Native Language and Cultural Relevance: A Study on the Acquisition of English Phonology

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Introduction

Even though native-like phonology is more difficult to acquire in a second language (L2) after childhood, many foreign-language speakers who began studying after this period are generally understood in their personal and professional use of a nonnative language. L2s are learned through a variety of ways. Some people learn through immersion, others learn through frequent interaction with speakers of that language, and a great number learn through formal education. The common belief is that the most efficient way to learn a nonnative language is through immersion in that country, or living with native speakers of that language. Such methods are effective for a variety of reasons: students are able to absorb the language more efficiently; implicit input that is subtle and varied is more productive than explicit input such as classroom instruction; and an environment without error-correction allows the student to learn without being "put on the defensive."

All people who learn English as a second language (ESL) have a variable input of English, but patterns still seem to exist among the accents of ESL speakers who share the same native language. For example, every French person who learns English receives a different amount and composition of English-language input. Some have native (L1) English-speaking teachers, some do not; some take more English classes than others do, while some choose to learn other languages instead of English. Yet, when English speakers consider the French, they often think of a stereotypical "French accent" in English, regardless of how the English was learned. There are commonalities between all of them that can be seen as patterns of transfer between their native French phonology and L2 English phonology. Patterns will emerge because ESL speakers think in terms of their native pronunciation to the extent that English words and phrases are often produced with sounds native to French that would not appear in a native English speaker's speech.

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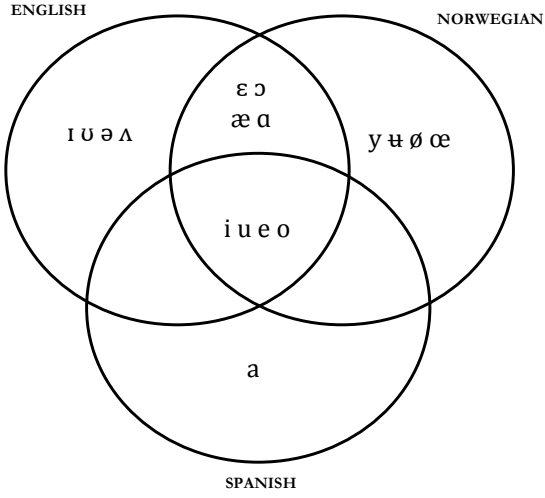
The phonemes of a language are the sounds that are used in a language to distinguish words. Mastery of these phonemes is distinct from fluency (a fluent English speaker could have an unintelligible accent). However there is a common perception that near-native pronunciation may correlate with increased fluency in a language. Stephen Krashen argues that the correlation between pronunciation and fluency results from a causal relationship: the more "authentic" one sounds when speaking a foreign language, the easier one is understood. In turn, more native speakers of that language will engage in more complex conversation with the nonnative speaker, thus improving the latter's fluency. According to Krashen "a second language speaker who makes lots of mistakes, has a poor accent, and is hesitant, will most likely receive, in general, more modified input than a speaker who appears competent and fluent." This theory is supported by the Input Hypothesis, which postulates that fluency is achieved by absorbing input rather than producing output. This paper comprises a small, 6-subject pilot study of the two basic causes of the so-called 'foreign accent': foreign language input and interference from native pronunciation.

This paper will focus on four qualities of English that may be problem sounds for native speakers of Norwegian and Spanish. The four sounds analyzed from the Norwegian data will be chosen based on differences specific to Norwegian vs. English phonology, and the four from the Spanish data will be chosen based on differences specific to Spanish vs. English phonology, because each language has a unique phonological relation to English. Phonological inventories of each language can be found in Table 1.

Table 1



In the context of this paper, the term "accent" will refer to a pronunciation that is influenced by another language. For example, a native Spanish speaker might speak English with a "Spanish accent," and a native Norwegian speaker with a "Norwegian accent." If the accent is very noticeable, meaning that the native phonology greatly impedes the pronunciation of English, the accent is said to be a "strong" accent. If the accent is hardly noticeable, and the speaker uses a greater amount of English phonology, they are said to have a "slight" accent. These distinctions are largely based on perception and judgment of the listener.

Phonological Comparisons

During my travels in Europe, I noticed that Norwegians in Oslo tended to have less of a perceivable accent when speaking English than did Spaniards in Madrid, and I decided to investigate why. The number of phonemes shared between Norwegian and English is greater (although not significantly so) than those shared between Spanish and English (see Table 1). Norwegian is a Germanic language, like English, and so the two languages are closely related. On the other hand, Spanish is an Italic language, and English has borrowed heavily from French, Latin, and Spanish. These observations might suggest that phoneme inventories of English would come more naturally to a Norwegian than to a Spaniard.

An important note to bear in mind when discussing ESL speakers is that many learn English from a great number of different sources, each of which is likely to teach a different dialect of English. Instead of comparing Norwegian and Spanish to one dialect of English, as many students are unsure of whether they learned RP (Received Pronunciation, a British dialect), SAE (Standard American English, a North American dialect), or other dialects, I will only count phonemes that violate the rules of both these widely-taught dialects as nonnative. For example, omitting the phoneme /ɹ/ is a feature of RP but not of SAE; /ɹ/ omission will therefore not be considered evidence of an accent. The phonemes /ptk/ always appear aspirated as the allophones [p^h] [t^h] [k^h] at the beginning of stressed syllables in both dialects of English, so an unaspirated /ptk/ sound spoken by any ESL speaker in this environment would be considered a nonnative sound. For example, most native English speakers would consider [pit] to be a nonnative pronunciation of "peat" which is normally pronounced [phit].

"Norwegian" is a nebulous term as it is the name used to refer to the languages spoken by the people of Norway, of which there are two written forms, Bokmål and Nynorsk, along with many spoken dialects. According to one of my subjects, the different dialects are mostly mutually intelligible. Classifying a language can be difficult due to personal and dialectal

variability. For this reason and for external validity in comparing Spanish and Norwegian phonemes, Norwegian as used in this study will refer to the dialects spoken by native Norwegians in and around Norway's capital, Oslo. Norwegian has a phoneme inventory of 23 consonants and 12 vowels, as does English. The only consonants that English has that Norwegian does not are /ʃ/, /ʒ/, /ʤ/, /ʧ/, /z/, /θ/, /ð/, /ɹ/, and /v/. Additionally, Norwegian's retroflex tap, /ɽ/, is similar to the English alveolar approximant /ɹ/. Norwegian's labiodental approximant /ʋ/ is also similar to the English labiodental fricative /v/. To speakers of languages which do not distinguish between those two sounds, the difference may be nearly impossible to hear.

"Spanish" is an even more nebulous term, as it is spoken natively by many more people and across more continents than Norwegian is. The Spanish that I will refer to in this study is the dialect known as español estándar, or "Standard Spanish," which is most stereotypically spoken in Spain's capital city, Madrid. The phonemes of Standard Spanish differ greatly from other varieties, such as the dialects of Castilian Spanish spoken in southern Spain or in the Canary Islands. Furthermore, these dialects of Castilian Spanish (also colloquially called "Peninsular Spanish") differ in vocabulary and pronunciation from varieties of South American Spanish. Spanish phonology contains 19 consonants and 5 vowels, compared to English's 23 consonants and 12 vowels. The consonants that English has that Spanish does not are /ʃ/, /ʒ/, /ʤ/, /z/, /ɹ/, /v/, /b/, /d/, /h/, and /ŋ/. I expect these exclusively English phonemes will be absent or used incorrectly in the speech of my Spanish subjects.

In both Norway and Spain, compulsory English education in public schools begins at a young age. I selected Norwegian and Spanish as target languages because the presence of English in Oslo and Madrid varies so greatly between the two capital cities. Most English media in Madrid comes in the form of television shows, movies, and interviews. Film is usually dubbed into Spanish before presented to the consumer (or, in the case of printed text, translated). Songs with English lyrics are frequently translated into Spanish for radio broadcast. Consumers rarely hear or see the original English version of any media unless they intentionally seek out such materials. In Oslo, on the other hand, English movies and television shows are largely shown in the original English with Norwegian subtitles. Media is usually only dubbed for young children who are often unable to read yet. Many university students read English texts untranslated, and English-language songs are popular on the radio. The disparity of these two situations should make it easier to discern a correlation between any of these factors, and to understand the scope of the English phoneme inventory of the 'average' Spaniard or Norwegian.

Predictions: Norwegian

The Norwegian rhotic is the retroflex /ɽ/, so it may appear in a native Norwegian's English instead of /ɹ/. The same can be said for the Norwegian retroflex voiced stop /ɖ/ and the English voiced stop /d/. Norwegian speakers generally release final /ptk/, while most English speakers do not. Release of final /ptk/ may therefore be expected in the speech of Norwegians. The releasing itself is not necessarily characteristic of a nonnative accent because it does occur in English dialects, though it usually only appears in SAE if pronounced in emphatic speech. However, when this feature is used non-emphatically and combined with the use of /ɹ/ stereotypical to SAE, a foreign accent may become apparent. The phoneme /z/ does not exist in Norwegian, so there is a high probability that native Norwegian speakers would pronounce /s/ when English dictates the use of /z/.

Predictions: Spanish

Unlike English speakers, Spanish speakers do not aspirate /ptk/. Because they are often used to aspirated /ptk/, English speakers may mishear unaspirated /ptk/ as /bdg/. The English contrast between /b/ and /v/ does not exist in Spanish. Instead, both written letters -b- and -v- are pronounced as /β/, a voiced bilabial fricative. Accordingly, a native Spanish speaker may have difficulty differentiating between the two sounds and is likely to pronounce /b/ and /v/ the same way. Like Norwegian, Spanish lacks the phoneme /z/. There is therefore a high probability that native Spanish speakers would approximate their speech by pronouncing its voiceless counterpart /s/ in place of /z/ in English.

Methods

Each interview was conducted according to the same standards and following the same procedures. The Norwegian interviews were conducted at the University of Oslo (Blindern campus). The three participants were students between the ages of 18 and 26, and native speakers of Norwegian from the region around Oslo. The Spanish interviews were conducted in a private area of the Botini gardens in Madrid. The three participants were university students in the city between the ages of 18 and 26, as well as native speakers of Castilian Spanish from Madrid.

The purpose of the study was explained to each participant. Each was given a statement of informed consent which they read and signed. I then asked them a series of questions to encourage them to speak about a broad range of topics in English. The form of the interview was informal free-response. Examples of the questions asked are:

- "What dialect of [Norwegian/Spanish] do you speak?"
- "Describe your personal history learning English."
- "How much media do you consume weekly, and what percentage of that is in English?"
- "Talk about your childhood: favorite foods, holidays, memories of family, etc."
- "Have you ever been to an English-speaking country? If so, where, why, and for how long?"

I then asked them to answer one question in their native language: "Please tell me what you have chosen to study, and why you have chosen to study that." This allowed me to evaluate their individual pronunciation and to validate the findings of my analysis. Instead of comparing their English phoneme inventory to textbook native language phoneme inventory, I could compare their English pronunciation to their own personal native language phoneme inventory. Audio was recorded for each interview to be transcribed later.

Transcription of the six interviews was a three step process:

1. Word level: A verbatim transcript was created with the words that each participant spoke in sentence format.
2. Broad phonological transcription: The specific phonemes that each participant spoke were written below each word-level transcription.
3. Narrow phonetic transcription: The broad phonological transcription of the entire Spanish interviews which contained approximately six minutes of speech, and the first six minutes of speech from each Norwegian interview (which were significantly longer) were edited to reflect the exact allophones (variations of a phoneme that does not make a difference in meaning) that each speaker used. Only the first six minutes of each Norwegian interview was narrowly transcribed to save time, and also to allow for consistency in comparison to the Spanish interviews, which were all around 6 minutes long with silences removed. From the narrow transcriptions, I was able to gather data for analysis.

Data Analysis: Norwegians

Anja spent thirteen years learning English at her local public school, beginning at age five. She has visited Tanzania (whose primary language is English) briefly, but otherwise has never visited an English-speaking country.

Over half of her media consumption is in the original English, sometimes with written Norwegian subtitles. Anja releases word-final /ptk/ 89% of the time (in 28 utterances, or N=28), which is the most noticeable feature of her "accent" because such release seems inconsistent with her American pronunciation. Anja uses /s/ where English has /z/ with 25% frequency (N=4). She produced the retroflex /ʈ/ phoneme instead of the English rhotic /ɹ/ with only an 8% frequency (N=13), and then the retroflex /ɖ/ with 14% frequency (N=14). It should be noted that the use of these retroflex sounds occurred at the beginning of the transcript only, and may have been a result of her abrupt transition from Norwegian to English speech. Anja statistically shows a strong accent in word-final /ptk/ release, a slight accent in substituting /s/ for /z/, and almost no noticeable accent in the use of retroflex /ʈ/ and /ɖ/ sounds instead of their non-retroflex counterparts.

Brita has learned English for eleven years in public school since she was ten years old. She lived in Australia for a little under 1 year, and has previously visited the United States and the United Kingdom on vacation. Most of the media Brita consumes is in English. Brita releases word-final /ptk/ phonemes 27% of the time (N=40). Brita substitutes /s/ for /z/ with 100% frequency (N=8). She produced the retroflex /ʈ/ phoneme instead of the English rhotic /ɹ/ with only a 5% frequency (N=46), and then the retroflex /ɖ/ with 4% frequency (N=26). As with Anja, Brita may have produced these retroflex sounds during her transition from Norwegian to English speech, as they appear only in the first few utterances of the transcript. Brita statistically shows a weak accent in word-final /ptk/ release, a strong accent in the inappropriate use of /s/, and almost no noticeable accent in the use of retroflex /ʈ/ or /ɖ/ sounds instead of their non-retroflex counterparts.

Carl has spent at least ten years learning English. He lived in the United States for one year when he was nine years old and one year when he was seventeen. The majority of the media Carl consumes is in English. Carl's English does not show any trace of retroflex sounds that are characteristic of Norwegian. His /ptk/ phonemes are all unreleased at the end of words (N=11), as is expected of a native speaker of SAE. He produces /z/ rather than /s/ phonemes when called for (N=9). Anecdotally, I should include that when I first spoke to Carl I assumed that he was American, and did not initially believe him when he told me he was a native Norwegian speaker.

Data Analysis: Spaniards

Alberto spent thirteen years learning English at a bilingual school, beginning at age 5. He has never lived in nor visited an English-speaking country. Approximately one-third of his weekly media consumption is in English. Alberto aspirated /ptk/ allophones at the beginning of stressed

syllables 86% of the time, as is consistent with English phonology. He is identified as having a slight accent because of the incorrect 14% unaspirated /ptk/s (N=7). He correctly produced the English-appropriate /v/ sound instead of /β/ with 100% frequency (N=4). /b/ was not a naturally-occurring English phoneme in any of the words he used, so it is understandable that he produced zero /b/ phonemes. Alberto uses /s/ where English has /z/ with 100% frequency (N=6). In summary, Alberto statistically shows a slight accent in syllable-initial /ptk/ aspiration before vowels, no accent in the use of /v/ and /b/, and a heavy accent in the inappropriate use of /s/.

Bernardo has been learning English in school for twelve years, beginning at age six. He has never lived in nor visited an English-speaking country, nor is any of his media consumption in English. Bernardo produces unaspirated /ptk/ where English speakers have aspirated sounds with 100% frequency (N=2). He uses /s/ in place of /z/ with 100% frequency (N=3). Bernardo produces neither /b/ nor /v/, instead using /β/ with 100% frequency (N=4). Overall, Bernardo numerically shows a heavy accent in lacking /ptk/ aspiration, a heavy accent in the use of /β/ for /v/ and /b/, and a heavy accent in the inappropriate use of /s/ in place of /z/.

Claudia has spent fifteen years learning English in school. She has never lived in nor visited an English-speaking country, and little of the two hours of weekly media she consumes is in English. Claudia aspirates /ptk/ appropriately with a 13% frequency (N=8) and uses the phoneme /s/ in place of /z/ with 100% frequency (N=5). She produces neither /b/ nor /v/ phonemes, instead using /β/ with 100% frequency (N=3). Claudia statistically shows a strong accent in lack of aspiration, in use of /β/, and in use of /s/ instead of /z/.

Discussion

The results of the phonological analysis follow the general trend that was hypothesized at the outset of my study; the Norwegians tended to use fewer non-English phonemes and allophones in their English speech samples than did the Spaniards. The Norwegian differences appeared in sounds that we don't distinguish in English (retroflexes), allophonically in the release of utterance-final /ptk/ sounds, and phonemically when /z/ was said as /s/. The Spanish differences appeared allophonically in a lack of aspirated /ptk/ sounds, and phonemically in the pronunciation of /b/ and /v/ as /β/ and the pronunciation of the English /z/ as /s/ after a vowel. This indicates a correlation between cultural exposure to English and native-sounding English phonology; Norwegians tend to consume more English media and have a more native-sounding English phonology than Spaniards. This supports the hypothesis that it is not the L1 that determines L2 English

phonology, but rather the depth and length of exposure to English, though of course it is impossible to separate the confounding factor of L1 phonemic inventory similarities.

The presence of English in each participant's life seems to be correlated with their English phonological proficiency. For example, Alberto went to a bilingual (Spanish/English) school, and his English phonology was more consistently accurate than the other Spaniards. Bernardo's extremely nonnative English phonology is consistent with the fact that he consumes no English media nor has ever been to an English-speaking country. Claudia, whose English immersion is somewhere between the levels of Alberto and Bernardo, has a grasp of English phonology that is also somewhere in between the nativeness of Alberto and Bernardo.

Each of the three Norwegian participants has spent more vacation and residence time around English speakers, is immersed in English media, and has a more native English phonology than any of the Spaniards. Carl, who lived in the United States for two years at a younger age than any other participant, and who consumes mostly English media, has a more native English phonology than the other Norwegian subjects. Next is Brita, who lived in Australia for nine months and consumes less English media than Carl but more than Anja. Least native is Anja, who consumes the smallest amount of English media of the three Norwegians, and has spent the shortest amount of time in an English-speaking country.

Perception could also play a role in the stereotypical conception of foreign accents. It is possible that the retroflex sounds of the Norwegian accent are not as noticeable to English speakers because English phonology does not contain retroflex sounds. This would mean that they do not have the ability to distinguish a /d/ from a /ɖ/; it might sound slightly "off," but not so much so that it would be confused for a different phoneme. Because English speakers would not mistake the /ɽ/ or /ɖ/ with any other phonemes, they are less likely to notice this misuse; on the other hand, a Spaniard confusing a /b/ for a /v/ is extremely noticeable because they are different English phonemes. As such, it may be difficult to discern what word a Spaniard with that particular accent feature is trying to say. This would support the fluency hypothesis that speakers who are perceived as having "little accent," or a more native phonology, would also be perceived as more fluent.

Even though Norwegian does not have more phonemes in common with English than Spanish does, Norwegians may be able to pronounce more nonnative phonemes than Spaniards because of their more diverse phoneme inventory. The conclusion could then be drawn that speakers of languages with greater phoneme diversity in their inventory would be better at producing the phonologies of nonnative languages because they can more

easily manipulate their consonant space. If this is true, one would expect Norwegians to have an advantage over Spaniards in learning any other nonnative language, a prediction that I was not able to test.

It should also be noted that the Norwegian participants all spoke English more fluently (with very few errors in syntax and colloquial phrases) than did the Spanish participants. This could be due to the constant exposure due to influx of English media, as explained through Krashen's Input Hypothesis. It could also be because Norwegian and English are part of the same language family, and English syntax is therefore easier for Norwegians to learn than it is for Spaniards.

Cultural relevance affects the acquisition of a language, and English is extremely culturally relevant in Norway. Krashen reports having heard Yiddish spoken in his family as a child, but never acquiring the language because he did not feel that it was relevant to his life. Perhaps Spaniards feel less compelled to acquire English phonology because it is not as relevant in their lives; they are exposed to English occasionally in school but nowhere else. English has become more prevalent in Norway as the country increasingly globalizes. Spaniards have a larger body of Spanish-language speakers to communicate with when outside their borders, whereas Norwegian is only primarily spoken in Norway. Norwegians must learn English, the de facto world language, for utilitarian purposes to better connect with non-Norwegians economically, socially, and politically.

Conclusion

The findings of the study suggest what all of the Norwegian subjects have anecdotally expressed to me: that they speak English with a high degree of native phonology because of the levels of exposure they receive on a regular basis. Furthermore, the variation in levels of English phonology among the Spanish participants alone showed a correlation between exposure to English and acquisition of English phonology. Further research should be conducted with more speech samples in order to extend the validity of these findings. It would also be worthwhile to study Spaniards who had lived in an English-speaking country to see if they were able to reach the same level of phonological nativeness as similarly-immersed Norwegians.

These results indicate that native phonology seems to provide a number of challenges when acquiring English phonology, but with sufficient exposure to authentic English phonology, those obstacles shrink and one's native phonology may become less prevalent in English. This is shown in the correlation between the high amount of English in Norwegian media and the high amount of English phonology usage exhibited by ESL Norwegians. One's accent is always dictated by one's native phonology, but the strength

of that accent can be reduced with more exposure to English. It also appears that exposure to a language at an earlier age correlates to less of a perceived accent. To extend the results of this study, speakers of other languages and at different ages of exposure should be observed in this same manner.

The universal nature of language acquisition can be called upon to extrapolate these conclusions to other languages as well (until further studies are done); if anyone wishes to increase comprehensibility and the appearance of nativeness in a nonnative language, immersion is key. Native phonology dictates the starting point of phonological acquisition in a nonnative language, but the level of success and the progress reached is a variable, potentially controllable factor.

Notes

[1] Paul M. Lewis, Gary F. Simons, and Charles D. Fennig, Ethnologue: Languages of the World, 17th ed. (Dallas: SIL International, 2013).

[2] An allophone is a variation of a phoneme. In English, aspirated [ph] and unaspirated [p] are allophones of the phoneme /p/.

[3] Birte Hillestad, Olaf Husby, Åsta Øvregaard, and Sissel Robbins, Norwegian on the Web (Trondheim: Norwegian University of Science and Technology, 2011), 7.

[4] Steven Weinberger, Speech Accent Archive (Fairfax: George Mason University, 2013), http://accent.gmu.edu.

[5] Paul M. Lewis, Gary F. Simons, and Charles D. Fennig, Ethnologue: Languages of the World, 17th ed. (Dallas: SIL International, 2013). "Spanish."

[6] Standard Spanish is a linguistic term for the phonology of this area, and not a term for the dialect that is well-recognized by the average individual.

[7] M.P. Nuño Álvarez and J.R.Franco Rodríguez Fonética, (Anaya ELE, 2008).

[8] Lewis et al., Ethnologue: Languages of the World.

[9] Weinberger, Speech Accent Archive.

[10] Ibid.

[11] A. Golden, personal interview with author, April 4, 2013.

[12] "What Is Phonology?" LinguaLinks Library 5.0 Plus, SIL International, January 5, 2004, http://www-01.sil.org/linguistics/GlossaryOfLinguisticTerms/WhatIsPhonology.htm.

[13] All names used in this study are pseudonyms.

[14] Lewis et al., "Language Family," in Ethnologue: Languages of the World.

[15] Krashen, Principles and Practice in Second Language Acquisition, 63.