

Levis, J. & Barriuso, T. A. (2012). Nonnative speakers' pronunciation errors in spoken and read English. In J. Levis & K. LeVelle (Eds.). *Proceedings of the 3rd Pronunciation in Second Language Learning and Teaching Conference*, Sept. 2011. (pp. 187-194). Ames, IA: Iowa State University.

NONNATIVE SPEAKERS' PRONUNCIATION ERRORS IN SPOKEN AND READ ENGLISH

John Levis and Taylor Anne Barriuso, Iowa State University

Adult foreign language learners typically reach a lower level of proficiency than do native speakers of the language. This is most obvious in pronunciation, where foreign accents are the norm and native-like accents the rare exception. When diagnosing pronunciation errors, teachers usually ask learners to read a passage that includes a variety of possible pronunciation targets. However, it is not clear that the errors that occur when reading are the same errors that learners demonstrate in spontaneous speech. This is especially true for foreign learners of English because of the indirect correspondence between English spelling and how words are pronounced.

This study looks at the English speech of three people from each of four different first language groups: Korean, Malay, Chinese, and Spanish. Each speaker read a passage intended to sample all possible pronunciation errors in English. They also took part in a brief, semi-structured interview that elicited conversational, unplanned speech. The most frequent vowel and consonant errors in each learner's read speech were identified and compared to the equivalent vowel and consonant features in their unplanned speech. The results suggest that the type of spoken language task influences the types of errors made by the speakers. Implications for diagnosing pronunciation are provided.

INTRODUCTION

When teaching pronunciation to nonnative speakers of English, it is important to determine the kinds of errors that learners actually make in order to effectively use class time. Some errors may be more important than others, but a critical first step is to identify errors in their oral production or in aural comprehension. Such diagnosis can be made in a variety of ways, including tests of listening comprehension, evaluation of free speech, or through oral reading tasks at the word, sentence or discourse level. It is not clear, however, whether evaluating pronunciation using these different approaches leads to similar findings.

Background – Oral Reading

Oral reading is commonly, though not invariably, used as a technique in published textbooks (e.g., Dauer, 1993; Grant, 2001; Smith, Meyers & Burkhalter, 1992) to diagnose pronunciation accuracy, and a host of reading passages have been constructed to efficiently provide full coverage of many phonological targets at the same time. For example, Prator and Robinett (1985) provide a diagnostic passage of 166 words that is designed to provide coverage of six areas related to stress and rhythm, seven related to intonation, four related to vowels, eight for consonants, and four for combinations of vowels and consonants (such as the pronunciation of allomorphs for the -s and -ed endings), as well as a section for general comments. The benefits

of this kind of diagnostic reading passage are many. It allows the diagnostic testing to be controlled, and multiple tokens of important vowel and consonant sounds to be included. Diagnostic passages also can be used to elicit intonation and stress targets, such as the intonation of different types of questions, the intonation of lists, the rhythmic structure of sentences and the stress of various multisyllabic words.

However, reading aloud is not actual speech. It includes spoken performance abilities that have no clear parallel in spontaneous spoken language. Reading aloud uses a dual-route processing architecture (Coltheart, Curtis, Atkins & Haller, 1993) in producing phonological form, in which lexical knowledge may be more important when orthographic regularities are not strong (Rosson, 1985). Second, reading aloud is affected by knowledge of English spelling and its relationship to the phonological form of words (Glushko, 1979). If reading aloud includes words that are unusual in any way, they are more likely to be read wrongly. Such orthographic knowledge may be especially weak for nonnative speakers of English. Because diagnostic passages are meant for nonnative speakers of English, the inclusion of unusual words may lead to mispronunciations that do not necessarily reflect overall pronunciation patterns. Moreover, reading aloud may be a fairly unusual task in most people's lives. People read aloud when reading books to their children, if they are elementary school teachers, if they teach literature, if they are actors, and if they are called upon to read in public contexts such as giving speeches or religious services. Effective performance can be improved with practice, and the oral interpretation of texts may be an important part of learning public speaking (Moran, 2006). Finally, there is a well-attested tendency for many readers to treat the language in reading aloud not as real communication but rather as an object, leading to flatter pitch patterns and unusual rhythm (Brazil, 1997). However, this tendency is unlikely to lead to mispronunciations of vowels and consonants.

There have been few studies on oral reading and its effectiveness in diagnosing non-native speakers' pronunciation accuracy. Munro and Derwing (1994) examined whether accented speech is judged as more accented when it is originally read or originally spoken freely. They collected and transcribed the English free speech narratives of 10 students (L1 = Mandarin Chinese). The students then read their own narratives aloud. Native English speaking listeners evaluated both the original narratives and the read versions. No differences were found in ratings of accent in the two conditions.

Levis (2011) asked a group of experts to listen to the speech of two advanced proficiency nonnative speakers of English, a native speaker of Spanish and a native speaker of Korean. Both were graduate students at a large US Midwestern university. The group listened to each speaker's performance once, taking notes and then discussing their reactions in a round table format. Their discussion suggested that using reading tasks elicited fundamentally different patterns of errors than free speech. The Korean speaker was halting and difficult to listen to in free speech but read aloud more fluently and smoothly. In contrast, many experts (but not all) found the Spanish speaker easy to understand in free speech, but extremely hard to follow when he was reading aloud. Even though the experts only listened to two speakers, they felt strongly that reading aloud was not a natural speech task and that it may skew accurate diagnosis of pronunciation needs.

Frequency of lexical items may also be a factor in pronunciation accuracy when reading aloud (Gerhand & Barry, 1998; McCann & Besner, 1987). Levis & Cortes (2008) examined the frequency of words in minimal pairs found in ESL pronunciation textbooks, looking for a

potential influence of frequency on mispronunciation. They found that minimal pairs rarely include two words of equivalent frequency, and suggested that more frequent words may show a different pattern of errors than less frequent ones. Furthermore, native English-speaking listeners may be less likely to misunderstand the pronunciation of frequent words when the word is pronounced like an infrequent word (e.g., if *think*, a frequent word, is pronounced like *sink*, an infrequent one). In all these cases, there is a suggestion that oral reading and free speech may identify different types of errors. We thus sought to examine the patterns of errors that occurred in the free speech and read speech of nonnative speakers to determine whether they showed different patterns. We looked at the error patterns in vowels and consonant production only, ignoring errors in stress and intonation.

The research question for this study had two parts. Will students show different frequencies of errors in read speech than in free speech, and will there be differences in the patterns for vowels and consonants when looking at the percentages of errors in read and free speech? Since we are looking at both consonant and vowel errors in this study, we wanted to see whether there were differences between these two categories of segmentals.

METHOD

Twelve nonnative speakers of English were recorded speaking three texts. The twelve subjects were three speakers from each of four different native languages: Spanish, Korean, Malay, and Chinese. All speakers were graduate students who had self-selected for pronunciation tutoring.

The first text for each subject was an interview in which they answered questions freely. The interview focused on questions personal to the speaker, asking about topics such as their hometown and their studies. After the free speech interviews were transcribed, the errors in both vowel and consonant sounds were examined. The second recording was the reading of a diagnostic passage of three paragraphs (Appendix 1). This was used to analyze speakers' consonant errors in reading. The third recorded text was a series of minimal pairs developed by the researchers, words that differ only in their vowel sounds (Appendix 2). This was used to examine vowel errors in reading. Each text was listened to and analyzed by two listeners. The vowel sound errors in the minimal pair reading and the consonant vowel sound errors in the diagnostic passage reading were identified and then compared to the errors made during the free speech.

Calculating the error rate

To calculate the error rate, 2-3 consonant sounds and 2-3 vowel sounds that were pronounced with errors were identified for each speaker from the read texts. The same sounds that were identified in the read speech were examined in the free speech texts. (Some speakers had only two sounds that showed frequent errors, while others had three.) The number of actual errors for each sound was divided by all the times the sound would have occurred for a native speaker. For example, if for 20 potential errors with the vowel in *seat*, *bee*, *seen*, 8 errors are actually identified, this would give an error rate of 40%. To come up with error rates for each language group, the error rate for each individual speaker within the language groups was combined.

The errors chosen were ones that had sufficient frequency in both the read and free speech. In addition, they were errors whose realization we could (phonemically) categorize. Those we

could not categorize were not counted for this study. For example, one subject consistently pronounced /l/, /n/, and /r/ in a way that did not match English articulatory targets for any of the three sounds. Even though all three targets were frequent in both read and free speech, we did not include them in the research because of our inability to precisely identify the errors being made.

RESULTS

Our research question asked whether students would show different frequencies of errors in read speech and in free speech and whether there would be differences in the patterns for vowels and consonants. It was clearly the case that there were more errors in read speech than in free speech, but this difference in frequency came from the number of vowel errors, which was considerably higher in read speech than in free speech. In comparison, the percentage of consonant errors was very similar in both modes. For some of the language backgrounds the difference for vowel errors was quite large (Malay 86% read vs. 36% free), while for others the difference was noticeable but narrower (Spanish 82% read vs. 67% free). As a group, however, the errors in read speech for vowels for the 12 speakers were much higher (79.5% vs. 48.3%) than the equivalent sounds in free speech.

Table 1

Percentage of Errors in Read Speech and Free Speech by Language Background

Language	Vowels		Consonants	
	Read	Free	Read	Free
Spanish	82%	67%	45%	57%
Chinese	81%	34%	49%	49%
Korean	69%	57%	37%	39%
Malay	86%	36%	59%	66%
Total	79.5%	48.3%	47.25%	52.58%

DISCUSSION

The first and the second research questions are tied together in the results. Subjects showed different frequencies of errors in read speech and in free speech, but the differences were tied to the types of errors. The percentage of errors in consonant sounds was very similar, while errors in the pronunciation of vowels were much more noticeable in read speech than they were in free speech.

We have already seen that the percentage of consonant errors was similar in free speech and reading for all language groups. One reason for this may be that the correspondence between consonant spellings and sounds is fairly direct in English, especially for the consonant sounds that we examined in the study. Consonant articulations are also more precise and more noticeable. Certain parts of the mouth touch in ways that can be felt by speakers. This is a contrast to the pronunciation of vowels, which are less precise since they are based on the shape

of the mouth cavity. In addition, even within any particular variety of English, such as North American English, vowel sounds may vary greatly. The /æ/ in North American English, for example, varies from a pure [æ] in much of Canada, to [eə] throughout much of the US, to [ɛ] in the upper US Midwest in words like bag, to [iə] in parts of New York. This presents a moving target to learners, who may not have ever had good control over even the pure [æ]. In addition, vowel variation may be less noticeable to listeners in free speech than in reading aloud, especially with the reading of minimal pairs.

Another reason that vowel errors were more common in read speech may be that the correspondence between vowel spellings and vowel sounds is very indirect in English. It is well known that there are five vowel letters in written English while there are 15 or more vowel sounds, depending on the variety of English and the descriptive scheme used. Vowel sounds are thus not directly represented by spelling patterns, with the same vowel spellings often representing three or more vowel sounds.

Also, because English has a well-populated vowel space, there are a number of perceptually close sets of vowel sounds that are difficult to distinguish in very controlled reading of minimal pairs, a task that is guaranteed to test control of a learner's ability to distinguish sounds that in normal speech may not need to be distinguished as clearly. We found that when subjects looked at the minimal pairs before reading aloud, it was common for them to laugh nervously and say that they could not say the pairs of words differently. They knew there was a difference - the task made that obvious - but when called on to make the difference, they felt uncomfortable. Often they made a distinction, such as saying [i:] for beat and [i] for bit, creating a quantity (long/short) distinction where English instead uses a quality (tense/lax) distinction.

Decoding sound from written form may still be a particularly important skill for learners, even if reading aloud is an unusual task. Because learners often receive much of their input from written sources, it may be important to explicitly teach them how to connect spelling to sound, as advocated by Dickerson (1987) and Gilbert (2001). Dickerson's patterns of spelling/sound correspondences are meant for more advanced learners and are connected to an understanding of word stress patterns for multisyllabic words (see Dickerson, 1989 for more information on word stress patterns). In contrast, Gilbert especially advocates teaching decoding skills for beginning learners, based on high frequency patterns in which English spelling reliably predicts sound (Carney, 1994).

Recommendations

In diagnosing pronunciation errors, it seems clear that we must use both read and free speech, especially to make sure that certain classes of sounds are represented. For consonants, diagnosis of pronunciation difficulties seems to be as accurate with reading aloud as with free speech. However, with vowels, this is not true, and read speech may overstate (or state more accurately, it is not clear) the seriousness of vowel errors. Reading minimal pairs is not reading aloud in the true sense, and it may give us a more accurate view of distinctions they really can or cannot make. We do not know without further research.

Jenkins (2000) says that distinguishing vowel quantity (the tendency of English to lengthen vowels at the ends of syllables or before voiced segments, and to shorten the same vowels before voiceless segments) is a critical pronunciation feature for English as a Lingua Franca, but that vowel quality distinctions may not be critical to teach, as they vary between inner circle varieties. As a result, we need research on whether read speech is more or less accurate than free

speech for vowels, and whether students' tendency to focus on length over quality is actually useful.

Limitations

There were a number of limitations to our results. First, the errors measured were only a small sample of those that were made. We found that some bothersome errors did not lend themselves to easy counting, either for reading or for free speech. For example, errors involving nasalization (n, ŋ, m) were quite difficult to count, since the errors may have involved nasalized vowels, or sounds that were not quite right but were not quite wrong either. Other consonant errors were hard to count precisely, such as one subject's pronunciation of /l/, /n/, and /r/, which were often produced with sounds that were not clearly identifiable as any of the three categories.

This analysis also does not examine the relative seriousness of errors for communication. Some of the errors we counted (such as the /ð/ for words like *these*) appear to be very common but not very serious (Munro & Derwing, 2006). This study instead looked only at whether the same errors that were common for each speaker showed different frequencies for read and free speech.

ABOUT THE AUTHORS

John M. Levis is Associate Professor of TESL and Applied Linguistics at Iowa State University. He teaches a variety of courses including Methods of Teaching Pronunciation, Listening and Speaking, Linguistics, and Sociolinguistics. He is the organizer of the Pronunciation in Second Language Learning and Teaching conference and has published in a variety of journals, including *TESOL Quarterly*, *Applied Linguistics*, *World Englishes*, *ELT Journal*, *Annual Review of Applied Linguistics*, and *System*.

Taylor Anne Barriuso is an undergraduate student at Iowa State University with a double major in linguistics and Spanish and a minor in Russian Studies. This is her first research experience in linguistics. After studying in Spain, she hopes to have a clearer idea of what linguistic areas most interest her.

REFERENCES

- Brazil, D. (1997). *The communicative value of intonation in English*. Cambridge: Cambridge University Press.
- Carney, E. (1994). *A survey of English spelling*. London: Routledge.
- Celce-Murcia, M., Brinton, D. & Goodwin, J. (2010). *Teaching pronunciation: A reference book for teachers, 2nd Ed.* New York: Cambridge University Press.
- Coltheart, M., Curtis, B., Atkins, P. & Haller, M. (1993). Models of reading aloud: Dual-route and parallel-distributed-processing approaches. *Psychological Review*, 100(4), 589-608.
- Dauer, R. (1993). *Accurate English: A complete course in pronunciation*. Englewood Cliffs, NJ: Prentice Hall Regents.
- Dickerson, W. (1987). Orthography as a pronunciation resource. *World Englishes*, 6(1), 11-20.

- Dickerson, W. (1989). *Stress in the speech stream: The rhythm of spoken English*. Urbana, IL: University of Illinois Press.
- Gerhand, S. & Barry, C. (1998). Word frequency effects in oral reading are not merely age-of-acquisition effects in disguise. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 24(2), 267-283.
- Gilbert, J. (2001). *Clear speech from the start*. New York: Cambridge University Press.
- Glushko, R. (1979). The organization and activation of orthographic knowledge in reading aloud. *Journal of Experimental Psychology: Human Perception and Performance*, 5(4), 674-691.
- Grant, L. (2001). *Well said, 2nd ed.* Boston: Heinle & Heinle.
- Jenkins, J. (2000). *The phonology of English as an international language*. Oxford: Oxford University Press.
- Levis, J. (2011). Assessing speech intelligibility: Experts listen to two students. In J. Levis & K. LeVelle (Eds.), *Proceedings of the 2nd Pronunciation in Second Language Learning and Teaching Conference*, Sept. 2010. (pp. 56-69), Ames, IA: Iowa State University.
- Levis, J. & Cortes, V. (2008). Minimal pairs in spoken corpora: Implications for pronunciation assessment and teaching. In C. A. Chapelle, Y.-R. Chung, & J. Xu (Eds.), *Towards adaptive CALL: Natural language processing for diagnostic language assessment* (pp. 197-208). Ames, IA: Iowa State University.
- McCann, R. & Besner, D. (1987). Reading pseudohomophones: Implications for models of pronunciation assembly and the locus of word-frequency effects in naming. *Journal of Experimental Psychology: Human Perception and Performance*, 13(1), 14-24.
- Moran, K. (2006). Nurturing emergent readers through readers theater. *Early Childhood Education Journal*, 33(5), 317-323.
- Munro, M. J., & Derwing, T. M. (1994). Evaluations of foreign accent in extemporaneous and read material. *Language Testing*, 11, 253-266.
- Munro, M. J., & Derwing, T. M. (2006). The functional load principle in ESL pronunciation instruction: An exploratory study. *System*, 34, 520-531.
- Prator, C. & Robinett, B. W. (1985). *Manual of American English pronunciation, 4th ed.* New York: Holt, Rinehart and Winston.
- Rosson, M. (1985). The interaction of pronunciation rules and lexical representations in reading aloud. *Memory & Cognition*, 13(1), 90-99.
- Smith, J., Meyers, C. & Burkhalter, A. (1992). *Communicate: Strategies for international teaching assistants*. Englewood Cliffs, NJ: Prentice Hall Regents.

APPENDIX 1

Pronunciation Reading Passage (Celce-Murcia, Brinton & Goodwin, 2010, p. 481)

Is English your native language? If not, your foreign accent may show people that you come from another country. Why is it difficult to speak a foreign language without an accent? There are a couple of answers to this question. First, age is an important factor in learning to pronounce. We know that young children can learn a second language with perfect pronunciation. We also know that older learners usually have an accent, though some older individuals also have learned to speak without an accent.

Another factor that influences your pronunciation is your first language. English speakers can, for example, recognize people from France by their French accents. They can also identify Spanish or Arabic speakers over the telephone, just by listening carefully to them. Does this mean that accents can't be changed? Not at all! But you can't change your pronunciation without a lot of hard work. In the end, improving appears to be a combination of three things: concentrated hard work, a good ear, and a strong ambition to sound like a native speaker.

You also need accurate information about English sounds, effective strategies for practice, lots of exposure to spoken English, and patience. Will you make progress, or will you give up? Only time will tell, I'm afraid. But it's your decision. You can improve! Good luck, and don't forget to work hard.

APPENDIX 2

Minimal Pairs of Vowels Used in Read-aloud Task.

beat----bit	met----mat	caught----coat
deed----did	bed----bad	bought----boat
seek----sick	men----man	law----low
leap----lip	guess----gas	raw----row
bid----bed	boot----book	cot----cut
miss----mess	Luke----look	lock----luck
lit----let	pool----pull	cob----cub
lift----left	fool----full	mod----mud
bird----bud	late----let	nice----noise
girl----gull	mate----met	ties----toys
shirt----shut	laid----led	kind----count
lurk----luck	raid----red	high----how