. 2):

> *Readers often hesitate when confronted with a large number of similar words out of context, and they may either make a special effort to distinguish the words in a way they usually do not do when reading or speaking contextually. Some may, for example, add unaccustomed vowel lengthening to distinguish*

> *similar items; or some may 'give up' and use the same pronunciation for a group of similar-looking words. So certain reservations must be applied in the interpretation of these otherwise very rich and useful data.*

This shows that attention needs to be given to the order in which minimal pairs and similar stimulus words are presented.

However, some of Chung's test words are also uncommon, such as the words *sate*, *wren*, *hog*, *bangs*, and *yeast*. Some respondents might pronounce such unfamiliar words in accordance with the spelling, which may not accurately reflect the sound patterns underlying their articulations.

In view of these shortcomings in the prior research on the pronunciation features of nonnative speakers of English, this study uses a word-reading measurement to collect formal readings for sound comparison. This is in contrast to prior dialectological research on casual utterances elicited from basilectal (broad or beginning-level) English speakers in intra-national interactions (e.g., Hinton & Pollock, 2000). The purpose of this approach is to provide insight into the sound features that informants typically display in such formal settings as initial interaction with outsiders and foreigners. This is because there is evidence that interlocutors who speak different varieties of English tend to speak as formally as possible in their initial contact in order to facilitate mutual understanding.

Jenkins' (2000, 2005) findings have demonstrated that nonnative English speakers aiming to enhance their intelligibility when interacting with unfamiliar interlocutors tend to refrain from using casual forms of pronunciation, such as consonant cluster simplification or the use of schwa as a weak articulation (e.g., the use of *from* /frəm/, rather than /frʌm/). In fact, speakers of English, native and nonnative alike, speak as formally as possible when speaking English as a lingua franca for international communication, in the belief that doing so will help to avoid misunderstanding and non-understanding. Accordingly, a word-reading test is an effective way of eliciting the sound features that are likely to appear in interaction with acquaintances from other ethnic groups or nations.

The use of the same word list by all of the informants makes it easier to compare the pronunciation of different speakers. Although actual (or task-directed, quasi-naturalistic) intranational or international communication between two interlocutors would provide optimal samples for sound analysis, such an approach poses difficulties with respect to the comparability of the speech samples. Furthermore, a speaker's use of casual speech might simply exhibit his or her communication strategy and not necessarily reflect the way the speaker is actually capable of speaking. Therefore, this study utilized a word-reading test to elicit formal speech samples.

3. RESEARCH QUESTIONS

This study aims to address the following questions:

- What are the English pronunciation characteristics of native speakers of Taiwan Mandarin that differ from those of Standard English?
- How frequently do these sound features occur?

3.1 Methodology

3.1.1 Participants

This study recruited ten native speakers of Taiwan Mandarin, all sophomore English majors at a university in central Taiwan. The relatively small number of informants was determined by the time-consuming nature of analyzing each speaker's pronunciation. The socio-phonetician Wolfram (1991, p. 183) found that "various studies of dialects have indicated that as few as five speakers per cell . . . may be an adequate sample of speakers to represent a given social variable."

Therefore, ten persons were regarded as an adequate number of informants.

All of the participants were between 21 and 24 years of age, and had passed an intermediate-level English proficiency test situated at the B1 level according to the Common European Framework of Reference for Languages. In addition to their similar level of English proficiency, they also shared a similar socio-cultural learning environment: L1 backgrounds (i.e., Mandarin), similar cultural practices (i.e., Taiwanese customs), and similar English-learning experience (i.e., little contact with native English-speakers, and no experience living in an English-speaking country for over three months). This study focuses on these English learners because these are the Taiwanese a foreigner is most likely to interact with when engaging in international trade, overseas travel, or intercultural exchanges (Hilgendorf, 2007; Jenkins, 2003, 2005; Mattock, 2003; Nero, 2006). Although the informants are not representative of all Taiwanese intermediate-level learners of English, because their backgrounds are similar to the majority of English learners in Taiwan, it is expected that the results provide useful information on the Mandarin-accented English spoken in Taiwan.

3.1.2 Instrument

For this study a word list was compiled as a phonetic-diagnostic instrument for analyzing the sound system of English learners. The list consisted of a corpus of 1,200 words frequently used in 60 episodes of the *Oprah Winfrey Show*.[2] This study did not employ an existing corpus of spoken English, because these are either slightly out-of-date (e.g., the London-Lund Corpus, launched in 1959); focus on academic spoken English (e.g., the Michigan Corpus of Academic Spoken English); are limited to telephone conversations (e.g., the Switchboard Telephone

[2] For a description of this American television show, visit www.oprah.com.

Speech Corpus); or focus on a particular field (e.g., the Corpus of Business Communications established by the Brigham Young School of Management). By contrast, on the *Oprah Winfrey Show* people of various backgrounds discuss a wide range of topics, serving as a "leading source for information about love, life, self, relationships, food, home, spirit and health." Accordingly, this TV program constitutes an appropriate source for a corpus of spoken English.[3]

Although the small-scale corpus compiled for this study primarily reflects spoken American English and might not cover words used in other varieties of English, there is evidence that there is a close correspondence between the different varieties of English with respect to high-frequency words, except proper nouns and culturally specific words (Hofland & Johansson, 1982; Ljung, 1990; Peyawary, 1999).

This study utilized the language-processing software developed by Cheng Chin-Chuan (CCLang: Language Processing) to retrieve the 1,200 words most frequently used in 60 episodes of the *Oprah Winfrey Show*. In order to reflect actual language used in oral communication, the corpus consists of graphic words. For instance, the word *go* includes such graphic words as *goes*, *went*, *gone*, and *going*. Furthermore, this study used graphic words instead of content words because high frequency words usually contain irregular forms. However, proper nouns and function words were excluded, as were culturally specific words such as exotic food names, trendy words, jargon, and slang.

A total of 1,200 words were considered sufficient for diagnosing the overall pronunciation proficiency of English learners who participated in this study. Although a total of around 562,000 words were spoken in the 60 episodes of the Oprah Winfrey Show analyzed in this study, only 1,161 words were found to occur more than fifty times. The detailed information about the word frequency is displayed below:

[3] The transcripts of Oprah Winfrey's recent TV interviews are available for online PDF download at the charge of US$12.95 each.

Table 1. The frequency of spoken English words used on the *Oprah Winfrey Show*

Occurrence times	The accumulative number of graphic words
1,000	96
500	172
100	690
75	855
50	1,161
25	1,846
15	2,555
10	3,277
5	4,969

Since the number of the graphic words that were used more than fifty times was only 1,161, it was decided that 1,200 high-frequency words should suffice for the sound analysis.

In addition to the 1,200 high-frequency words, the experiment also included another 25 words with sound sequences that were speculated to be influenced by the participants' mother tongue. For instance, some speakers of Taiwan Mandarin, particularly from outside of Northern Taiwan, have been found to shift the rhyme /iŋ/ into /in/ (Zee, 1985; Tse, 1992; Yang, 2010) and presumably might be influenced by such habitual articulation so as to pronounce *seen* for *sing*, and *keen* for *king*. Accordingly, the test words included such words as *wing*, *sing*, *spring*, *walking*, *king*, *win*, *sin*, and *kin*. Thus the final list consisted of 1,225 test words.[4]

[4] The high-frequency words used in this study are available online at: http://teacher.yuntech.edu.tw/yanght/research/1200words.xls.

3.1.3 Procedures

Each informant was asked to read the test words, which were displayed in random order. Each individual was instructed how to use Praat software to record at the CD quality setting of 44.100 kHz, 16-bit, mono. Before recording, all of the informants were told that this study aimed to examine the way they spoke American English (AE); accordingly, they were asked to pronounce the words as in AE, to the best of their ability. They were also given around 10 minutes to browse the test words and were required to mark all of the words which were new to them. They were instructed to consult the online MSN Dictionary of American English and write down the Chinese definitions of the words that were new to them and also the KK-based phonetic transcriptions found in the dictionary. They were also given about 10 minutes to practice reading the test words before making the formal recording. Then they were asked to read each word aloud, with an interval of around one second between words. Each informant spent about one hour on the reading task.

The notes written on the word lists handed in by all of the participants showed that they recognized most of the test words. Only three participants found several unfamiliar words, including *abusive*, *assault*, *bacteria*, *conceive*, *crash*, *decade*, *devastated*, *donor*, *edge*, *fabric*, *flattering*, *gorgeous*, *intervene*, *molest*, *outfit*, and *stuck*. However, since the informants looked up each new word in the online dictionary to find the Chinese meaning and the KK-based transcription, it is assumed that they were all able to enunciate the unfamiliar words; i.e., their semantic and phonetic understanding of the new words was regarded as sufficient to enable them to avoid spelling-driven pronunciation. In summary, the procedures made it possible to collect formal speech samples for the analysis of the sound patterns underlying each informant's understanding of English phonetics, instead of idiosyncratic features that result from mistaken pronunciations and casual ways of speaking.

3.1.4 Analysis

The informants' reading of the test words was recorded and transcribed by ear for sound analysis. A research assistant with knowledge of phonetics and phonology made the initial transcription, which was later checked by the researcher. Very few transcription discrepancies occurred, and they were later resolved after re-examination and discussion. To explore the deviations in the pronunciation, we marked the words articulated differently from General American English (GAE). Once a phonetic divergence was identified, its occurrence rate was investigated across the ten speakers by adapting Meade's (2001) categorization of sound alterations, as presented below:

Table 2. Classification of the occurrence frequency of phonological processes (adapted from Meade, 2001, p. 85)

Occurrence rate	Phonological processes
Over 90%	Complete usage
75%-89%	Full usage
50%-74%	Regular usage
25%-49%	Inconsistent usage
1%-24%	Sporadic usage
0	Absent

4. FINDINGS AND DISCUSSIONS

The findings show that the informants' pronunciation, by and large, reflects the sound system of GAE. First of all, they all exhibited the rhotic accent typical of GAE speakers. In addition, they displayed the low front vowel /æ/, as in the words *bath*, *trap* and *happen*, in which the vowel is /a/ or /ɑ/ in Received Pronunciation (RP) (Upton, 2008). They also presented the vowel /ɑ/ instead of /ɒ/ in RP, as in the words *lot* and *hot* (Upton, 2008).

However, the informants tended to preserve /hw/ for *wh* words, as in *where*, *when* and *why*, reflecting a common feature in British English (BE), although the use of this feature has been declining rapidly recently (Upton, 2008). Like most BE speakers, they also often inserted the glide /j/ before the stressed vowel /u/ in such words as *during*, *new*, *news*, *student* and *suit*. Upton (2008) commented, "Yod coalescence is actually a general feature of RP . . . heard regularly for example in *attitude*, *residue*, *tissue*, and *usual*" (2008, p. 249), but added, "Yod deletion is similarly characteristic word-initially in RP in such words as *super* and *suit*" (2008, p. 250). He concluded, "Coalesced forms are becoming increasingly apparent in all positions in RP, where they provide a less formal alternative to the more 'careful' forms" (2008, p. 249).

Additionally, the Taiwanese informants tended to pronounce the lax high front vowel /ɪ/ for the unstressed syllable-final vowel of such words as *happy* and *family*, reflecting a traditional RP feature, although RP currently has a tense /i/ for the unstressed vowel (Upton, 2008, p. 247). In GAE, the syllable-final vowel "is now commonly pronounced with /i/, but the older /ɪ/ may still be heard, especially from educated Southern speakers" (Kretzschmar Jr., 2008, p. 48).

Interestingly, some of the sound features found in this study have also been found regularly in other varieties of English. For example, the Taiwanese respondents also tended to pronounce /ɑ/ for /ʌ/, as illustrated in words like *study*, *discuss*, *someone*, and *grandmother*. This vowel shift also occurs in such varieties of English as Australian English (Horvath, 2008) and New Zealand English (Bauer & Warren, 2008). Furthermore, the substitution

of /dʒ/ for /ʒ/, as in the words *decision* and *pleasure*, also exists in General Indian English (Gargesh, 2008). Furthermore, the tensing of high vowels, as in the words *tip* and *good*, also appears in the utterances of mesolectal Jamaican English speakers (Henry & Harris, 2002). Moreover, also common in many beginning-level and basilectal varieties of English is the schwa epenthesis forming the CV syllable, as in the word *act* /ækət/ (Henry & Harris, 2002).

The voiced interdental fricative /ð/ in the syllable-initial position was pronounced as /d/, which is also widespread in many non-standard varieties of English, as in *that* /dæt/ (Rickford & Rickford, 2007). However, this phoneme substitution is not a regular sound alteration, but merely an inconsistent one, because it occurred only 34.6 percent of the time in the readings. By contrast, its voiceless counterpart /θ/ in the syllable-initial position was not articulated as /t/ but as /s/ by most of the informants. Interestingly, in many other nonstandard varieties of English, such as Indian English (Gargesh, 2008) and African American English (Green, 2002), the voiceless stop /t/ is often substituted for the unvoiced fricative. This consonant shift from /θ/ to /s/ occurred 51.9 percent of the time in the readings. This regular sound feature supports the findings of Rau, Chang, and Tarone (2009).

In particular, three sound features were identified in this study as those that make Taiwan Mandarin-accented English distinct from other varieties of English. First, most of the Taiwanese informants tended to substitute /n/ for syllable-final /m/, as in *seen* for *seem* and *teen* for *team*. This sound modification might be regarded as a language transfer from Mandarin, which does not have the syllable-final bilabial nasal /m/. This sound alteration has been frequently observed in the research on Chinese dialects (Chen, 1975; Zee, 1985).

Another distinctive feature was the realization of /in/ for the ending *–ing*, as in such words as *savin'*, *walkin'*, and *anythin'*. This feature is also used by native English speakers in informal settings and is also common in many nonstandard varieties of English as well (Jenkins, 2006; Wassink, 1999; Wolfram & Schilling-Estes, 1998). However, there is a slight difference, in

that the Taiwanese informants tended to pronounce /i/ rather than its lax vowel for the rhyme, as in *spreen* for *spring*, *wean* for *wing*, and *keen* for *king*. This sound variation might be influenced by Taiwan Mandarin, which has been found to undergo the nasal coda shift from /iŋ/ to /in/ in many places outside of northern Taiwan (Li et al., 2005; Yang, 2010). Overall, the most intriguing feature of the participants' pronunciation was the replacement of /ʊ/ for the lax vowel /ɪ/ after /ʃ/, as in *relationship* ([rɪ'leʃʊnʃʊp]); this results from the sound assimilation of the vowel to its preceding round consonant /ʃ/. The following table summarizes the detailed sound divergences found in the readings and their rates of occurrence:

Table 3. Regular sound features in Taiwan Mandarin-accented English

Phonological Feature	Example	Rate of Occurrence
Substitution of /dʒ/ for /ʒ/	decision→[dɪ'sɪdʒən]	100% (complete)
Tensing of high vowels	ear→[ir] put→[put]	/ɪ/→/i/: 81.2% (full) /ʊ/→/u/: 90.3% (complete)
Glide insertion before stressed /u/	new→[nju]	86.2% (full)
Vowel shift from /ʌ/ to /ɑ/	color→collar	76.1% (full)
Substitution of /s/ for th	thousand→[sauznd]	Syllable-initial: 51.9% (regular)
Epenthesis in a consonant cluster	act→['ækət]	After /k/: 52.1% (regular)

In addition, five features which were not described in earlier studies (Chang, 1991; Chen, 1975; Chung, 2006; Gao, 1995; Lee, 1986) were found in the present study, as shown below:

Table 4. Regular sound features not described in previous research on Taiwan Mandarin-accented English

Phonological Feature	Example	Rate of Occurrence
Realization of /in/ for the ending *–ing*	walking→ ['wɔlkin]	92.6% (complete)
Relaxing of the unstressed word-final /i/	happy→ ['hæpɪ]	88.4% (full)
Preservation of /h/ for wh-words	what→[hwɑt]	84.7% (full)
Replacement of /ʊ/ for the lax vowel after /ʃ/	relationship→ [rɪ'leʃʊnʃʊp]	53.2% (regular)
Substitution of /n/ for syllable-final /m/	seem→seen	52.3% (regular)

Furthermore, a comparison of the results of the present study with those of earlier ones (Chang, 1991; Chen, 1975; Chung, 2006; Gao, 1995; Lee, 1986) shows that some pronunciation features are found to occur inconsistently, and most of them do not appear in this study, as displayed below:

Table 5. Low-frequency sound features in Taiwan Mandarin-accented English

Phonological Feature	Example	Rate of Occurrence
Substitution of /d/ for /ð/	that→[dæt]	Syllable-initial: 34.6% (inconsistent)
Vowel shift from /e/ to /ɛ/	table→[tɛbl]	0 (absent)
Vowel shift from /æ/ to /ɛ/	vast→vest	0 (absent)
Vowel shift from /o/ to /ɔ/	low→law	0 (absent)
Consonant cluster simplification	ask→ass	0 (absent)
Word-final schwa insertion for CV pattern	big→[’bɪgə]	0 (absent)
Substitution of /l/ for syllable-initial /r/	right→light	0 (absent)
Substitution of /l/ for syllable-initial /n/	night→light	0 (absent)
Substitution of /tɕ^{h}/ (ㄑ) for /tʃ/	chair→[tɕr][5]	0 (absent)
Substitution of /tɕ/ (ㄐ) for /dʒ/	orange→[’ɔrɪntɕ][6]	0 (absent)

The question that arises is: Why were some features found in other studies not found in the present study? The reason might be related to the informants’ levels of proficiency in English. In this study the participants were intermediate-level learners of English, so it may well be that the pronunciation features in question might occur more frequently among learners at the elementary and low-intermediate levels. Unfortunately, none

[5] The Chinese sound symbol ㄑ is transcribed as the consonant /tɕ^{h}/ (Cheng, 1997).

[6] The Chinese sound symbol ㄐ is transcribed as the consonant /tɕ/ (Cheng, 1997).

of the studies reviewed above specified the English proficiency level of their participants. Thus it would be worthwhile undertaking a mirror study to comparing the features of general Taiwan English found in this study with those of broad and cultivated Taiwan English.

5. CONCLUSION

In this study a list of 1,225 high-frequency words was used to investigate the English pronunciation features of native speakers of Taiwan Mandarin. By examining the ways in which students pronounce these commonly-used words, teachers can determine not only an individual learner's overall level of spoken English proficiency, but also the inter-phonological patterns shared by a number of learners.

This study also used the same word list to compare the pronunciation features of Taiwanese learners of English at the intermediate level with those of native speakers of GAE. The results indicate that there exist a total of eleven regular features in the enunciation of the informants. Among these, the three that distinguish Taiwan English from other varieties of English are the substitution of /n/ for syllable-final /m/, as in *teen* for *team*; the realization of /in/ for the ending *-ing*, as in *savin'* for *saving* and *wean* for *wing*; and, most distinctively, the replacement of /ʊ/ for the vowel after /ʃ/ in the ending *–tion* and *–ship*, as in *relationship*, [rɪ'leʃʊnʃʊp]. Teachers can utilize these findings to predict the difficulties students have in pronouncing certain words and help them become aware of how their articulation differs from GAE.

Follow-up research might also examine the phonetic environment that best predicts the occurrence rate of a divergent sound feature. In this respect, Rau, Chang, and Tarone (2009) clearly demonstrated the influence the phonetic environment has on the acquisition of the voiceless, interdental fricative /θ/. They discovered the following patterns:

- The onset fricative /θ/ tends to be preserved when preceding such vowels as, from most to least, /æ, ə, ɜ, ɪ, i, ɔ/. However, it tends to shift to /s/ when the preceding vowel is /ʌ, aʊ/. Particularly, the phoneme shift occurs in the *thr* cluster, as in *three*, *threaten*, *through*, and *throw*.
- The coda fricative /θ/ also tends to be preserved when following such vowels as /ɪ, i, ɔ, ɜ/. However, the preceding vowels that tend to inhibit the production of the fricative include /æ, u, aʊ, ə/.
- The coda fricative /θ/ also tends to be preserved in such clusters as *–lth* (*wealth*), *-fth* (*fifth*), and *-nth* (*tenth*, *strength*), but not in *–rth* (*north*).

Accordingly, teachers can increase the effectiveness of their pronunciation pedagogy by beginning with easier words like *thank* and *third*; next, they can instruct students to pronounce such words as *think*, *wealthy*, and *thought*. They can also use such words as *with*, *teeth*, *moth*, and *breath*. Finally, they can help students articulate more difficult words like *thunder*, *thousand*, *three*, *throw*, *threaten*, *through*, *math*, *mouth* and *truth*. Furthermore, following the example of Rau, Chang, and Tarone (2009), future researchers studying the English phonology of Taiwanese students may explore the linguistic environments that are likely to cause, for instance, the substitution of /n/ for syllable-final /m/.

The shared phonological patterns of the participants in this study—all at the intermediate level of spoken English—might not necessarily reflect those of native speakers of Taiwan Mandarin at other levels of English ability. Like many native varieties of English, a nonnative variety of English does not exist as a homogeneous entity, but consists of sub-varieties, including the three ranges of the speech continuum: broad (basilectal), general (mesolectal), and cultivated/educated (acrolectal). Future research on this topic might increase the number of informants and conduct a quantitative survey. Follow-up research might also include native speakers of GAE as a control group for comparison.

A nonnative variety of English might also vary considerably due to differences in the speech communities. For instance, Taiwanese Mandarin differs from that of mainland China. Future research might compare the

phonological differences between the English spoken by natives of Taiwan with that spoken in mainland China, Hong Kong, Malaysia, and Singapore.

One of the most unexplored and debated topics in recent research on World Englishes is whether nonnative varieties of English are acceptable as independent and legitimate varieties (Bolton, 2003; Kachru, 2005; Nero, 2006; Pennycook, 2007). Chung (2006) regards "Taiwan English" as a distinct variety of English, due to the divergent sound features used by most Taiwanese students. Likewise, Rau, Chang, and Tarone (2009) consider English learners in Taiwan and mainland China to be a single speech community because they substitute /s/ for /θ/. Furthermore, this study has identified eleven regular sound features common in Taiwanese intermediate-level learners of English. From a linguistic perspective, these phonological patterns manifest not as idiosyncratic utterances, but as a distinct variety of English—Taiwan English, which has a sound system different from Standard English.

From a sociolinguistic perspective, the sound features discovered in this study are also likely to appear in, for example, the public speeches of Taiwanese scholars and, most crucially, in the interaction between Taiwanese locals and the increasing number of immigrants in Taiwan. Despite the lack of recognition in Taiwan of this localized variety of English, an unconscious process of establishing it as the local norm has long been in process because in Taiwan, English has long been primarily taught and modeled by locally trained teachers (Groves, 2009), as is the case in many other countries in the Outer and Expanding Circles. These local forms exist alongside the native speaker norms, with some deviations unconsciously accepted by Taiwanese, particularly those which have little influence on intelligibility, as in the replacement of /ʊ/ for the vowel after /ʃ/ in the ending *–tion* and *–ship*. Interestingly, this syllable-final labial assimilation is similar to one of the sound patterns characteristic of Jamaican English: the replacement of the nasalized /ɪɑ/ for the schwa in the ending *–tion*, as in *relation* /rɪ'leʃɑ̃n/ (Yang, 2005).

In the view of linguistic purism, any sound feature divergent from Standard English is regarded as an error. Although English teachers need to

help students overcome their pronunciation difficulties and learn how to speak SE, they also need to inform students of the existence of nonstandard varieties of English. For example, although the vowel shift from /ʌ/ to /ɑ/, as in *color* pronounced as *collar*, is considered "wrong" in Taiwan, it is accepted as the speech norm in Australian English (Horvath, 2008) and New Zealand English (Bauer & Warren, 2008). It is time to adopt the perspective of World Englishes to explore Taiwanese responses to the sound features found to exist in Taiwan English and to critique these responses from a liberal and empathetic standpoint. It is also time to explore the effect these sound features have on intelligibility, and, most crucially, to consider how Taiwanese use their Expanding-Circle variety of English as a way of negotiating their Taiwanese identity in intercultural communication.

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從世界英語的觀點，分析台灣英語的發音特徵

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早期有關華人的英語發音特徵研究，雖然不多，但已發現許多異於標準英語的腔調(Chang, 1991; Chen, 1975; Chung, 2006; Gao, 1995; Lee, 1986)。可惜的是，這些研究並未分析這些發音特徵的發生頻率，以及這些發音特徵與不同英語程度之間的關係。因此，本研究旨在探討中級英語程度的台灣人，如何唸 1,225 個常用的英文口語單字，瞭解他們發音特徵的發生頻率。本研究以中級英語程度的台灣人為研究對象，因為他們與初、高級英語程度的人相比，是使用英語作國際溝通的最大多數者(Hilgendorf, 2007; Jenkins, 2003, 2005; Mattock, 2003; Nero, 2006)。這項研究發現，一共有 11 個常見的非標準英語發音特徵，其中五個未被記錄過；尤其，有三個發音特徵為說台灣國語者所獨有，別於其他的英語腔調。本研究最後以世界英語的觀點，討論這個擴展圈(Expanding Circle)的英語發音特徵，在國際溝通使用上的意涵。

關鍵字：英語語音學，圖形字彙，台灣英語，世界英語