

Phonological Difficulties Encountered by Italian Learners of English: An Error Analysis

Anne Wheelock*

Hawai'i Pacific University, USA

Abstract

This paper provides an error analysis of English pronunciation by a cohort of Italian learners of English with the goal of adding to the body of knowledge concerning the acquisition of English by Italian learners and aiding the design of pronunciation teaching materials for this group of learners. Using data from the Speech Accent Archives, I conducted an error analysis of 27 Italian learners reading aloud an English passage. The most common vowel error was a misformation of /ɑ/ as [ə], which was retained by the seven advanced speakers. Being that /ə/ is the most common reduced vowel in English and /ɑ/ is not an Italian phoneme, this vowel error is explicable. The most common consonant error was a misformation of /z/ as [s], also retained by the advanced speakers. Devoicing of /z/ to [s] also becomes explicable once the speaking passage words were examined for /z/ placement. Pearson's r showed a weak correlation between length of residency and error rate and between the age at which English study began and error rate.

Introduction

One might think that Italian learners of English would not have such a difficult time with the target language (TL) since both languages utilize almost the same alphabet, there are many helpful cognates, and both use S-V-O word order. However, English still presents a formidable challenge, especially in the realm of pronunciation. Pronunciation is important in language learning. If the goal of language learning is to communicate in the TL, then learners of English as a second language (ESL) should strive for intelligibility (sound patterns recognized as English), comprehensibility (listener understands meaning of utterance) and interpretability (listener understands purpose of utterance) (Burns, 2003, p. 5).

The purpose of this paper is to further the body of knowledge concerning English language acquisition by Italian learners by performing an error analysis. Knowing actual errors produced by language learners can aid in the development of pronunciation teaching materials, both premeditative and remedial. I begin the paper with an overview of the rationale and procedure for both contrastive analysis and error analysis. I continue with a contrastive analysis of the Italian and English sound systems, followed by an analysis of pronunciation errors by Italian learners of English. The paper concludes with a discussion of teaching implications.



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Website: <http://www.hpu.edu>.

* Email: anne.wheelock@gmail.com. Address: MP 441, 1188 Fort Street Mall, Honolulu, HI 96813, USA.

Contrastive Analysis

Contrastive analysis compares two languages, in relation to their linguistic inventories, to discover similarities and differences, with the ultimate goal of isolating what actually needs to be learned in the TL (Lado, (1957) as cited in Gass & Selinker, p. 96).

Contrastive analysis arose in the mid-to-late 1950s out of earlier ideas about the influence of a learner's native language on the interlanguage (IL). "The basic problems arise not out of any essential difficulty in the features of the new language themselves but primarily out of the special 'set' created by the first language habits." (Fries (1957) as cited in Gass & Selinker, p. 95). However, contrastive analysis appeared problematic because the predicted errors did not always occur and errors that did occur were not always predicted (Gass & Selinker, 1994, p. 97). More importantly, not all errors can be explained by the differences between the L1 and TL. Language learning is not the formation of habits but active rule formation. Instead of predicting the success of language teaching materials based on a comparison of the two languages (often referred to as the *stronger* or *predictive* view), the *weaker* or *explanatory* view encouraged analysis of learners' *actual* recurring errors. Analyzing learner errors and the strategies they used to arrive at their interlanguage forms was found to be more useful (p. 97). This process inspired error analysis.

Error Analysis

Error analysis concentrates on the errors that learners actually make (Gass & Selinker, 1994, p. 102). Two main goals of error analysis are to (a) describe learners' errors and (b) seek explanations for these errors. In error analysis, learner production data are compared to the TL to reveal areas of pronunciation with which learners are struggling. Problem areas can then be targeted with specific teaching techniques designed to mitigate errors.

Error analysis has not been without its critics. Corder (1967) argued that learners' transitional competence" (similar to the term *interlanguage*, coined later) should not be labeled erroneous (implying a breach of rules that ought to be known). A learner's errors provide evidence of the language system she has learned to that point in time (p. 167). Hammarberg ([1974] as cited in James, p. 17) criticized error analysis for its neglect in describing non-errors whose production was avoided. Schachter (1974) thought that error analysis was flawed in not recognizing that learners tend to avoid TL items with which they are not comfortable. Learners' failure to commit errors does not imply that they are competent in the given aspect of the TL. Schachter and Celce-Murcia (1977) also believed that it can be difficult to *categorize* an error—is the omission of an article in English an actual case of L1 transfer (by a Korean native speaker) or a case of simplification (by a Spanish speaker) (Odlin, 1989, p. 19)? Some feel that error analysis tends to focus on what learners do wrong rather than learners' accomplishments (Celce-Murica, Brinton & Goodwin, 2010, p. 23) and that error analysis cannot deal effectively with learner reception (listening and reading).

An important part of error analysis is to identify the causes of the errors. For the purpose of this paper, I will briefly review the factors that can affect pronunciation accuracy in the next section.

Factors that Influence English Pronunciation Acquisition

The quantity of exposure to English, the age at which exposure began, attitude and motivation, and instruction quality can influence the development of English pronunciation by a non-native speaker. Additionally, the speaker's L1 is an influential factor in the development of intelligible English pronunciation.

Learners acquire the target language both receptively (through input) and productively (through output). Immersion in an ESL setting can offer extensive comprehensible English input and opportunities for output, as long as the learner is not isolated in a *linguistic island* (i.e., immigrant Chinese living and working in a Chinatown). Genesee claimed that the optimal case of exposure to the TL in an instructional setting is early total immersion ([1991], as cited in Celce-Murcia et al., 2010, p. 19). In support of this claim, observers of Spanish immersion programs in the United States report native-like pronunciation of the children's TL (p. 19).

Unlike the known benefit of extensive exposure to English, the impact of the age at which English study begins is still being debated. Some theorists believe it is crucial to begin any TL studies during the *critical period* before the brain lateralizes (Krashen (1973) as cited in Celce-Murcia et al, 2010, p. 16), i.e. at least before puberty. Others would disagree, arguing that amount of exposure to the TL, ego permeability and type of motivation are overlooked by the critical period hypothesis (Celce-Murcia et al., 2010, pp. 16-17). Some feel that different aspects of language acquisition occur during different *sensitive periods* (p. 17). Nevertheless, "the younger the better" is unlikely to be disputed.

Motivation is necessary for any learning and, in general, the desire to acquire native or near-native pronunciation of English tends to foster better pronunciation skills. Motivation involves the desire to attain a goal, effortful behavior, and a positive attitude toward the activities designed to achieve that goal (Gardner (1985) as cited in Gass & Selinker, 2008, p. 426). A favorable attitude toward English and its speakers also increases pronunciation accuracy (Sparks & Ganschow, 1991, p. 4).

Quality of instruction is positively correlated with improved English pronunciation. Pronunciation is often neglected or deemed the least useful of basic language skills. Native speaker pronunciation is widely believed to be unattainable, and many instructors find pronunciation difficult to teach due to inadequate skills and/or materials. But, many studies have shown that adults are quite capable of achieving at least near-native pronunciation given the proper instruction (Gilakjani, 2012, p. 123-24).

A second language learner trying to make sense of the TL's pronunciation system might be expected to transfer their L1's phonemic orthography onto that of the IL. Significant phonological features, such as the phoneme inventory and syllable and morphological structure, will be tuned into the L1 (Randall & Isnin, 2004, p. 2). Elements of the L1's pronunciation can positively transfer (facilitate the learning of the TL) or negatively transfer (interfere with learning of the TL). Examples of positive transfer might include similar phonemes and timing. Negative transfer might include timing or the degree of correspondence of graphemes to phonemes in the L1.

While there are many factors that may influence L2 pronunciation, in this paper I will investigate the effect of length of residency in an English-dominant country and the effect of the age at which formal English language learning begins for Italian learners of English.

A Contrastive Analysis of Italian and English Segmental Sounds

While by no means an exhaustive discussion, highlighted here are a few of the more common problems on a segmental level that can be predicted for Italian learners of English through the use of contrastive analysis.

Figures 1 and 2 show Italian consonants and vowels alongside English ones for comparison. Note that North American English (NAE) and Italian have almost the same number of consonant phonemes, 25 and 23 respectively. However, while Italian has seven vowel phonemes, NAE has 12 – 15 (depending on the source), and this alone, according to contrastive analytic assumptions, could present numerous difficulties for Italian learners.

| | Bilabial | Labiodental | Dental | Alveolar | Palatal | Velar | Glottal |
|-----------|----------|-------------|--------|----------|----------|--------|---------|
| Stop | /p, b/ | | | /t, d/ | | /k, g/ | |
| Fricative | | /f, v/ | /θ, ð/ | /s, z/ | /ʃ, ʒ/ | | /h/ |
| Affricate | | | | | /tʃ, dʒ/ | | |
| Nasal | /m/ | | | /n/ | | /ŋ/ | |
| Liquid | | | | /l/ | /r/ | | |
| Glide | /w/ | | | | /y/ | | |

Figure 1. English Consonant Phonemes
(Adapted from Celce-Murcia et al., 2010, p. 61)

| | Bilabial | Labio-dental | Dental | Alveolar | Post-alveolar | Palatal | Velar | Labial-velar |
|---------------------|----------|--------------|--------|----------|---------------|---------|-------|--------------|
| Plosive | p b | | t d | | | | k g | |
| Affricate | | | tʃ dʒ | | tʃ dʒ | | | |
| Nasal | m | | | n | | ɲ | | |
| Trill | | | | r | | | | |
| Fricative | | f v | s z | | ʃ (ʒ) | | | |
| Approximant | | | | | | j | | w |
| Lateral approximant | | | | l | | ʎ | | |

Figure 2. Italian Consonant Phonemes (Bertinetto & Loporcaro, 2005, p. 132)

Besides the differences in vowel and consonant phonemes, Italian and English also differ in how well pronunciation matches spelling. Unlike in English, the spelling of the Italian language is nearly phonemic. Italian has an orthography with high grapheme-to-phoneme and phoneme-to-grapheme correspondences. In fact, the question of spelling in Italian is typically raised by asking, “*Come si scrive...?*” (*How do you write...?*) or *Qual’è l’ortografia per...?* (*What is the proper writing for...?*) and the question is answered by pronouncing the word (e.g. [tʃok.kola.to] could only be spelled *cioccolato* (*chocolate*)).

A major reason for the challenging nature of English pronunciation is that its phonemic orthography is inconsistent. As an example, Celce-Murcia et al. (2010, p. 54) list 14 ways to spell /ʃ/ in English, including *shoe, sugar, ocean, fuschia* and *nation*. Given Italian’s more consistent phonemic orthography, Italian learners might have the tendency to pronounce English words just as they are spelled. One can thus see the difficulties Italian learners could have remembering all the graphemes that represent /ʃ/.

Predicted Consonant Problems for Italian Learners

As can be seen in Figure 1, the English dental fricatives /θ/ and /ð/ are not part of the Italian inventory of phonemes, so these phonemes must be acquired by Italian learners of English. It is generally difficult for Italian learners of English to place their tongue between their teeth and let air escape through the gap. Instead, they tend to keep the tongue inside and press it against the teeth, forming the alveolar stop [t] or placing the teeth on the lip, forming the labial-dental fricative [f] (for /θ/) (for example, /θæŋk/ becomes [tæŋk]). Similarly, they also tend to form the alveolar stop [d] (for /ð/).

In Italian [ŋ] is an allophone of /n/ which occurs before velar stops. Unlike many cases in English, the velar stops are always pronounced in these contexts. Thus, the word *singer* can sound like *finger*. Because of this difference, it is predicted that Italian learners of English will add a [k] or [g] when pronouncing these types of words. For example, *thing* can sound like *think*. Further, *Ch* is pronounced [k] in Italian. Thus, a word with /tʃ/ (e.g., *chest*) may be pronounced [kest].

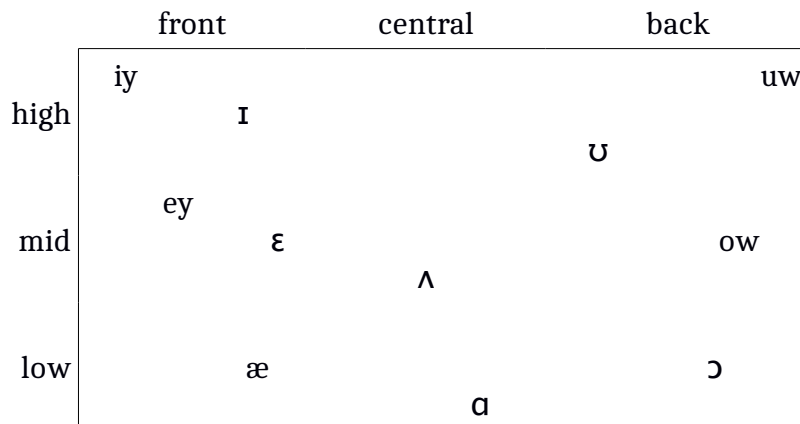


Figure 3. English Vowel Phonemes (Adapted from Celce-Murcia et al., 2010, p. 118)

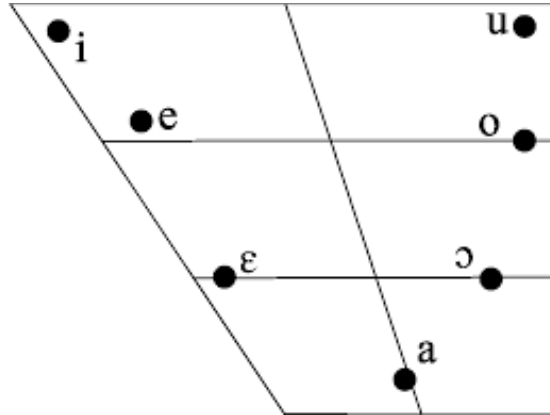


Figure 4. Italian Vowel Phonemes (Bertinetto & Loporcaro, 2005, p. 136)

The English [r] is retroflex while the Italian [r] is flapped or trilled in the case of a geminate r. The word *red* /rɛd/ spoken by an Italian learner as [rɛd] may sound like [lɛd] to a native English speaker.

Italians do not aspirate /p, t, k/. For instance, the [t] in Italian is made with a relaxed tongue tip just touching the back of the teeth. In English, the tongue tip touches the alveolar ridge and then pulls down releasing a puff of air (aspiration). Predictably, /tʌg/ can sound quite like [dʌg] when uttered by an Italian learner of English.

The consonant clusters of Italian are bound by different rules than those of English. In consonant clusters where /s/ is followed by /l, m, n/, English rules allow for the voiceless quality of [s] to remain ([sliyp, smɔl]). In Italian, /s/ is voiced by assimilation to the following consonant creating a [z] sound. This difference predicts that Italian learners of English, following their native language rules, will pronounce *sleep* and *small* as [zliyp] and [zmɔl], respectively, and indeed, these have been documented as actual errors. (Celce-Murcia et al., 2010, p. 102).

Predicted vowel problems for Italian learners

Vowels in Italian are non-contrastively long in open non-final stressed syllables (for example, *cioccolato* [tʃok.ko.lato] and *fato/fatto* [fato]/[fatto] {fate/fact}); all other vowels are short in Italian. It is extremely difficult for Italian learners of English to differentiate words in English that are distinguished solely by a vowel (e.g., *sheep/ship*, *beg/bag*, etc.). Additionally, English has five reduced vowels that occur in unstressed syllables, the schwa [ə], a mid-central vowel sound, being the most prevalent. The following discussion highlights a select few of the many pronunciation problems that English vowels present to Italian learners of English.

As shown in Figure 3, Italian has one open unrounded vowel: /a/. English has three: /æ/ (cat), /ɑ/ (park) and /ʌ/ (cut). Thus, both *cat* /kæt/ and *cut* /kʌt/ can become *cot* [kat]. In one study, the vowel most often misidentified by English native speakers listening to advanced Italian learners speaking English was [ʌ] (Flege, 1999, p. 2977). This is readily explicable as most languages, including Italian, do not have a mid-central vowel. Moreover, Italian does not have the English high lax vowels /ɪ/ and /ʊ/. Italian learners tend to replace these vowels with [i] and [u]. Thus, *fit* and *feet* become homophones as do *cook* and *kook*.

In spoken English, the schwa sound [ə] is the most common vowel. Due to the schwa's pervasiveness in English, mispronouncing it can have a large impact on Italian learners' intelligibility. Adding to this, since many Italian words end in a vowel, Italians often add a short vowel sound, often [ə], to English words ending in a consonant:

- (1) (English speaker) "I ate SOUP for lunch."
(stress on *soup*, equal time for *I ate*, *soup*, and *for lunch*)
(Italian speaker) "I atə soupə for lunchə."
(equal stress and time on all syllables)

Based on the above contrastive analysis and review of the literature on pronunciation errors made by Italian learners, I will next present an analysis of actual errors made by Italian learners. Given the scope of this paper, my analysis will focus on six consonant errors (e.g., /z/ as [s]) and six vowel errors (e.g., /æ/ as [a]).

An Analysis of Pronunciation Errors by Italian Learners of English Research Questions

Given that error analyses can be valuable sources of information concerning actual errors produced by language learners, this study aims to conduct an error analysis of Italian native speakers' pronunciation of English. The focus is on (a) a description of errors and (b) explanations of possible reasons for the errors. Specifically, the analysis will address the following questions:

1. What types of vowel and consonant errors were actually made by the Italian learners of English?
2. What types of vowel and consonant errors were retained by higher-performing learners?
3. Does length of residence in an English-dominant country correlate, positively or negatively, with error retention/pronunciation accuracy?
4. Does age at which the Italian learners began English language study correlate, positively or negatively, with error retention/pronunciation accuracy?

The goal of this analysis is to point out to the language learner areas of difficulty on which to focus and to provide the teacher with opportunities to aid her students in acquiring

increased intelligibility. Additionally, the results may positively influence the development of pronunciation teaching materials.

Methodology

The online Speech Accent Archives (SAA) (Weinberger, S., 2015) was chosen as the data source for this paper. SAA currently has phonetically-transcribed online speech samples, based on a common elicitation passage, from 27 Italian learners. SAA followed the 2005 version of the International Phonetic Alphabet (IPA) in transcribing the speech samples. The transcriptions were completed by two to four English-speaking, phonetically-educated judges. As stated by the SAA website, the consensus rate between judges is high. For each of the 27 speakers, gender, and age, age at which English study was begun, and years of residence in an English-dominant country (all at the time of the speech sample) were provided. The SAA elicitation passage was:

“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.”

The online service lingorado.com/ipa/ was used to generate a model NAE transcription of this passage, which yielded the following:

“Please call Stella. Ask her to bring these things with her from the store:
[plɪz kəl stɛlə.] [æsk hɜr tu brɪŋ ðɪz θɪŋz wɪð hɜr frəm ðə stɔːr.]

Six spoons of fresh snow peas, five thick slabs of blue cheese,
[sɪks spʊnz əv frɛʃ snəʊ piːz,] [faɪv θɪk slæbz əv blu ʃiːz,]

and maybe a snack for her brother Bob. We also need a small plastic snake
[ænd meɪbi ə snæk fɔr hɜr brʌðər bɒb.] [wi əlsoʊ nid ə smɔl plæstɪk sneɪk]

and a big toy frog for the kids. She can scoop these things into three red bags,
[ænd ə bɪg tɔɪ frɑːg fɔr ðə kɪdz.] [ʃi kæn skuːp ðɪz θɪŋz ɪntu θri rɛd bægz,]

and we will go meet her Wednesday at the train station.”
[ænd wi wɪl ɡoʊ miːt hɜr wenzdi æt ðə treɪn steɪʃən.]

For each of the 27 Italian speakers, the SAA transcription of each word of the elicitation passage was analyzed for errors as compared to the same word transcribed by Lingorado. Because of the virtually infinite amount of possible errors that could be elicited by the passage, only the two largest groups of errors, consonant shifts (e.g. /s/ as [z]) and vowel shifts (e.g. /æ/ as [a]) were included.

Findings and Discussion

RQ1: What types of vowel and consonant errors were actually made by the Italian learners of English?

Once all consonant and vowel misformations were recorded and tabulated, the six most common vowel misformations and six most common consonant misformations were determined (Table 1).

The majority of the vowel misformations were perhaps due to those English vowel phonemes not being part of the Italian vowel phoneme inventory. This was also true for two of the consonant misformations – Italian does not have the interdental fricatives /ð/ and /θ/. The other four consonant misformations were devoicing errors. This is discussed in more detail below.

Table 1
Vowel and Consonant Misformations Selected for Study

| Vowel Misformations | Consonant Misformations |
|-------------------------|-------------------------|
| /ɑ/ as [V] ¹ | /z/ as [s] |
| /oʊ/ as [o] | /v/ as [f] |
| /æ/ as [V] | /ð/ as [d] |
| /ɜ/ as [ɛ] | /θ/ as [t] |
| /i/ as [ɪ] | /g/ as [k] |
| /ɪ/ as [i] | /d/ as [t] |

Note. ¹[V] refers to any other vowel

Vowel Errors

Table 2 shows the six most common vowel misformations, the total obligatory contexts, the range of actual misformations, the range of misformation rate (in percentage), and the average group misformation rate (in percentage) for the cohort of 27 speakers.

As shown in Table 2, the misformation of /ɑ/ as [V] (where “V” stands for various vowel forms), at 80.6%, had the highest error rate. This can be explained by the fact that the open back /ɑ /is not one of the seven Italian vowel phonemes.¹

The misformation of /æ/ as [V] (various vowel forms) had a moderate error rate at 32.6%. The front vowel /æ/ is also not one of the Italian vowel phonemes. But, Italian does have other open (/a/) and open-mid (/ɛ/) front vowels. This indicates it may be easier for Italians to acquire /æ/ than /ɑ/.

The vowel misformation of /oʊ/ as [o] involves an elimination of [ʊ]. The high lax vowel/ʊ/ is not an Italian phoneme. The three words in the passage that had [oʊ] as part of their transcription were *go* ([goʊ]), *also* ([ɔlsoʊ]) and *snow* ([snɔʊ]). Two of these words end in *o* and the speaker would have had to learn to add the [ʊ] to the end of these words. *Snow* would

also not be intuitive to an Italian learner; *w* is not in their alphabet. (However, the *w* in the words *with* and *Wednesday* in the elicitation passage did not present problems.)

The vowel misformation of /ɜ/ as [ɛ] is quite common; Italians tend to pronounce *her* as *hair* (Dr. Kenneth Cook, 8/11/2015, personal communication).

In words such as *with* (/wɪð/) or *six* (/sɪks/), both used in the elicitation passage, a vowel misformation of /ɪ/ as [i] would be predictable, and did have an error rate of 10.9%. The Italian *i* is pronounced like the *i* in *machine*. A shift of /i/ to [ɪ] (for example, *these* [ðɪz] to *this* [ðɪs]) is less predictable, as /ɪ/ is not an Italian phoneme. However, this shift had an error rate of 12.0%.

Table 2
Six Most Common Vowel Misformations Produced by Entire Cohort

| Vowel misformation | Total obligatory contexts ¹ | Range of actual misformations | Range of misformation rate (%) | Average group misformation rate (%) |
|--------------------------|--|-------------------------------|--------------------------------|-------------------------------------|
| /ɑ/ as [V] ² | 4 | 2-4 | 50-100 | 80.6 |
| /oʊ/ as [o] ³ | 3 | 0-3 | 0-100 | 60.5 |
| /æ/ as [V] | 10 | 0-10 | 0-100 | 32.6 |
| /ɜ/ as [ɛ] ⁴ | 4 | 0-4 | 0-100 | 28.7 |
| /i/ as [ɪ] | 13 | 0-6 | 0-46.2 | 12.0 |
| /ɪ/ as [i] | 17 | 0-6 | 0-35.3 | 10.9 |

Notes. ¹how many times the vowel appeared in the elicitation passage

²[V] refers to any other vowel

³not an actual vowel shift, but a vowel deletion (deletion of [ʊ]) – included due to high misformation rate

⁴there are four of these vowel contexts, all in *her* [hɜr]

Table 3 examines the four most common misformations of /ɑ/ as another vowel ([V]) for the four obligatory contexts among the cohort of 27 speakers. The four obligatory contexts for /ɑ/ were *of* [ɑv] (twice), *Bob* [bɑb] and *frog* [frɑg]. Table 3 shows that the most common /ɑ/ as [V] misformation was /ɑ/ as [ɔ]. The vowel /ɑ/, an open low central vowel which exists in English, is not an Italian vowel phoneme, while /ɔ/, a mid-open back vowel, exist in both English and Italian, and is probably the closest to /ɑ/. The /ɑ/ as [ɔ] misformation was fairly evenly split across the three words. The /ɑ/ as [o] misformation is interesting as the majority of the errors (80%) occurred in the word *Bob*. *Bob* is an extremely common English nickname for *Robert*, and *Bob* is likely heard often in the Italian media and pronounced there as [bob].

Table 3
Four Most Common Misformations of /ɑ/ as a Different Vowel [V] Produced by Entire Cohort

| Vowel misformation | Total obligatory contexts ¹ | Total misformations | Misformations in <i>of</i> [ɑv] | Misformations in <i>Bob</i> [bɑb] | Misformations in <i>frog</i> [frɑg] |
|--------------------|--|---------------------|---------------------------------|-----------------------------------|-------------------------------------|
| /ɑ/ as [ɔ] | 4 | 32 | 11 | 8 | 13 |
| /ɑ/ as [o] | 4 | 10 | 2 | 8 | 0 |
| /ɑ/ as [ʌ] | 4 | 8 | 7 | 1 | 0 |
| /ɑ/ as [a] | 4 | 4 | 3 | 0 | 1 |

Note. ¹Number of times the vowel appeared in the elicitation passage

Consonant Errors

Table 4 shows the six most common consonant misformations, the total obligatory contexts, the range of actual misformations, the range of misformation rate (in %) and the average group misformation rate (in %) for the cohort of 27 speakers.

Table 4
Six Most Common Consonant Misformations Produced by Entire Cohort

| Consonant misformation | Total obligatory contexts ¹ | Range of actual misformations | Range of misformation rate (%) | Average group misformation rate (%) |
|------------------------|--|-------------------------------|--------------------------------|-------------------------------------|
| /z/ as [s] | 12 | 0-11 | 0-91.7 | 51.5 |
| /v/ as [f] | 3 | 0-3 | 0-100 | 44.4 |
| /ð/ as [d] | 7 | 0-6 | 0-85.7 | 42.9 |
| /θ/ as [t] | 4 | 0-4 | 0-100 | 20.4 |
| /g/ as [k] | 4 | 0-2 | 0-50 | 15.7 |
| /d/ as [t] | 7 | 0-2 | 0-28.8 | 8.5 |

Note. ¹ Number of times the consonant appeared in the elicitation passage

Three misformations, /z/ as [s], /v/ as [f], and /ð/ as [d], show average group error rates above 40%. /z/ as [s] is the devoicing of an alveolar fricative while /v/ as [f] is the devoicing of a labiodental fricative; both are final obstruent devoicing misformations—voiced obstruents become voiceless before voiceless consonants. Italian has very few words with final voiced consonants (the vast majority of these are borrowed from English), so final obstruent devoicing errors, especially before voiceless consonants, would be understandable. The pronunciation of /ð/ as [d] represents a voiced dental fricative being misformed into a voiced

alveolar stop. This is also understandable as /ð/ is not an Italian phoneme and the Italian [d] is a dental-alveolar stop, likely the closest phoneme to the English [ð].

The consonant misformation of /z/ as [s], having the highest average group error rate, merits a more detailed discussion. With the exception of *Wednesday*, the 12 words in the sample passage (see above) containing a /z/ had [z] as the word-final sound (*please, these* (twice), *things* (twice), *spoons, peas, slabs, cheese, kids* and *bags*). In Italian, /s/ is pronounced as [z] only before voiced consonants and between two vowels. For the 11 words with the word-final /z/, the error rate for each word ranged from 33% to 81.5% - the highest error rate was associated with the word *these*. In the elicitation passage, the word *these* (in both instances) was followed by the word *things*, which has the voiceless [θ] as its initial consonant; thus the high misformation rate associated with the word *these* is explicable. Only two speakers devoiced the [z] in *Wednesday* - a 7% misformation rate.

As mentioned above, the English interdental fricatives /θ/ (voiceless) and /ð/ (voiced) are not part of the Italian phonemic inventory, and the voiceless [t] and voiced [d], respectively, both alveolar stops, may be substituted. Speakers seemed to have more trouble with /ð/ than with /θ/; Table 4 shows that the average group error rate for /ð/ as [d] was 42.9% while for /θ/ as [t] the average group error rate was only 20.4%. This points to it possibly being easier for speakers to acquire /θ/ than /ð/, maybe due to a difficulty with voicing.

The last two misformations in this table were devoicing of velar and alveolar stops, with relatively low error rates for the whole cohort of 27 compared to the other four consonant misformations. To summarize the misformations in this table, four of the six were devoicing misformations, while the other two resulted from a foreign English phoneme.

RQ2: What types of vowel and consonant errors were retained by higher-performing learners?

A sub-cohort of the 27 speakers was chosen, randomly based on total misformations of 28 or fewer. This seven-speaker sub-cohort was categorized as higher-performing learners (in red in column four of Tables 8 and 10).

Vowel Errors

Table 5 includes the same parameters as does Table 2, but only for the sub-cohort of higher performing learners.

Both vowel misformations of /ɑ/ as [V] and of /oo/ as [o] were retained in the higher-performing learners at high rates, indicating difficulty, even with increased exposure, with acquisition of these two phonemes.

The average group error rate percentage for the vowel misformation /æ/ as [V] decreased by over half (32.6% to 14.3%) in the sub-cohort of higher-performing learners, possibly indicating additional learning of the phoneme [æ] with more exposure to English via residency.

There was also a large decrease, 28.7% to 10.7%, with the misformation of /ɜ/ as [ɛ]. The word *her* is a common word, and perhaps with more exposure to English in those speakers living in English-dominant countries, a closer-to-native-like pronunciation of this word was acquired.

Table 5
Six Most Common Vowel Misformations Produced by High Performers

| Vowel misformation | Total obligatory contexts ¹ | Range of actual misformations | Range of misformation rate (%) | Average group misformation rate (%) |
|--------------------------|--|-------------------------------|--------------------------------|-------------------------------------|
| /ɑ/ as [V] ² | 4 | 2-4 | 50-100 | 75.0 |
| /oʊ/ as [o] ³ | 3 | 1-3 | 33.3-100 | 61.9 |
| /æ/ as [V] | 10 | 0-4 | 0-40 | 14.3 |
| /ɜ/ as [ɛ] ⁴ | 4 | 0-1 | 0-25 | 10.7 |
| /i/ as [ɪ] | 13 | 0-4 | 0-30.8 | 9.9 |
| /ɪ/ as [i] | 17 | 0-3 | 0-17.6 | 5.0 |

Notes. ¹Number of times the vowel appeared in the elicitation passage

²[V] refers to any other vowel

³not an actual vowel shift, but a vowel deletion (deletion of [o]) – included due to high misformation rate

⁴there are four of these vowel contexts, all in *her* [hɜr]

Both the misformations of /ɪ/ as [i] and /i/ as [ɪ] saw a decrease in their average error rates when only the sub-cohort of higher-performing learners was considered, possibly indicating more discrimination between the two phonemes with increased exposure.

Table 6
Five Most Common Misformations of /ɑ/ as a Different Vowel [V] Produced by High Performers

| Vowel misformation | Total obligatory contexts ¹ | Total misformations | Misformations in <i>of</i> [ɑv] | Misformations in <i>Bob</i> [bɑb] | Misformations in <i>frog</i> [frɑg] |
|--------------------|--|---------------------|---------------------------------|-----------------------------------|-------------------------------------|
| /ɑ/ as [ə] | 4 | 12 | 12 | 0 | 0 |
| /ɑ/ as [ɔ] | 4 | 8 | 1 | 3 | 4 |
| /ɑ/ as [o] | 4 | 0 | 0 | 0 | 0 |
| /ɑ/ as [ʌ] | 4 | 1 | 1 | 0 | 0 |
| /ɑ/ as [a] | 4 | 0 | 0 | 0 | 0 |

Note. ¹Number of times the vowel appeared in the elicitation passage

Table 6 examines the five most common misformation of /ɑ/ as [V] for the four obligatory contexts in the sub-cohort of seven higher-performing learners (compare to Table 3, which includes the same parameters but for the entire cohort of 27 speakers). Again, the four obligatory contexts for /ɑ/ were *of* [ɑv] (twice), *Bob* [bɑb] and *frog* [frɑg]. Table 6 shows the same trend with the misformation of /ɑ/ as [ə] as in Table 3 – all the misformations were in the word *of* (see discussion following Table 3, above). The change in the misformation of /ɑ/ as [o] between Table 3 and Table 6 is noteworthy in that we see none of this misformation in the sub-cohort of higher-performing learners. Since the majority (five of seven) of these speakers have lived in an English-dominant country for 3.5 years or longer, they may have heard the word *Bob* spoken as [bɑb] often enough to have acquired the pronunciation.

Consonant Errors

Table 7 depicts the six most common consonant misformations, and includes the same parameters as in Table 4, but only for the sub-cohort of higher performing learners.

Table 7
Six Most Common Consonant Misformations Produced by High Performers

| Consonant misformation | Total obligatory contexts ¹ | Range of actual misformations | Range of misformation rate (%) | Average group misformation rate (%) |
|------------------------|--|-------------------------------|--------------------------------|-------------------------------------|
| /z/ as [s] | 12 | 0-10 | 0-83.3 | 29.7 |
| /v/ as [f] | 3 | 0-2 | 0-66.7 | 28.6 |
| /ð/ as [d] | 7 | 0-4 | 0-57.1 | 30.6 |
| /θ/ as [t] | 4 | 0-3 | 0-75 | 17.9 |
| /g/ as [k] | 4 | 0-1 | 0-25 | 3.6 |
| /d/ as [t] | 7 | 0-2 | 0-28.6 | 6.1 |

Note. ¹ The number of times the consonant appeared in the elicitation passage

Compared with Table 4, Table 7 shows that all the percentages for the average sub-cohort error rate decrease for the six consonant errors. It is worth noting that the misformation of /z/ as [s] still surfaces even in those speakers with lengthy residencies in English-dominant countries; this knowledge could be used to inform materials development and teaching.

RQ3: Does length of time spent residing in an English-dominant country correlate, positively or negatively, with error retention?

Table 8 sorts the cohort of 27 Italian learners by the length of time the speaker lived in an English-dominant country, in years (self-reported). The range is 0–34 years.

Table 8
Residency Length in English-Dominant Country for Individual Speakers

| Number | Speaker ¹ | Length of exposure (yrs) ² | Number of misformations ³ |
|--------|----------------------|---------------------------------------|--------------------------------------|
| 1 | Abilio | 0 | 35 |
| 2 | Bianca | 0 | 37 |
| 3 | Carlo | 0 | 36 |
| 4 | Daniela | 0 | 28 ⁴ |
| 5 | Emilio | 0 | 46 |
| 6 | Giada | 0 | 50 |
| 7 | Giacomo | 0.1 | 29 |
| 8 | Maria | 0.1 | 37 |
| 9 | Luca | 0.1 | 42 |
| 10 | Rosa | 0.1 | 35 |
| 11 | Omero | 0.2 | 33 |
| 12 | Teresa | 0.2 | 36 |
| 13 | Remo | 0.25 | 28 |
| 14 | Piera | 0.3 | 42 |
| 15 | Bruno | 1 | 43 |
| 16 | Anna | 3 | 38 |
| 17 | Donato | 3.5 | 45 |
| 18 | Cinzia | 3.5 | 28 |
| 19 | Flavio | 6 | 17 |
| 20 | Elena | 6.5 | 39 |
| 21 | Ivo | 9 | 38 |
| 22 | Lara | 10 | 31 |
| 23 | Mario | 12 | 47 |
| 24 | Olivia | 15.5 | 50 |
| 25 | Paolo | 25 | 28 |
| 26 | Stella | 27 | 19 |
| 27 | Tristano | 34 | 28 |

Notes. ¹pseudonyms

²length of time living in English-dominant country, in years

³number of total misformations (of the six consonant and six vowel misformations studied –see Table 1)

⁴red color indicates a higher-performing learners (those with 28 total misformations or fewer)

As described earlier, the quantity of exposure to the TL can positively influence acquisition of that TL. Table 8 shows that five of the seven higher-performing learners (Cinzia (#18), Flavio (#19), Paolo (#25), Stella (#26), and Tristano (#27)) spent 3.5 years or more in an English-dominant country. The last three of these seven spent 25 years or more in an English-dominant country.

To help determine whether the length of residency in an English-dominant country correlated with misformation rate, the cohort listed in Table 8 was divided into two groups, a sub-cohort of Speakers 1-14 (shorter residency lengths) and a sub-cohort of Speakers 15-27 (longer residency lengths), and a Pearson's *r* was used.

Table 9 indicates that, for this cohort of 27 speakers, there is the expected negative correlation between length of residency in an English-dominant country and error rate. Additionally, the sub-cohort of Speakers 15-27 (with longer residencies than the sub-cohort of Speakers 1-14) did have a slightly higher Pearson's *r* suggesting that a longer length of residency could have effected a slight decrease in error rate. However, the correlations found in both groups are weak, suggesting that at least for this cohort, length of residency is not a predictor of pronunciation accuracy.

Table 9
Correlation between Residency Length and Error Rate

| Sub-cohort | Pearson's <i>r</i> | Interpretation ¹ |
|-----------------------------------|--------------------|-----------------------------|
| Speakers 1-14 (shorter residency) | -0.2106 | Weak |
| Speakers 15-27 (longer residency) | -0.3718 | Weak |

Note. ¹scale used: Very weak: 0.00-0.19; weak: 0.20-0.39; moderate: 0.40-0.59; strong: 0.60-0.79; very strong: 0.80-1

RQ4: Does age at which the Italian learners began English language study correlate, positively or negatively, with error retention?

Table 10 lists the cohort of 27 Italian learners by the age at which the speaker began English language study, in years (self-reported). The range is 3.5 – 25 years.

As discussed previously, the age at which TL study begins can positively influence the acquisition of that TL. On the face of it, Table 10 seems to indicate, at least for this cohort of 27 speakers, that age at which English language study began does not correlate well with error rate. There are a few glimmers, however, that there might be some correlation. Five of the seven better speakers (Stella (#1), Daniela (#11), Paolo (#14), Flavio (#20) and Remo (#22)) began English language study at age 18 or younger. There is a relatively large sub-cohort of 12 speakers, in the mid-range of errors (29-39), which began English language study between the ages of six and 14 years.

Table 10
Age of English Language Study Onset for Individual Speakers

| Number | Speaker ¹ | Age at English Language Study Onset (yrs.) | Number of Misformations ² |
|--------|----------------------|---|--------------------------------------|
| 1 | Stella | 3.5 | 19 ³ |
| 2 | Abilio | 6 | 35 |
| 3 | Bianca | 6 | 37 |
| 4 | Carlo | 8 | 36 |
| 5 | Giacomo | 8 | 29 |
| 6 | Maria | 8 | 37 |
| 7 | Luca | 8 | 42 |
| 8 | Bruno | 8 | 43 |
| 9 | Rosa | 10 | 35 |
| 10 | Omero | 10 | 33 |
| 11 | Daniela | 11 | 28 |
| 12 | Emilio | 11 | 46 |
| 13 | Teresa | 11 | 36 |
| 14 | Paolo | 12 | 28 |
| 15 | Anna | 14 | 38 |
| 16 | Elena | 14 | 39 |
| 17 | Ivo | 14 | 38 |
| 18 | Lara | 14 | 31 |
| 19 | Giada | 15 | 50 |
| 20 | Flavio | 15 | 17 |
| 21 | Olivia | 15 | 50 |
| 22 | Remo | 18 | 28 |
| 23 | Piera | 18 | 42 |
| 24 | Mario | 20 | 47 |
| 25 | Tristano | 21 | 28 |
| 26 | Donato | 22 | 45 |
| 27 | Cinzia | 25 | 28 |

Notes. ¹Pseudonym; ²numbers of total misformations include the six consonant and six vowel misformations studied – see Table 1); ³red color indicates better speakers (those with 28 total errors or fewer)

To help determine whether age at which English language study began had a correlation with error rate, the cohort listed in Table 10 was divided into two groups, a sub-cohort of Speakers 1-14 (younger age at which study began) and a sub-cohort of Speakers 15-27 (older age at which study began), and a Pearson's *r* was used.

Table 11 indicates that only the sub-cohort of Speakers 1-14 shows the expected positive correlation between age at which English study began and error rate, though the correlation was weak.

The sub-cohort of Speakers 15-27 shows a negative correlation, though also very weak. This may indicate that as the age at which English study began increased, the effect of age on error rate could diminish. The majority (four out of seven) of the seven higher-performing learners were in this sub-cohort (having begun English language study at age 15 years or older).

Combining a younger age at which English language study began with a larger number of years of residency in an English-dominant country should, theoretically, produce a speaker with a low misformation rate. This is somewhat borne out within the sub-cohort of seven higher-performing learners: Speakers Stella, Paolo and Flavio all began English study below age 16 and had residencies of at least 3.5 years. The speaker with likely the best combination of these two factors, Stella, had the second-lowest misformation rate.

There seems to be more correlation between longer length of residency in an English-dominant country and lower misformation rate (Tables 8 and 9) than between younger age of beginning English language study and lower misformation rate (Tables 10 and 11). This points to the length of residency in the TL's country as contributing more influence to TL acquisition than does age at which TL study begins. This may be somewhat evident in Table 10: Speakers Luca, Emilio and Giada all began English language studies at age 15 or younger but have 42, 46 and 50 errors, respectively. Note that these three speakers have virtually no residency time in an English-dominant country: 0.1, 0, and 0 years, respectively. Speakers 2-10 (Table 10) began English study between six to 10 years of age, well within the *critical period*, but none of them fall into the sub-cohort of the seven higher-performing learners. And, Speakers 2-10 spent very little residency time in an English-dominant country (0 – 0.2 years).

Table 11
Correlation between Age of English Study Onset and Error Rate

| Sub-cohort | Pearson's <i>r</i> | Interpretation ¹ |
|-----------------------------------|--------------------|-----------------------------|
| Speakers 1-14 (earlier onset age) | +0.2518 | Weak |
| Speakers 15-27 (later onset age) | -0.1081 | Very weak |

Note. ¹scale used: Very weak: 0.00-0.19; weak: 0.20-0.39; moderate: 0.40-0.59; strong: 0.60-0.79; very strong: 0.80-1

Conclusions and Teaching Implications

As mentioned, error analysis can be advantageous when it comes to demonstrating the problems that might arise in the acquisition of a new language. We have seen, both in the contrastive analysis and the error analysis of this paper, where Italian learners could face challenges in acquiring intelligibility in English. For example, the contrastive analysis predicted, and the error analysis showed, that completely new phonemes, such as /θ/ and /ɑ/, can be a challenge for the learners observed. Also, as predicted, L1 interference plays a role, as seen in the persistent /z/ as [s] devoicing misformation.

Vowel sounds in English, largely due to the high number of phonemes and possibility for reduction, present, arguably, a larger hurdle than do consonant sounds for Italian learners. Even though the error analysis was carried out on a very small cohort and may not be representative of all Italian learners, it did show some interesting and explicable vowel misformation retention, such as /ɑ/ as [ə], even in higher-level speakers. As mentioned, it is difficult for many Italians to differentiate words in English distinguished only by a vowel; learners would likely benefit from listening discrimination activities early and often in their English study.

It is true that Italian consonant phonemes parallel English's to a high degree, but pronunciation of English consonants for Italian learners presents hurdles, as evidenced by the error analysis. The error analysis found, for this cohort, that consonant devoicing and the lack of acquisition of the foreign phonemes /ð/ and /θ/, especially the voiced /ð/, were the major errors. Armed with this knowledge, teachers could design teaching strategies, such as listening discrimination and voicing practice to target these particular troublesome areas. It would be beneficial to repeat this error analysis with a larger cohort to see if the same shift errors, both vowel and consonant, held true.

Two important learner-based factors that can influence acquisition of pronunciation are quantity of exposure to the target language and age at which exposure to the language began. Possibly the most effective type of exposure to the target language is residing in a country where that language is dominant, and this was somewhat borne out in this study. The error analysis showed a weak negative correlation between length of residency in an English-dominant country and misformation rate – longer residency times correlated with lower misformation rates, which would be expected. The fact that the correlation was weak suggests that mere length of residency is not a strong factor – perhaps other factors during that residency, such as the quality of input and interaction, matter more. The error analysis did show a positive correlation between age at which English study began and misformation rate, though very weak. It would be interesting to see if a larger cohort of speakers would show stronger correlations between length of residency or age at which English language study began and error rate.

This study is not without limitations. To truly measure the effects of multiple factors on learners' accuracy, a regression model would be more suitable. However, a regression analysis is beyond the scope of this exploratory paper. Additionally, general factors that affect pronunciation learning, such as motivation and attitude were not measured in this study. These may have been stronger factors for these learners, which may have contributed to the weakness of the age and length of residency correlations. Future studies could employ more appropriate statistical analyses to gain a better understanding of the different factors' effects.

Despite these limitations, this study suggests that armed with error analyses results, teachers could have the necessary teaching materials ready and focus on these problems early and often, which might help students increase their intelligibility. For those learners desiring native or near-native pronunciation, whether for business or personal reasons, small nuances in pronunciation differences between the interlanguage and the TL could be addressed.

Given a positive attitude, motivation, copious comprehensible input, and quality instruction that pays attention to error analyses results, Italian learners are more than capable of achieving a high degree of English pronunciation accuracy for effective communication.

Note

¹ Italian does have the grapheme “a” pronounced similarly to the first “a” in “papa” in English.

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About the author:

Anne Wheelock received her MA TESOL from Hawai'i Pacific University in December 2016. After a career in pharmacy and teaching pharmacology, anatomy and chemistry, she is in transition to her new profession as a language teacher.