▶ A Socio-Phonological Analysis of Taiwan English from the Perspective of World Englishes

從世界英語的觀點，分析台灣英語的發音特徵

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

James H. Yang
National Yunlin University of Science and Technology

ABSTRACT

While earlier studies on English pronunciation features among native speakers of Mandarin, albeit scarce, have discovered many sound features distinct from Standard English, they failed to analyse how frequently each of the features occurred in learners with different English proficiency levels (Chang, 1991; Chen, 1975; Chung, 2006; Gao, 1995; Lee, 1986). This study focuses on intermediate-level learners of English explore the occurrence frequency of such pronunciation features among them because there is evidence that mesolectal speakers, to use a sociolinguistic term, are the majority in a community speaking English for international communication with foreigners (Hilgendorf, 2007; Jenkins, 2003, 2005; Mattock, 2003; Nero, 2006). To this end, ten Taiwan Mandarin speakers were invited in this study to read 1,225 common English words, and the findings indicate that a total of 11 sound features regularly appear in the readings 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.

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

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1. INTRODUCTION

As early as 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 are used to investigate the degree of precision with which a given communication tool transmits both vowels and consonants. The first set of test materials consists of 20 phonetically balanced lists, each containing 50 monosyllabic words; the second set consists of 50 six-word lists of monosyllabic words; and the third set consists of 192 common monosyllabic words arranged in 96 minimal pairs.

These assessment materials, however, might not be very useful for diagnosing the pronunciation characteristics of non-native speakers because some of the words are rare, as illustrated in words like *rut*, *vamp*, *teal*, and *daw*. English learners tend to mispronounce the uncommon words. As a result, the deviation in their pronunciation might not reflect the sound system behind their pronunciation, but rather their incomplete knowledge of 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 the measurement to investigate the vowel production by Mandarin speakers of English. 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 non-native speakers' enunciation of the vowels was different from that of the native speakers. However, some of the test words are also found to be uncommon and hence presumably would have been unfamiliar to the respondents, including such words as *hud*, *hoed*, *hawed*, and *hod*.

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Additionally, Waters (2002) employed minimal pairs to examine whether the Japanese and Mandarin speakers of English could articulate English word-final consonants as voiced or voiceless. The four minimal pairs he used to test the non-native speakers' performance of the reading task were *cap/cab*, *pick/pig*, *pot/pod*, *beet/bead*. His findings show that the non-native speakers tended 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* and *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.

In short, uncommon words might result in spelling-dependent pronunciation. Accordingly, researchers need to exclude infrequent words from their word lists to ensure that their instruments do not induce orthographic pronunciation. Furthermore, a comprehensive analysis of the sound patterns underlying the pronunciation of non-native speakers requires a sufficient number of stimulus words that are common in colloquial speech.

2. LITERATURE REVIEW

To avoid spelling-driven pronunciation in a speech production experiment, Rogers (1997) provided lexical 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 non-native 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 infrequent 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 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 non-native 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.

Wienberger's paragraph, however, contains some culturally specific words that may look unfamiliar to some non-native speakers. For instance, the word *slab* is more uncommon than such measure words as *piece* and *slice*. Moreover, the phrase *five thick slabs of blue cheese* might also puzzle

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

non-native speakers of English who come from countries where cheese is not usually eaten.

Non-native 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; *put* or *place* would be most ordinarily used in this context. The verb *scoop* is more often associated with such expressions as *She scooped the ice cream into a delicate sundae glass*.

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 non-native participants.

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

To present a preliminary phonetic and phonological description of Taiwan Mandarin speakers of English, 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 each minimal pair might confuse readers if arranged in a sequence, leading them to pronounce each of the contrastive phonemes in the same way. As Chung states (2006, p. 2):

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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 minimal pairs and similar stimulus words in a reading task need to be presented in a different order.

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

In view of the drawbacks of the prior research on the pronunciation features of non-native English speakers, this study proposes a word-reading measurement to collect formal readings for the sound comparison 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). It aims to provide insight into the sound features that informants typically display in formal settings such as initial interaction with outsiders and foreigners, 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 non-native 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 (such as the use of *from* /frəm/, rather than /frʌm/). In

fact, speakers of English, native and non-native 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 considered an effective approach to 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 in the reading task also makes it easier to compare the pronunciation of different speakers. Although actual (or task-directed, quasi-naturalistic) intra-national 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 proposes a word-reading test to elicit formal speech samples.

3. RESEARCH QUESTIONS

Specifically, this study aims to address the following questions:

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

3.1 Methodology

3.1.1 Participants

This study recruited ten Taiwan Mandarin speakers of English, who were sophomore English majors at a university in central Taiwan. The

number of the informants was determined by the time-consuming nature of analyzing each speaker's pronunciation; Furthermore, 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 appropriate number for this preliminary study on the sound system of Taiwan Mandarin-accented English.

All of the participants, aged between 21 and 24, 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 similar socio-cultural learning environments based on their L1 backgrounds (e.g., Mandarin), similar cultural practices (e.g., Taiwanese customs), and similar English-learning experiences (e.g., little contact with a native English-speaking teacher or friend, and no experience living and/or learning English in an English-speaking country over three months). This study focuses on these English learners because a foreigner is most likely to interact with such Taiwanese in international trade, overseas travel, and intercultural exchanges (Hilgendorf, 2007; Jenkins, 2003, 2005; Mattock, 2003; Nero, 2006). Although the informants did not represent all Taiwanese intermediate-level learners of English, their backgrounds were similar to the majority of English learners in Taiwan, and thus their performance in the study might provide helpful hints on general Taiwan Mandarin-accented English.

3.1.2 Instrument

This study devised a word list as a phonetic-diagnostic instrument for analyzing the sound system of English learners. To this end, this

study constructed a corpus of 1,200 high-frequency English words based on 60 of Oprah Winfrey's recent interviews.[2] This study did not employ an existing corpus of spoken English, because some are slightly out-of-date (e.g., the London-Lund Corpus, launched in 1959); some are built on academic spoken English (e.g., the Michigan Corpus of Academic Spoken English); some are limited to telephone conversations (e.g., the Switchboard Telephone Speech Corpus); and some focus on a particular field (e.g., the Corpus of Business Communications established by the Brigham Young School of Management). By contrast, the Oprah Winfrey talk show, which invites people of various backgrounds to discuss a wide range of topics, serves as a "leading source for information about love, life, self, relationships, food, home, spirit and health." Accordingly, this American TV program constitutes an appropriate source for a corpus of spoken English.[3]

Although the small-scale corpus established 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 (excluding proper nouns) (Hofland & Johansson, 1982; Ljung, 1990; Peyawary, 1999).

This study utilized Professor Chin-Chuan Cheng's language-processing software (CCLang: Language Processing) to retrieve the top 1,200 high-frequency words from the corpus. The test words consist of graphic words in order to reflect actual language usage in oral communication. For instance, the word *go* includes such graphic words as *goes*, *went*, *gone*, and *going* different forms for the need of grammar. Furthermore, this study used graphic words instead of content

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[2] For a description of the Oprah Winfrey television show, visit www.oprah.com.

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

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words because high frequency words usually contain irregular forms. However, some words were deleted, including proper nouns and function words. Culturally specific words were also excluded from the list, such as exotic food names, trendy words, jargon, and slang.

The 1,200 high-frequency spoken English words were considered a sufficient number of the test words for the diagnosis of English learners' overall pronunciation proficiency. Although a total of around 562,000 words are spoken by all of the participants, only 1,161 words are found to occur more than fifty times in the corpus. The detailed information about the word frequency is displayed below:

Table 1. The frequency of spoken English words *(where?)*

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 appear more than fifty times in the corpus is only 1,161, it was decided that 1,200 high-frequency words should suffice for 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 habitual articulation of the learners in the use of their 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]

3.1.3 Procedures

Each informant was asked to read the test words, which were displayed in random order. Each individual was instructed at a time in how to use Praat software to record at the CD quality setting of 44.100 kHz, 16-bit and mono in a quiet room. 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 using AE as the model, if capable, while refraining from using British English pronunciation or that of other varieties of English. 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 at an interval of around a second before articulating the next word. It took about an hour to conduct a reading task with each informant.

The review of the word lists handed in by all of the respondents shows that they recognized most of the test words. Only three of them found a few unfamiliar words, including *abusive*, *assault*, *bacteria*, *conceive*, *crash*, *decade*, *devastated*, *donor*, *edge*, *fabric*, *flattering*, *gorgeous*, *intervene*,

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[4] The high-frequency words used for this study are available online for scholars interested in the acquisition of English pronunciation. The download site appears here: http://teacher.yuntech.edu.tw/yanght/research/1200words.xls.

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molest, *outfit*, and *stuck*. However, the informants had been instructed to look up new words in the online dictionary, and all of the words had been given the Chinese meanings and the KK-based transcriptions, as requested. Accordingly, it was thus assumed that they were all able to enunciate the unfamiliar words after consulting the online dictionary. 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*"

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(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 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 words like *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 testifies the finding 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, because the syllable-final bilabial nasal /m/ does not exist in the language. This sound alteration is also a common sound change frequently observed in the literature (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, because the Taiwanese informants tended to pronounce /i/ rather than its lax vowel for the rhyme, as in the words *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 was the replacement of /ʊ/ for the lax vowel after /ʃ/, as in the word *relationship* ([rɪ'leʃʊnʃʊp]), which resulted from the sound assimilation of the final schwa to its preceding round consonant /ʃ/. The following table summarizes the detailed sound divergences found in the readings and their rates of occurrence:

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

Phonological Feature	Example	Rate of Occurrence
Substitution of /dʒ/ for /ʒ/	decision→[dɪˈsɪdʒən]	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→[ˈækət]	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 this present study, as shown below:

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

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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:

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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→[ˈbɪgə]	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 /tɕʰ/ (ㄑ) for /tʃ/	chair→[tɕr][5]	0 (absent)
Substitution of /tɕ/ (ㄐ) for /dʒ/	orange→[ˈɔrɪntɕ][6]	0 (absent)

The question that arises is: Why are some features evident in other studies not present in this study? The reason might be related to the informants' levels of proficiency in English. Because this study aimed to explore how the intermediate-level Taiwan Mandarin learners of English

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

articulated the test words, some pronunciation features not found with any regular occurrence in this study might occur more frequently among learners at the elementary and low-intermediate English levels. This study targeted mesolectal Taiwan English speakers because they are more likely than basilectal and acrolectal speakers to speak English in international communication (Jenkins, 2000, 2005). Additionally, it is possible to presume that some of the pronunciation features found in the present study might differ from those discovered ten years ago. Unfortunately, the previous studies reviewed above did not present the sound features according to their informants' proficiency in English. Nonetheless, it would be intriguing to explore how the mesolectal Taiwan English features found in this study may change over time. A mirror study is worth undertaking for comparison in the future.

5. CONCLUSION

This study has constructed a list of 1,200 high-frequency spoken English words for English teachers to investigate the pronunciation features of non-native speakers of English. By examining the way 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 has also used the word list to explore how intermediate-level Taiwanese learners of English differ phonologically from 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 the word *teen* for *team*); the realization of /in/ for the ending *-ing* (as in words like *savin'* for *saving* and *wean* for *wing*); and, most *distinctively*, the replacement of /ʊ/ for the lax vowel after /ʃ/ in the ending *–tion* and *-ship* (as in the word *relationship*, [rɪ'leʃʊnʃʊp]). Teachers can utilize these findings to predict their students' difficulty in pronouncing

some relevant words and help them become aware 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) have presented a shining example of the influence of the phonetic environment 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 the words like *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*), *-nth* (*tenth*, *strength*), except –*rth* (*north*).

Accordingly, for effective pronunciation pedagogy, teachers can begin 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*. Following the example of Rau, Chang, and Tarone (2009), future researchers who are interested in the acquisition of English phonology by Taiwanese students may explore the linguistic environments that are likely to cause, for instance, the substitution of /n/ for syllable-final /m/.

While this study has analyzed the sound features underlying the pronunciation of ten intermediate-level Taiwan Mandarin speakers of English, their shared inter-phonological patterns might not necessarily reflect and represent those of other Taiwan Mandarin learners of English. Like

many native varieties of English, a non-native variety of English does not exist as a homogeneous entity, but consists of sub-varieties, including three ranges of a speech continuum: broad (basilectal), general (mesolectal), and cultivated/educated (acrolectal). Future research might expand 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 the difference in speech communities. For instance, the Taiwanese speak Mandarin differently from natives of mainland China. Future research might compare how Taiwan Mandarin-accented English differs phonologically from Chinese Mandarin-accented English. It would also be intriguing to compare the sound variations of English in Taiwan with the English spoken in such other Mandarin-speaking communities as Hong Kong, Malaysia, and Singapore.

One of the most unexplored and debated topics in recent research on World Englishes is whether non-native varieties of English are acceptable as independent and legitimate varieties (Bolton, 2003; Kachru, 2005; Nero, 2006; Pennycook, 2007). As far as Taiwan Mandarin-accented English is concerned, Chung (2006) regards it as a distinct variety of English, due to the divergent sound features used by most Taiwanese students. Likewise, Rau, Chang, and Tarone (2009) also consider English learners in Taiwan, as well in China, to be a single speech community because they share the preference of /s/ for /θ/ as its substitute. Furthermore, this study has confirmed eleven regular sound features common to the Taiwanese informants. From a linguistic perspective, these phonological patterns have manifested themselves 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 speech of Taiwanese scholars and, most crucially, in the interaction between Taiwanese locals and the increasing number of immigrants in Taiwan. Despite Taiwanese people's lack of recognition of their own variety of English, an

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unconscious process of establishing the local norm has long been in process because English in Taiwan, as well as in many other countries in the Outer and Expanding Circles, has long been taught by locally trained teachers as the school model (Groves, 2009). The local forms actually exist alongside the native speaker norms, with some deviations unconsciously accepted by Taiwanese, particularly those mostly not influencing intelligibility, as in the replacement of /ʊ/ for the lax vowel after /ʃ/ in the ending *–tion* and *–ship*. 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* in Jamaican English, as in the word *relation* /rɪ'leʃɑ̃n/ (Yang, 2005). After all, some sound features are identifiable as Taiwanese, as demonstrated in this study.

The exonerative model based on linguistic purism is problematic because any sound feature divergent from Standard English is regarded as an error. Although English teachers help students overcome their pronunciation difficulties to speak SE, they need to inform students of the variation of English. For example, when the vowel shift from /ʌ/ to /ɑ/, as shown in the word *color* pronounced as *collar*, is considered 'wrong' in Taiwan, it is accepted as the speech norm in other varieties of English like Australian English (Horvath, 2008) and New Zealand English (Bauer & Warren, 2008). It is time to explore Taiwanese responses to the sound features found to exist in Taiwan Mandarin-accented English from the perspective of World Englishes and to critique the responses from a liberal and empathetic standpoint. It is also time to explore the effect of the sound features on intelligibility to other speakers of English, 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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James H. Yang
Department of Applied Foreign Languages
National Yunlin University of Science & Technology
Yunlin, Taiwan 64002, ROC
jamesyang1118@gmail.com

James H. Yang

從世界英語的觀點，分析台灣英語的發音特徵

楊孝慈
國立雲林科技大學

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