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Comparing phonetic difficulties by EFL learners from Spain and Japan

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I. Abstract

After decades of improving language learning methods, English as a Foreign Language (hereafter EFL) still makes Spanish and Japanese learners struggle with the correct pronunciation. Each country focused on its own lack of phonemes in relation to the target language and, despite years, of research the problem is as present as ever.

This article approaches this border-crossing problem by means of the moderate version of the contrastive analysis hypothesis (henceforth CAH) and compares and analyses the phonetic problems of both languages against the target language, English.

By expanding the focus, the resulting data could serve as a starting point for further studies that down the way could facilitate EFL learning all around the world.

Keywords: EFL, Spanish, Japanese, Vowels, Contrastive Analysis Hypothesis

II. Introduction

EFL learners always face the problem of learning the English language while lacking some of the phonemes in their respective L1 needed for English. This can lead in some cases to conspicuous accents that give native speakers a wrong impression about EFL learners. It is equally valid for relatively close languages to English, like German or Spanish, as it is for distant languages like Korean or Japanese. The different phonetic systems of Spanish (Hammond, 2001) and Japanese (Labrune, 2012) do not always share the same phonemes or sometimes even the same phonetic characteristics for a phoneme. This is a linguistic barrier that needs to be dealt with in order to acquire proper pronunciation.

This article will briefly explore the concept of contrastive analysis. Secondly, it will present the most common phonetic difficulties from Spanish-speaking and Japanese-speaking linguistic communities, and finally it will compare similarities and discuss the differences between Japanese and Spanish learners.

III. Objectives

The aim of this article is to review and analyse some phonetic problems encountered by Spanish and Japanese EFL students. The reason for picking these two languages is that both countries are considered to have problems with EFL (Pantaleoni, 2008; Miller,



2014). In addition, for comparative purposes, one language is closer to English phonetically, whereas the other is as far away as possible.

IV. Methodology: Contrastive analysis hypothesis

One of the most important premises regarding EFL is the contrastive analysis hypothesis (henceforth CAH). It is a way of comparing the speaker's L1 and L2 and how the L1 itself affects the learning of L2. CAH takes a closer look at the differences and similarities between two or among a small group of languages.

This contrastive approach gained importance after the Second World War when the US realized the importance of foreign language learning and additionally research based on bilingualism by immigrants started to emerge.

It was Robert Lado in 1957 who defined what we call the strong version of CAH, which states that all errors made in L2 were due to interference by L1 and subsequently all errors could be predicted. No empirical evidence has sustained this claim (Banathy et al., 1966) and it neglected essential criteria such as age. It also focused too strongly on the inference aspect of the L1 language and offered little use to language teachers (Newmark & Reibel, 1968).

Out of the ashes of the overambitious strong version, an alternative arose, the so called «weak version», that commences with the errors already made by the learner which then get explained as much as possible by designating the differences and similarities between both languages (Stockwell, 1967). This form can be seen as complementary to error analysis and as such shares some of the same mistakes (e.g. identifying learning complications cannot rely solely on error analysis).

Finally, a third iteration of CAH, the moderate version, is an essential research method for second language acquisition: «the categorization of abstract and concrete patterns according to their perceived similarities and differences is the basis for learning; therefore, wherever patterns are minimally distinct in form or meaning in one or more systems, confusion may result» (Oller & Ziahosseiny, 1970). This contradicts Lado's original variant, since here the hypothesis goes that the more different the L2 is from your own L1, the easier it will be to learn the targeted new language. Additionally, language awareness is a very profitable language learning method for advanced and/or adult learners and it is part of teacher training programmes at many universities (König & Gast, 2009).



V. Results

5.1. Spanish

It must be mentioned that the Spanish used for comparison is the one officially spoken in Spain, i.e. standard peninsular Spanish; for the purposes of keeping this task manageable, I will ignore regional varieties within and outside of Spain. Any numbers and percentages are based on the seminal work *A Course in English Phonetics by Spanish Speakers* by Diana Finch and Hector Ortiz Lira.

5.1.1. Vowels

As opposed to English, Spanish is more of a phonetic language which means that the orthography is quite similar to the sounds it represents. The 5 Spanish vowels have 14 different spellings (e.g. /i/ can be represented with i, y, hi and ui).

English has a far more complex relationship between sounds and letters with twenty-six letters representing forty-six phonemes and the twelve English vowel phonemes having at least 70 regular spellings (not including the 70 less common ones). The phoneme /ɔ/ alone has about thirty different spellings and half of those are regular spellings.

«To sum up, in English (a) the same vowel phoneme is usually represented by several spellings; (b) one spelling may represent several vowel phonemes, and (c) two or more vowel letters may represent only one vowel phoneme, or no phoneme at all» (Finch & Ortiz Lira, 1982).

Let me illustrate this with a few examples:

E1. My father read /rɛd/ that book already.

E2. My mother's favourite colour is red /rɛd/.

Both words in examples E1 and E2 («read» & «red») share the same pronunciation but are written differently.

E3. You have to read /ri:d/ this book until the end of the semester.

Both words in examples E1 and E3 («read») have the same written form but different pronunciations

Furthermore, vowel sounds of Spanish and English share two characteristics: first, they are normally voiced oral (versus nasal) phonemes. That means that the air is usually released through the mouth. There are indeed nasalized and devoiced vowel sounds in both languages but it is not frequent at all. Second, they are routinely voiced sounds and are produced through vibration of the vocal folds.

Examples of nasalized vowels would be «caña» or «morning».



Both languages also have mainly syllabic sounds: in the case of vowels they dominate the other sounds in a syllable whereas consonants can form a syllable by themselves. (e.g. the *n* in button).

Spanish learners are not trained to make the delicate distinctions of vowel qualities necessary to produce the twelve pure vowel phonemes of the English language.

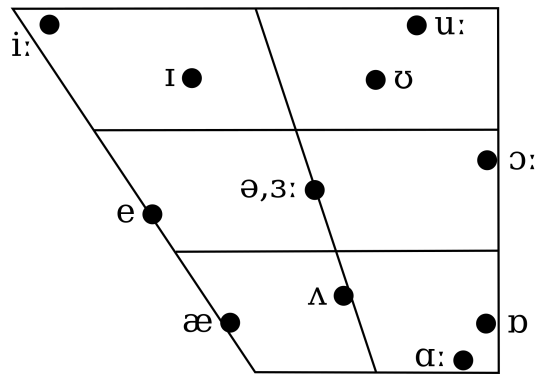


Figure 1. RP vowel chart

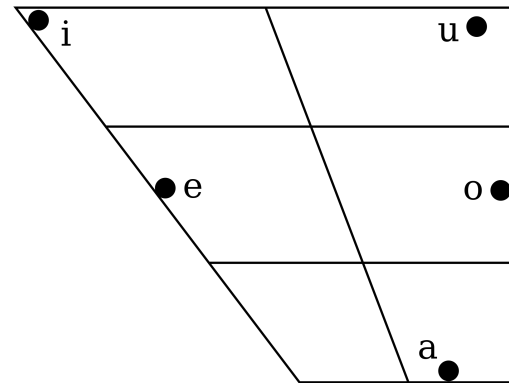


Figure 2. Spanish vowel chart

The first apparent difference is the scarcity in pure vowels in the Spanish language when compared to English. Moreover, the 5 Spanish vowels do not coincide exactly with any of the English ones (admittedly the differences in some case are minuscule). And finally we can observe that Spanish does not have central vowels.

5.1.2. Frequency of occurrence of vowel phonemes

Letter frequency serves as a basic technique to gather fast and rudimentary information about phonetic patterns of languages. Be it if a language is either syllabic, ideographic or alphabetic or if it's statistical figures are comparable to another one. A quick glance comparing the letter frequency of two (or more) languages already gives us information about the similarities between languages, but more importantly, also the differences and this helps us see if the learning method successfully applied to an language could be transferred to another, or not. However, there is not one exact letter frequency distribution due to the difference in collected corpus (it can be based on oral transcription or writing). But the longer the text the better the average distribution is visible, which means that if you compare two letter frequencies from two different corpus about the same language the distribution frequencies will be very similar with a limited amount of data used for a corpus but if you increase the amount of data the gap between will continually grow smaller (Moreno, 2005).

Table 1. Frequency of occurrence of English vowel phonemes

English			
/ə/	10.74%	/i/	1.65%
/ɪ/	8.33%	/əʊ/	1.51%
/e/	2.97%	/æ/	1.45%
/aɪ/	1.83%	/ɒ/	1.37%
/ʌ/	1.75%	/ɔ/	1.24%
/eɪ/	1.71%	/u/	1.13%
		r.v.*	3.53%
		<u>TOTAL</u>	39.21%

Table 2. Frequency of occurrence of Spanish vowel phonemes

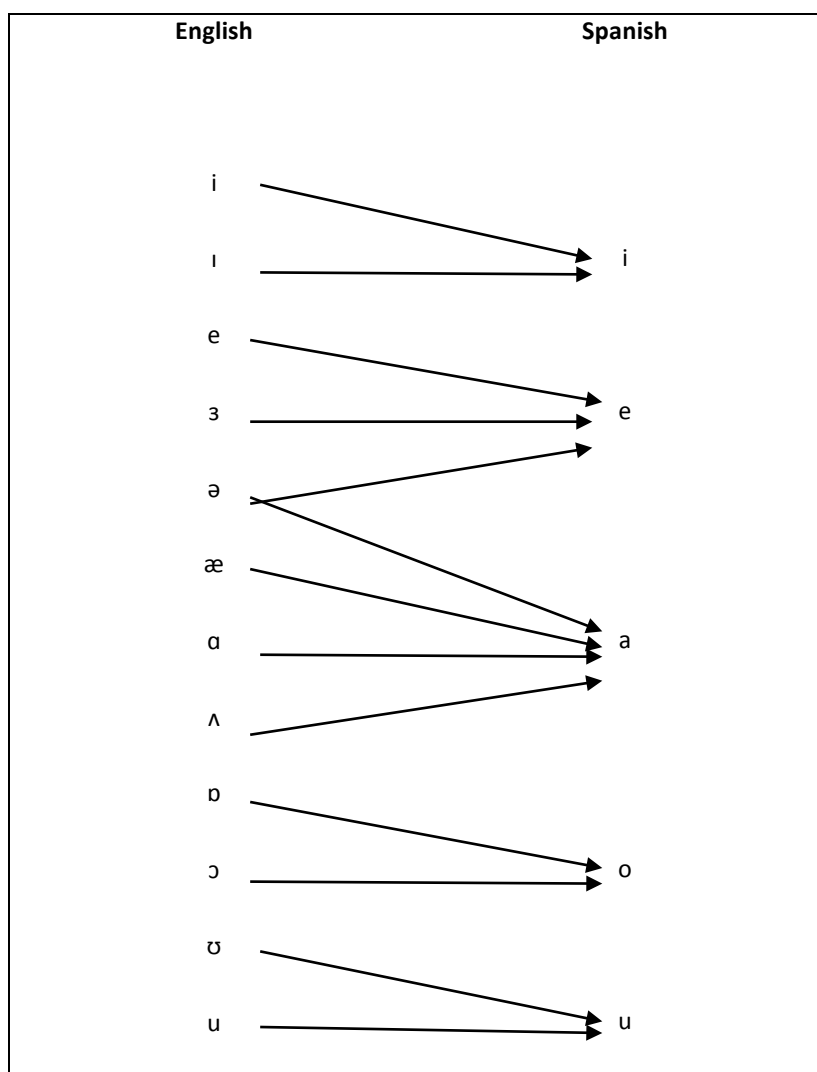
Spanish	
/a/	13.00%
/e/	11.75%
/o/	8.90%
/i/	4.76%
/u/	1.92%
r.v.*	3.16%
<u>TOTAL</u>	43.49%

Source: Finch, Ortiz, 1982

The figures from the table display a higher frequency of occurrence of vowel sounds in Spanish than in English. Further, English has a prevalence of centralized vowels while Spanish relies on the three most open vowels.

As mentioned in the beginning of the article, the phonemes of a new language are mostly interpreted in comparison to the speaker's mother tongue. The Spanish learner has a tendency to equate the 12 English vowels with the 5 Spanish ones.

Table 3. The English vowel system compared



Source: Finch, Ortiz, 1982

Another problem is that English has words with more than one acceptable pronunciation in RP. According to Finch & Ortiz's findings, 75% of those variations are due to vowel variabilities.

5.1.3. Consonants

Regarding consonants, English uses 24 consonant oppositions whereas Spanish only uses 20. Two pairs of affricate and 4 of fricative phonemes can be found in English, while Spanish has only one affricate and five fricatives. The alveolar region is the place of articulation for half of the English phonemes (13 in English vs. 6 in Spanish). Finally, only ten out of the 26 phonemes have similar equivalents in Spanish (/p, b, k, g, tʃ, m, n, l, ((θ)), f, s/).

Table 4. Frequency of occurrence of English consonant phonemes

English			
/n/	7.58%	/w/	2.81%
/t/	6.42%	/z/	2.46%
/d/	5.14%	/v/	2.00%
/s/	4.81%	/b/	1.97%
/l/	3.66%	/f/	1.79%
/ð/	3.56%	/p/	1.78%
/r/	3.51%	/h/	1.46%
/m/	3.22%	/ŋ/	1.15%
/k/	3.09%	/g/	1.05%
		r.c.*	3.32%
		<u>TOTAL</u>	60.78%

* rest of consonant phonemes

Table 5. Frequency of occurrence of Spanish consonant phonemes

Spanish			
/s/	8.50%	/k/	4.23%
/n/	6.94%	/m/	3.09%
/r/	5.91%	/p/	3.06%
/l/	5.46%	/b/	2.54%
/d/	5.00%	/θ/	2.23%
/t/	4.82%	/g/	1.04%
		r.c.*	3.69%
		<u>TOTAL</u>	56.51%



Source: Finch, Ortiz, 1982

As stated on the tables 1, 2, 4 and 5 consonants arise a bit more frequently in English than in Spanish. The alveolar is the most frequent place of articulation in English (about 36% vs. 28% in Spanish) and English stops occur over 20% compared to just 14% in Spanish.

English uses 120 ways of spelling its 24 phonemes (two thirds are of regular occurrence) while Spanish only has 28 spellings for its 19 consonant phonemes.

Some phonemes present in both languages have different realizations (e.g. the fortis plosives). Also, sounds which count as phonemes in one language are considered allophones in the other (e.g. Eng. / ð/ ~ Sp. [ð]). In addition, phonemes exclusive to English constitute new sounds for the Spanish learner, as previously mentioned.



One of the problems regarding place of articulation is the confusion between the English alveolar /t, d/ and the Spanish dental /t, d/. Despite only affecting two sounds it is one of the most noticeable mistakes due to the high occurrence frequency of the English set. It is not the recognition and production of that sound that is difficult since Spanish-speaking students are accustomed to making an alveolar stricture for the Spanish /n/.

I mentioned before that Spanish is a phonological language and thus Spanish speakers tend to pronounce English words according to the spelling while following the Spanish rules. The letter /h/ is silent in Spanish and when elementary Spanish EFL learners read words like that or these they just ignore the letter *h* and pronounce them *tat* or *tese* hence using /t/ instead of /ð/.

The other big phonetic problem for Spanish speakers is the realization of the English lenis stops /b, d, g, dʒ/as fricatives.

The final big phonetic problem is the distinction between a pair of affricates and a pair of fricatives, although this problem is more frequent in other Spanish-speaking countries.

The phoneme /s/ is also troublesome because the Spanish speaker is not trained in producing a variety of sibilants and words and phrases including more than one of them (e.g. scissors).

5.1.4. Syllable Structure

There are also differences in the syllable structure. Though Spanish and English share the same simplest syllable structure (V), English can have more consonants before (3) and after (4) the vowel. Spanish on the contrary, can only have 2 consonants before the vowel and 2 after it.

Spanish syllable: CC V CC → trans-bor-do, bron-ca

English syllable: CCC V CCCC → strength, scratch-y

Table 6. Syllable comparison chart between Spanish and English

	CVC	VC	CV	CCV
Spanish	19.8%	3.1%	55.6%	10.2%
English	31.8%	11.9%	27.6%	4.0%

Source: Finch, Ortiz, 1982

Spanish inclines toward open syllables (ending in a vowel) while English goes for consonant endings, also called «closed syllables».

5.2. Japanese

Let me start by mentioning that EFL learners in Japan are «divided» between picking up RP and General American, as models for pronunciation. Historically, Japan has more ties with the United States, and especially after the Second World War Japan adapted quite a few American concepts, but as of now English textbooks in Japan also use RP, especially in more expensive private schools. For convenience sake, I will focus on data where RP was used. Figures and numbers on frequency of vowels and consonants are difficult to obtain and also quite seldom to find for Japanese. Any numbers and percentages stem from the thorough and exhaustive research done by Tamaoka and Makioka who analyzed a corpus of over 920 069563 vowels and consonants.



5.2.1. Vowels

Japanese is based on a syllabic writing system, rather than a phonetic one. The 5 vowels can either occur alone or in combination with consonants. The phoneme /n/ is the only consonant that can appear without a vowel.

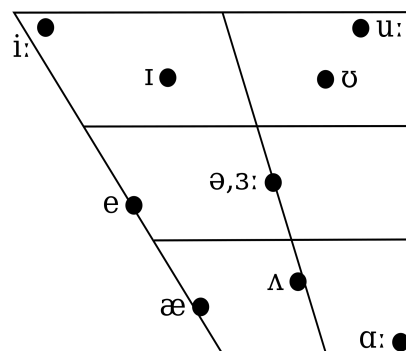


Figure 1. RP vowel chart

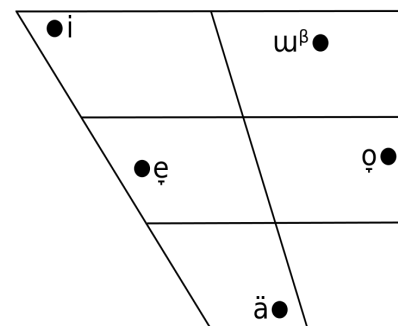


Figure 3. Japanese vowel chart

Due to CV syllable structure, Japanese EFL learners tend to attach vowels at the end of English words that end in consonants (e.g. cook à cooku). As observable in table 1 and 3, Japanese has fewer vowel phonemes than English. While there are more front and back vowels than in Japanese, it is the lack of two important central vowels that results in many students having pronunciation problems as their tongue is not trained to move correctly between the many subtle different positions the English vowel phonemes require. English words like hat, hut and hot are wrongly reproduced with the exact same sound.

There is also a difference between both languages in the tense/lax distinction. According to how much muscle tension or movement is involved during the production of the vowel we differentiate between tense and lax in English, whereas this contrast is absent in Japanese. There are though long vowels (e.g. roku= six and rokku = rock music)) but the difference between long and short vowels is not as contrastive as the tense/lax distinction in English. This fact results in Japanese EFL speakers not differentiating words like live /liv/ and leave /li:v/ and producing tense/lax vowel pairs practically identical.

Another noteworthy distinction consists in the absence of diphthongs in Japanese. Instead, two different vowels in a row are considered two syllables. English diphthongs form one syllable and the tongue glides effortlessly from one vowel tongue position to the other.

Allophones

As mentioned before Japanese syllables consist mostly of V or CV combinations but a few sound combinations do not occur in Japanese and this L1 allophonic rule is then carried over into the L2. The Japanese vowel [i] does not admit /s, z, t, d/ in front of it and [s] for example is replaced by [ʃ] in front of an [i] and leads to Japanese speakers making the mistake of pronouncing *shimple* instead of *simple*.

5.2.2. Consonants

Affricates

Japanese originally did not have need for affricative phonemes but with the rise of foreign loan words the following affricative phonemes /ts/, /dz/, /tʃ/, /dʒ/ appear in recent words from foreign origin.

Liquids

Probably the most famous difficulty Japanese EFL learners have is the /r/ versus /l/ distinction. Japanese has a similar sound but it does not correspond exactly to English /r/ and /l/; it is more or less something that is exactly between both English sounds and that is the reason why Japanese students mix them up on occasions. In English these sounds are alveolar and the tongue touches the alveolar ridge with the sides of the tongue lowered. In Japanese the tongue makes a quick contact with the alveolar ridge, the technical term for this flap and the resulting Japanese phoneme is /r/.

Fricatives

Japanese has also fewer fricatives than English, 5 compared to 9. The phoneme /v/ does not exist in Japanese and subsequently it gets confused with the sound /b/ and turns «very» into «bery».

The two interdental fricatives [θ] and [ð] are not found in Japanese either, which leads to mispronunciation by substituting them with /t/ and /d/ respectively.

5.2.3. Syllable structure

Table 7. Syllable comparison chart between Japanese and English

	CVC	VC	CV	CCV	V
Japanese	5.6%	0.7%	77.7%	3.5%	12.5%
English	31.8%	11.9%	27.6%	4.0%	9.7%

Table 7 shows the 5 possible syllable combinations in Japanese as compared to frequencies of occurrence in English. In the case of CVC and VC the combination is limited to have the nasal sound /n/ as the final C in the structure. Another observation is the overwhelming majority of CV combinations which means that Japanese is a language with a higher vowel frequency than English

Table 8. Consonant vs. vowel distribution chart for English, Spanish and Japanese

	Consonant distribution	Vowel distribution
English	60.78%	39.22%
Spanish	56.51%	43.49%
Japanese	48.00%	52.00%

5.3. Comparing the Difficulties by Spanish and Japanese EFL Learners

5.3.1. Vowels

Both languages have fewer vowel phonemes than Japanese but Spanish practically does not distinguish between short and long vowels (though regional varieties like the dialect spoken in Southern Spain do have long vowels) while Japanese and English do share that distinction.

Regarding the frequency of occurrence of vowel phonemes, Spanish and English have a somewhat similar occurrence (43% for Spanish and 39% for English). Japanese however due to the fact that consonants have to be accompanied by a vowel (with the sole exception of /n/) has a much higher vowel occurrence (52%).

Unlike Spanish and English, Japanese does not have diphthongs. Whenever two vowels in a row occur they are just two different syllables. This lack of diphthongs has phonological side effects for Japanese EFL learners as gliding vowels are unknown to them and as such have never been practised before.

5.3.2. Consonants

Both Spanish and Japanese have fewer consonant sounds (18 and 20 respectively) than English with its 24 consonant. They also share less than half of the sounds: Spanish shares 11 while Japanese only has 9 consonant sounds in common with English.

All three languages share that the majority of these sounds are formed in the alveolar region of the mouth.

There are fewer fricatives in Spanish and Japanese (3 and 5 respectively) than in English. Spanish has a problem with /ð/ since an untrained Spanish EFL learner could, wrongfully, pronounce it like the Spanish /d/ (e.g. saying /dei/ instead of /ðei/ for they), despite having the allophone /θ/ before voiced consonants (e.g. /'xaθmin/ for jazmín). Japanese does not have the sound at all.

Also, a solely Japanese problem is the /r/ and /l/ distinction or lack thereof.

5.3.3. Syllable structure

Spanish and Japanese share the fact that CV is the most common used syllable structure in their respective languages. Half of every Spanish structure (55.6%) uses this pattern and Japanese elevates that number even to an overwhelming 77.7% which means that every other combination is much less common.

Table 9. Syllable comparison chart for Japanese

	CVC	VC	CV	CCV	V
Japanese	5.6%	0.7%	77.7%	3.5%	12.5%

Subsequently this means that both Spanish and English have more diversity in their structures and thus a Japanese EFL learner will have more trouble than his Spanish counterpart.

VI. Conclusion

CAH in its moderate version is a helpful research method both for second language teaching and learning. Spanish and Japanese EFL

learners struggle until today with English despite all the research, obtained data and learning methods developed in the last decades.

Comparing Spanish and Japanese against the English language we found that both languages have fewer vowel and consonant sounds than in English. In the case of the consonants the sounds shared with English are only 61% for Spanish speakers and Japanese shares even less: 45%.

Idiosyncratic problems for each language are, for example, the lack of distinction of short and long vowels in Spanish. Japanese have more problems, such as the total absence of diphthongs, the higher frequency of vowels resulting in almost exclusively having open syllables, fewer fricatives and specific headaches like the inadequate distinction between /r/ and /l/.

Spanish and Japanese were chosen as examples of languages that are close (Spanish) and very far (Japanese) from English. The comparison shows that, despite both languages having difficulties with EFL, Spanish per se has less problems than Japanese.

Expanding the focus and instead of targeting just one language maybe comparing a few of them could give rise to data that could act as a catalyst and subsequently lead to new paradigms, theories and approaches that could facilitate EFL learners around the world.

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