ABSTRACT

Heritage and Second Language Learner Perception of Spanish Pronunciation

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Spanish heritage language (HL) learners demonstrate measurable differences in their production and accent when compared to both native speakers (NS) and second language (L2) learners of Spanish (Montrul, 2011; Potowski, 2009; Rao, 2014; Shea, 2019). This research sought to continue study in phonological perception by testing HL learners' assessments of other speakers. The results suggest that differing language experience of L2 and HL learners of Spanish is associated with their perceptions of the proficiency, native-like accent, and language identity of other speakers. Findings also suggest that HL learners and NS are less likely than L2 learners to focus on phonetics when identifying the language proficiency, accent, and identity of Spanish speakers and they respond more favorably to other speakers' proficiency and accent when compared to L2 learners. This thesis contributes to our understanding of perception and addresses the need for additional research in this area or heritage linguistics.

Heritage and Second Language Learner Perception of Spanish Pronunciation

by

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A Thesis

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DEDICATION

To my husband, Derek Garza, who has been a constant source of encouragement,
support, and inspiration throughout my graduate studies.

CHAPTER ONE

Introduction

Within the field of second language acquisition (SLA), language development is
generally examined with regard to just two subsets of language learners: native speakers
in their first language (L1) and second language learners in the development of their
second language (L2). In recent decades, however, the field of heritage language (HL)
study has emerged, differentiating itself from typical L2 research in foreign language
teaching. The concept of an HL learner, distinct from traditional L1 or L2 learners, has
found recognition in the field of SLA (Leeman, 2015). According to Valdés (2000), an
HL speaker is anyone:

> who is raised in a home where a non-English language is spoken,
> who speaks or merely understands the heritage language and who
> is to some degree bilingual in English and the heritage language

The need for this distinction primarily arose from the realization that heritage
language learners demonstrate differences in language acquisition that distinguished them
from both NS and traditional L2 learners. HL learners demonstrate a difference in two
main areas: both in the dominance and proficiency of their HL (Shea, 2017). *Dominance*
in this study primarily considers the degree to which speakers use their HL (i.e. whether
it is used primarily with certain friends or family members, or whether they tend to utilize
it with the majority of interlocutors in their daily life); it refers to the Spanish language
experience exhibited by a language learner. In contrast, *proficiency* describes linguistic
accuracy used by HL learners (Shea, 2017). Typically, the average HL learner grows up

in a household where the HL is spoken to an extent that they gain some level of acquisition via the input that they receive (Au et al., 2002).

In the last few decades, research on HL learners primarily focused on the way language use is non-native; that is, the production of "errors" that cause HL learners to demonstrate less native-like production (Fairchild & Van Hell, 2017; Montrul, 2010; Rao, 2014; Shea, 2019; Spicer-Escalante, 2005). In contrast, recent research in the field of Spanish HL studies also focuses on the way HL learners demonstrate a more native-like competency than the typical L2 learner (Blake & Zyzik, 2003; Montrul, 2010; Montrul, 2011; Shea, 2019). Researchers indicate that due to the way in which HL production is frequently compared and contrasted with that of NS and L2 speakers, they often feel pressured to drop the HL usage from their childhood to acquire what is considered a more elegant and "proper" speech in the classroom (Colombi, 2015; Martínez, 2019; Potowski et al., 2009; Smith et al. 2011). Recent findings have resulted in an emphasis on HL-oriented pedagogy, and the number of HL programs at both the high school and university level has rapidly grown throughout the last decade (Colombi, 2009; Felix, 2009).

In contrast with the field's overwhelming emphasis on studies in HL learner production, the present study focuses instead on HL learners' perception of spoken Spanish in an effort to understand how HL learners perceive NS, L2 learners, as well as other HL speakers. In this study, I analyzed the perceptions of 37 HL learners, 63 L2 learners, and 12 NS. Each participant listened to recordings of NS, L2, and HL speakers of Spanish. They subsequently offered their perceptions regarding the proficiency and identity (ID) of each speaker.

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The primary goals of this study are as follows:

1. To study HL learners' perceptions of differing Spanish accents with specific attention to the following sounds: the use of "uh" or "um", aspirated stops, inappropriate use of liquids in Spanish, and an intervocalic [z].

2. To understand how HL and L2 learners' divergent Spanish backgrounds (learning Spanish as an HL versus learning Spanish in the classroom) may be related to any differing perceptions of spoken Spanish.

For first research goal, I hypothesized that HL learners would be more likely to perceive phonetics when perceiving the language proficiency, accent, and language ID of each speaker's recording than L2 learners. Similarly, I hypothesized that HL learners would notice specific sounds within each recording as a means of reaching a decision due to having greater Spanish dominance than L2 learners. Consequently, they would be more likely to notice when a speaker used "um" versus "em", aspirated stops, inappropriate use of liquids, and the intervocalic [z]. With regard to my second research goal, I hypothesized that HL learners would be more likely to correctly describe the language ID of each speaker. Lastly, I hypothesized that demographic factors of the Spanish language background of HL learners would be associated with their perception of the Spanish speakers within the study.

This thesis is organized into six chapters. Chapter One introduces the study's topic and objective. Chapter Two comprises a critical literature review on the history and development of the field of HL as well as a description of HL production and perception. Chapter Three details the method procedures. Chapter Four describes data analysis and results in context of the research goals of this study. Chapter Five includes a discussion of the results and their significance in the context of current HL research. Chapter six concludes with limitations, implications, applications, and a need for future research.

CHAPTER TWO

Literature Review

Heritage Learners, Second Language Learners, and Native Speakers

This literature review begins with a discussion of the linguistic differences between NS, HL, and L2 learners. This discussion is followed with a brief summary of the history of the HL field as well as current research in HL learners. Finally, the review concludes with an explanation of HL phonetic production as well as current studies in HL perception.

In order to understand the importance of examining HL learners as their own linguistic category, it is helpful to compare characteristics of each group. Table 2.1 compares and contrasts HL, L2, and native speakers of Spanish.

Table 2.1. Characteristics of HL, L2, and Native Speakers of Spanish

HL Learners	L2 Learners	Native Speakers
L1 is often Spanish, or they learn English and Spanish simultaneously	L1 is not Spanish	L1 is Spanish
Typically learn Spanish until they enter public school	Usually begins learning Spanish after puberty	Lived in a Spanish-speaking country for a significant portion of their life
Dominant language is usually English	Dominant language is not Spanish	Dominant language is Spanish

Note: (Montrul, 2011; Shea, 2019; Valdés, 2000)

HL learners are not a homogenous group (Blake & Zyzik, 2003). Though their L1 is often Spanish, many HL learners report learning both English and Spanish simultaneously (Valdés, 2000). Most commonly, HL learners in the United States begin

speaking Spanish in the home and are dominant in Spanish until they attend school, where they must learn to speak, read, and write in English (Shea 2017). Generally, this tendency leads to a change in language dominance from Spanish to English as the HL learner becomes surrounded by English-speaking peers and is obligated to learn literacy skills in English. Notably, however, language dominance depends on a variety of factors; such as use of Spanish inside and outside of the home and the exact age when HL learners began to acquire English (Shea 2017). Furthermore, the generation of immigration for HL learners also contributes to their language competency in both English and Spanish. Lewelling & Peyton (1999) first indicated three primary groups of heritage learners, based upon generation:

a. Third- or fourth-generation United States-born Hispanic students considered to be receptive bilinguals. Dominant in English with limited speaking, writing, and reading skills in Spanish.

b. First- or second-generation bilinguals possessing different ranges of proficiency in English and Spanish. In most cases, their education has been in English with few if any literacy skills in Spanish.

c. Recent immigrants to the United States who are Spanish dominant. Their level of English proficiency and amount of formal education in Spanish varies.

These three definitions of varying HL learners suggest that generation plays a large part in linguistic competency of HL learners. These distinctions between language competency in different generations of HL learners were first noted in the United States in the late 19th century (Rivera-Mills, 2012).

The History of Spanish as a Heritage Language in the United States

The study of Spanish as a heritage language in the United States first arose with efforts in native language maintenance beginning in the late 19th century (Rivera-Mills,

2012). These endeavors came just a few decades after the completion of the Mexican-American War when the controversial Treaty of Guadalupe in 1848 resulted in Mexico conceding a large portion of its land to the United States (Castillo, 1990). At that time, the Hispanic population who became a part of the United States due to the treaty (thereafter known as immigration), began acclimating to living in a society where Spanish was being displaced by a new language, English (Rivera-Mills, 2012). Early researchers noticed how the acquisition of English began to affect the phonological and morphological integrity of their native language of Spanish and advocated for the maintenance of the native Spanish language by anyone of Hispanic heritage (Rivera-Mills, 2012). Along with native language maintenance came the first textbook materials in HL instruction, taking on a "language as problem" approach in detailing the errors made by heritage learners and giving examples of "correct" usage of Spanish, initiating an issue in HL programs that continues to persist today (Martínez, 2019).

Originating in the 1960s, the Chicano movement sustained not only the idea of native language maintenance but also of native-culture maintenance (Rivera-Mills, 2012). Though concentrated along the Mexican-American border, the Chicano movement was a nation-wide movement, maintained by many different organizations throughout the United States (Estrada, 2015a). The movement is considered to be a continuation of the ongoing Chicano resistance which began with the arrival of the Spanish at the turn of the 16th century (Rodriguez, 1996). At that time, "the Chicano movement brought about awareness that the Spanish language was an important element of community identity and social activism" (Rivera-Mills, 2012). The movement was "a civil/human rights struggle" in which "universities became one of the focal points of… the movement"

(Rodriguez, 1996). The term "Chicano" itself was deliberately used in order to reject the term "Mexican-American" which, for many involved in the movement, implied that someone had turned away from their heritage in order to assimilate to the English-only culture of the United States (Estrada, 2015a). The movement primarily developed as a response to increased racial tensions against persons of Hispanic descent, Hispanic culture, and the Spanish language. It encompassed other movements for "gender equality, access to higher education, immigrant rights and a literary and artistic… rediscovery of *mestizo/*indigenous roots and self-definition" (Rodriguez, 1996).

The Chicano movement was primarily a youth activism protest that sought higher and better education for themselves in reaction to a perception that Hispanic students had been taught to be laborers and not intellectuals (Rodriguez, 1996). In 1969, Chicano students organized themselves at the University of California, Santa Barbara in order to create *El plan de Santa Bárbara*, which united several Chicano student activist groups together in order to form the *Movimiento Estudiantil Chicano de Aztlán,* or MEChA (Estrada, 2015b). MEChA was also responsible for creating a list of several changes that they felt should be made at Santa Barbara (which would be the first

of many in the following decades). This list included the addition of Mexican-American faculty, counselors, resources for Hispanic students, and new curriculum in Mexican-American/Chicano Studies (Estrada, 2015a; Rodriguez, 1996). Although the Chicano movement is not as dominant as it once was, many researchers maintain that it lives on, especially in Hispanic faculty and generations from the 1960s, 70s, and 80s who continue to push for HL programs and cultural learning in schools throughout the U.S. (Rivera-Mills, 2012; Rodriguez, 1996).

Although there is a need for heritage programs in the United States today, universities, high schools, and elementary schools are still struggling to commit to HL and bilingual programs (Coles-Ritchie & Lugo, 2010). Despite methods in L2 learning that are conducive to a combined classroom of HL and L2 learners (Smith et al., 2011), HL learners can greatly benefit from instruction tailored toward their language needs (Colombi, 2009; Potowski et al., 2009). Additionally, when organizing an HL program, it is important to research current methods in HL instruction as well as successful practices of established programs (Coles-Ritchie & Lugo, 2010). Furthermore, investigators recommend maintaining open communication with students to determine their language needs and create language goals for the course (Coles-Ritchie & Lugo, 2010; Colombi, 2009). Typically, it is best to start with what the HL learner already knows: items related to the house and family, such as food, titles of family member, and characteristics. (Colombi, 2009). Later, the class can advance towards more abstract topics such as politics, philosophy, linguistics, and sciences (Colombi, 2009). Finally, it can be useful to ask students to reflect on their own grammar in Spanish and to consider how class instruction could help them to better their communication abilities with family and friends outside of the classroom (Colombi, 2009).

Even though more HL programs have been implemented throughout the United States in recent years, investigators suggest that the current field of Spanish education also includes negative approaches to Spanish instruction for HL learners (Felix, 2009; Martínez, 2019; Smith et al., 2011). For instance, previous research suggests that HL learners may face discrimination from instructors emphasizing that there is only one correct dialect of Spanish (Magaña, 2015; Polinsky, 2014; Schreffler, 2007). Defeo

(2011) posits that instead of encouraging HL speakers to utilize language from their country of heritage, they are encouraged to utilize elements of Peninsular Spanish. Lastly, investigators have found that many Spanish HL learners living in the United States assert that they are taught to feel a certain "shame" in speaking their HL, affecting their use of the language (Smith et al., 2011; Felix, 2009). According to previous literature, this perception may occur due to the prevailing political climate in the United States (Smith et al., 2011; Felix, 2009). In particular, the current political climate has increased the existence of stereotypes concerning the use of Spanish and the reaction to these prejudices by Hispanic families, with many attempting to discourage the use of Spanish by their children (Smith et al., 2011; Felix, 2009).

<div align="center">Heritage Language Studies Outside of the US</div>

Although Spanish is the primary HL spoken in the United States, a heritage language is any native language spoken by preceding generations living in a region where their native or heritage language is not the primary language (Valdés, 2000). In areas other than the US, such as Spain, Holland, Belgium, Sweden, France, Italy, and many other European countries, the discussion of heritage languages is often buried within research on bilingualism and multilingualism (Cenoz & Jessner, 2000). In these countries, there is generally a high prevalence of multilingual individuals who learn heritage languages in the home, speak the majority language of the country, and learn second and third languages at school (Cenoz & Jessner, 2000). In many cultures, several languages are spoken, and the designation of whether each language is an HL may vary from person to person (Cenoz & Jessner, 2000). For instance, in many areas where English serves as a primary language, various heritage languages are spoken: The United

Kingdom, Ireland, Canada, Australia, and New Zealand (Cenoz & Jessner, 2000). Moreover, many speakers in these countries are exposed to not only one HL, but two or three at once (Cenoz & Jessner, 2000). Heritage languages and research also can be found throughout the continent of Africa, especially in areas in which English is learned as an official language and native African languages are learned at home as heritage languages (Jagero & Odongo, 2011; Manuel, 2015). Similarly, in China, many HL speakers of languages other than Mandarin Chinese preserve their cultural tradition by maintaining their HL (Gu, 2017). Thus, heritage languages have existed in many countries for much of history, and numerous areas outside of the United States have had a much longer history of more complicated language contact between multilinguals of differing heritage cultures and languages.

Dominance and Proficiency

When discussing HL learners, it is important to consider how factors of dominance and proficiency affect the acquisition and production of their HL. *Dominance* refers to the degree of language in the HL speaker's daily usage, and *proficiency* refers to the speaker's linguistic production and ability (Shea 2017). Language dominance in Spanish and English correlates with Spanish-language proficiency in HL speakers of Spanish (Dunn & Fox Tree, 2009; Marian et al., 2007; Shea, 2019). Table 2.2 delineates characteristics of dominance and proficiency in HL learners.

Table 2.2. Characteristics of Language Dominance and Proficiency in HL Learners

Dominance	Proficiency
Age of English acquisition	Knowledge of vocabulary (lexical production and understanding)
Spanish spoken in the home	
	Ability to produce aspects of grammar (morphologically, syntactically, etc.)
Spanish spoken outside of the home	
Codeswitching	Production of linguistic errors in language tasks
Contribution to language learning (whether from family, friends, school, television, etc.)	Self-reported ratings of ability speaking, reading, writing, or listening to Spanish
Duration of immersion in another country	
	Fluidity in speech
Language choice (level of comfort in speaking Spanish or English)	

Note: (Birdsong, 2014; Dunn & Fox Tree, 2009; Marian et al., 2007; Shea, 2019)

Some of the factors presented in Table 2.2, such as contribution to language learning, age of acquisition, and duration of immersion have been considered as factors of both dominance and proficiency due to the close association between the two concepts (Marian et al., 2007). As Table 2.2 demonstrates, HL learners' dominance tends to include age, language choice, and language immersion. On the other hand, proficiency factors tend to focus on self-ratings of language competency as well as performance in language tasks.

Dominance and proficiency factors, along with generation of the speaker, have been used to characterize groups of HL learners, demonstrating varying degrees of linguistic ability along a spectrum of bilingualism (Birdsong, 2014; Lewelling & Peyton, 1999). In general, HL learners with a higher age of English acquisition, higher rates of speaking Spanish both inside and outside of the home, and higher immersion in a Spanish-speaking country (SSC) tend to exhibit a more native-like proficiency in grammar, lexical, translation, and phonetic pronunciation tasks in Spanish (Birdsong,

2014; Dunn & Fox Tree, 2009; Marian et al., 2007; Shea, 2019). Due to the dominance characteristics mentioned above, the generation of an HL learner tends to correspond with both Spanish and English proficiency (Valdés, 1997; Lewelling & Peyton, 1999).

Though HL learners tend to demonstrate higher levels of dominance in Spanish than their L2 learner counterparts (Shea, 2017), this higher level of dominance does not necessarily predict learners' abilities to fully attain their HL (Au et al., 2002). Generally, the HL learner has excellent pronunciation of Spanish, but competency in other areas of linguistic production varies (Au et al., 2002; Shea, 2019). Dominance factors tend to change throughout a speaker's lifetime (Birdsong, 2014), and being exposed to a language in early childhood does not demonstrate a measurable benefit with regard to linguistic production in areas such as morphosyntax or lexicon later in life (Au et al., 2002; Birdsong, 2014). Attrition in dominance and proficiency characteristics can be attributed to an absence of resources, motivation, or a need to acquire the language (Au et al., 2002; Birdsong, 2014). Due to attrition and motivation, advanced L2 learners may be more likely to demonstrate higher proficiency levels, even if they are less dominant in Spanish than HL learners.

Theories in Heritage Language Acquisition

Research in HL acquisition has historically taken a "deficit" approach to HL production in that investigations tend to focus on errors, or non-native-like discrepancies in HL production (MacSwan, 2000; Valdés, 2000). Furthermore, when studies do not focus on a non-native like competency, they concentrate on how HL learners' linguistic acquisition and ability are more similar to that of L2 learners than NS (Boon & Polinsky, 2014). Although specifying HL speakers' language usage is a necessary step in

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understanding their unique language-learning needs, interpretations of these investigations have led to a negative view of HL learners' capabilities within the SLA field (Boon & Polinsky, 2014).

The Theory of Incomplete Acquisition and the Theory of Fossilized Errors offer two significant SLA models whose interpretations have often led to a negative image of the HL speaker (Boon & Polinsky, 2014; Polinsky, 2008). The Theory of Incomplete Acquisition suggests that HL learners diverge from native speakers due to a "rapid shift from Spanish to English input" as children, consequently not achieving a native-like acquisition of their HL (Montrul, 2002). Fossilized Errors consist of morphological, syntactic, and other grammatical errors that have persisted since an HL learner's early Spanish acquisition and, though allowing the speaker to communicate in their HL, are considered incorrect in standard Spanish (Deyoe-Chiullan, 2009). Despite being used to discuss errors, fossilization can also include "fossilized forms," or native-like phrases produced by HL learners that are considered successful and correct (Boon & Polinsky, 2014; Polinsky, 2014). Nevertheless, these two theories have been used to discuss limitations for both HL and L2 learners of Spanish (Boon & Polinsky, 2014; Polinsky, 2008). As a response to negative interpretations of HL language production, Blake & Zyzik (2003) assert the following:

> When speaking about the abilities of [a heritage learner], it is important to keep in mind that [heritage learners] are not imperfect versions of the monolingual 'native speaker'. They are fundamentally different from monolinguals, and therefore should not be judged according to monolingual norms.

In recent decades, a sociopolitical movement within the HL field has begun to demand dialect acceptance of HL speakers (Polinsky, 2014). Wang (2009) argues that

this movement primarily arose due to microaggressions against the Spanish language in today's sociopolitical scene and also against a systematic oppression of HL learners in L2 classrooms in the United States. Wang (2009) also suggests that HL learners are encouraged to conform to English-only policy in school and are often scrutinized for their use of both English and their HL. This movement also addresses students' lack of exposure to both regional United States dialects of Spanish and Latin American dialects (Polinsky, 2014). The movement also emphasizes that HL learners have unique abilities and can make unique contributions to the L2 classroom (Blake & Zyzik, 2003; Boon & Polinsky, 2014).

Phonetics and Phonology

Since HL learners demonstrate many measurable differences in language production from their NS and L2 learner counterparts (Montrul, 2010; Montrul, 2011; Potowski et al., 2009; Shea, 2019), this study focuses on phonetic production and perception by HL speakers. Due to the time period in which many HL learners are exposed to Spanish language input, often solely in their HL, there is considerable consensus that heritage learners demonstrate high phonetic proficiency (Au et al., 2002; Montrul, 2010; Montrul, 2016; Shea, 2019). As HL learners generally approximate a native Spanish accent, their phonetic production can be considered "native-like" (Au et al. 2002).

The phonetic characteristics of Spanish pertinent to this study include use of [e] instead of the English [ə] when saying "em" versus "um," aspirated and unaspirated stops, inappropriate use of liquids, and the intervocalic use of [s] versus the [z] in English. In the Spanish language, five basic vowel phonemes make up all vocal sounds

and are consistent throughout dialects: /a e i o u/ (Stevens, 2011). The phonemes /a e o/ are considered to be strong vowels because they are produced lower in the mouth, while /i u/ are considered to be weak vowels since they are produced higher in the mouth, they are more easily formed and can create glides when paired with both weak and strong vowels (Hualde et al., 2010). When a strong and weak vowel are paired, they produce a diphthong, combining the two sounds into one syllable as in [ai], [au], [io], [ui], etc. (Hualde et al., 2010). On the other hand, when two strong vowels are placed next to one another, they do not usually combine into one syllable and instead are pronounced as separate syllables such as in [a.e], [o.a], and [e.o] (Hualde et al., 2010).

Native speakers of Spanish, regardless of location, may not always follow these phonological tendencies (for example, in rapid speech or poetry), but, in general, Spanish speakers tend to follow these trends (Stevens, 2011). HL learners, however, may or may not follow standard phonological rules, depending on individual factors of dominance and proficiency (Au et al., 2002; Shea, 2019). This difference in production is likely influenced by the variety of vowels in English. HL learners have rich exposure to a greater range of vowel production, which ultimately alters their Spanish vowel pronunciation (Shea, 2017). When using filler words in Spanish, an NS will generally say "e..." or "em" since both are representative of the Spanish vowel /e/ (Mondaca Becerra et al., 2015). Alternatively, an L2 speaker or an English-dominant HL speaker may say "uh" or "um" as a filler word, even while speaking in Spanish, due to transfer from English (Erten, 2014).

Spanish also contains several consonantal classes, based on the manner of production: stops, fricatives, affricates, approximates, nasals, laterals, and liquids (Rao &

Kuder, 2016). Stops are comprised of / p t k b d g / (Rao & Kuder, 2016). The first three stops are voiceless and the last three are voiced, where voiced represents a sound that utilizes the vocal cords (Rao & Kuder, 2016). In English, voiceless stops are typically aspirated "word-initially," causing them to be realized as [pʰ tʰ kʰ] (Rao & Kuder, 2016). L2 learners, however, often continue to use these aspirated stops when speaking in Spanish (Lord, 2008). In contrast, HL learners demonstrate a native-like competency in their production of voiceless Spanish stops (Au et al., 2002). Voiced stops /b d g/ have become the focus of many studies in recent years due to their possible phonetic realizations in Spanish (Au et al., 2002; Rao, 2014). Typically, in an initial position (such as at the beginning of a sentence) or after a nasal (or after /l/ in the case of /d/), these phonemes are realized as [b d g] (Hualde et al., 2010, pp. 69). In all other positions, voiced stops are actually realized as another class of sounds called approximates, which "approximate" the complete occlusion of the voiced stopped consonants [b d g] but in their weakened forms [β ð ɣ] (Hualde et al., 2010, pp. 69; Rao & Kuder, 2016).

Another group of consonants pertinent to this study are the flapped /ɾ/ and trilled /r/ (Rao & Kuder, 2016). Often HL learners' phonetic realization of such phonemes depends upon their specific language background, or their families' specific country or region of origin (Polinsky, 2014). In general, the Spanish trilled /r/ is produced in word-initial or syllable-initial position whereas the flapped /ɾ/ occurs in all other contexts (word-terminally, intervocalically, etc.) (Amengual, 2016). Although both the flapped /ɾ/ and trilled /r/ occur within the English language, traditional L2 learners often struggle to acquire the ability to produce either of these sounds, whereas HL learners generally successfully pronounce and differentiate between the two sounds (Amengual, 2016).

The last phonetic class pertinent to this study contains the fricatives [s] and [z]. Unlike other Romance languages, most Spanish dialects do not allow an intervocalic /s/ to be voiced as [z] (Recasens, 2002). Nevertheless, due to the prevalence of the intervocalic realization of /s/ as [z] in English, L2 learners and English-dominant HL speakers may voice intervocalic /s/ in Spanish as well (Escalante, 2016). Another related error that may occur is a failure to assimilate an /s/ that occurs before a voiced consonant such as in the case of <desde> where the /s/ should be voiced as a [z] (Escalante, 2016).

Heritage Phonetic Production

When researchers consider HL phonetic production to be non-native-like, it is typically because the HL learner is producing English phonemic realizations in Spanish (Rao, 2014; Shea, 2019). In general, however, HL learners exhibit phonetic production in both English and Spanish that has been affected by their phonetic acquisition of the other language (Polinsky, 2015; Rao, 2014; Shea, 2019). For example, the HL Spanish phonetic system is influenced by English phonemic-graphemic realizations especially when writing and speaking in Spanish (Rao, 2014). In a study on phonemic-graphemic realizations of the phoneme /b/ in Spanish, Rao (2014) found that HL learners who grew up in a Spanish-dominant household were more likely to produce the anticipated approximate [β] in reading tasks than those who grew up in a mixed-language household. In other words, HL learners with greater English dominance were more likely to differentiate between the intervocalic <b> or <v> graphemes, producing differing allophones accordingly (Rao, 2014). Alternatively, in a discussion of HL speakers' production of the voiceless stops /p t k/ in Spanish, Au et al. (2002) found that HL speakers tend to produce native-like voiceless stops when speaking Spanish. Mazzaro et

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al. (2016) also concluded that English has a limited effect on HL speakers' ability to correctly perceive voiced and voiceless stops (/b d g p t k/) as well as differing vowels in Spanish. On the other hand, in a study in which HL speakers listened to Spanish words and wrote down what they heard, HL speakers demonstrated phonemic realization issues with word-initial /p b/ and word-final /p k/ sounds but demonstrated fewer errors with regard to Spanish vowel realizations (Shi, 2017).

With regard to vowel production, Shea (2019) found that HL learners produced a larger range of vowels in Spanish than their NS counterparts, but a smaller range of vowels in English than their L2 learner counterparts. Whereas NS of Spanish demonstrated usage of the five tense vowels available in Spanish [a e i o u], HL production included a higher variance due to the influence of the relaxed English vowel system (Shea, 2017). In the study, HL learners presented a greater degree of overlap with native Spanish vowel production than with L2 English vowel production (Shea, 2017), meaning that they demonstrated a tendency to produce more tense vowels in either language than their L2 learner counterparts. The study also suggested that Spanish dominance is related to native-like phonetic production in HL learners (Shea, 2017). Other investigations have determined that HL learners' vowel production is affected by their English language dominance, noting that HL learners commit English-like vowel reduction on unstressed syllables in Spanish, similar to the way in which the schwa [ə] is used in American English (Byers & Yavas, 2017; Ronquest, 2013). Additionally, Sánchez-Muñoz (2007) indicates that HL learners produce both English and Spanish filler words while speaking in Spanish and that their usage of the Spanish versus English filler word may depend on their relationship with that person (whether it is a friend,

family member, etc.). In the present study, for example, the advanced-low HS utilized the Spanish "eh" and "em," while the intermediate-low HS used the English "uh" and "um."

Few studies discuss the production of the Spanish /r/ and the intervocalic use of [s] by HL learners. In general, HL learners have been shown to utilize the flapped /ɾ/ and trilled /r/ in a native-like manner (Amengual, 2016), though HL learners with higher English dominance (high exposure to English and low exposure to Spanish) demonstrate pronunciation similar to L2 speakers. Conversely, Shi (2017) suggests that because the use of the phoneme /s/ is so similar in "frequency content" in both English and Spanish that its realization can sometimes be confused in either language. For instance, the appearance of the grapheme <z> intervocalically (as in the word *cazo*) may cause HL learners to produce a [z], due to the influence of English phonemic-graphemic realizations.

Heritage Perception

Current research in perception studies of Spanish tends to focus on: (1) the ways that different groups of speakers perceive each other's use of Spanish (Agostinelli, 2012; Callahan, 2004; Campanaro, 2013; Chappell, 2019b) or (2) the ability to perceive contrasts between Spanish and English linguistic elements (Boomershine, 2013; Chappell, 2018; Chappell, 2019a; Kim, 2015; Oh et al., 2003). Consequently, there is currently a gap in research on HL learner's perception of language use by other HL learners.

Within the literature describing perception between groups of Spanish speakers, Callahan (2004) found qualitative data suggesting that HL learners and NS believe that L2 learners should use caution when speaking Spanish unless they are highly proficient.

Nevertheless, both groups indicated that they generally accepted L2 learners in the classroom (Callahan, 2004). Similarly, Agostinelli (2012) performed a review of Callahan (2004) and other L2 perception studies, concluding that problematic phonetic pronunciation in L2 Spanish is more readily noticed by NS and HL learners than any other production error. Conversely, Campanaro (2013) found more positive perceptions than previous studies, with L2 and HL learners reporting positive collaborative experiences in working together in the Spanish classroom. This study also emphasized that students experience many benefits in having both groups in a mixed-classroom setting, though a quarter of HL learners felt that they could have learned more in the course if L2 learners were not present (Campanaro, 2013).

The other definition of perception previously mentioned in the literature emphasizes the *ability* of HL learners to perceive certain elements of Spanish and English lexicons, phonetics, morphology, and other linguistic elements (Boomershine, 2013; Chappell, 2018; Kim, 2015; Oh et al., 2003). These studies are more concerned with perception as a factor of linguistic aural proficiency than perception as a factor of attitude, opinion, or judgement. For instance, Boomershine (2013) found that L2 speakers of Spanish perceive more difference between certain vowel pairs in English, such as [e]/[I], than their Spanish HL learner counterparts. On the other hand, Kim (2015) found that HL learners are able to perceive lexical stress in Spanish similar to that of monolingual Spanish speakers. In another perception study, Chappell (2018) studied the way HL learners process lexical information in Spanish. The authors concluded that HL learners use phonetic overgeneralizations when perceiving lexical information, which is likely associated with their varied phonetic production. For instance, if an HL learner

hears the structure /teréfono/, they more readily understand that the intended meaning is *teléfono* when compared with other Spanish speakers (Chappell, 2018). Chappell (2018) also concludes that the HL learners' varied phonetic production is associated with this ability to understand lexical information despite varied pronunciation. In other words, HL learners' ability to understand *teléfono* from /teréfono/ is related to their own variation in pronunciation.

In conclusion, current HL perception studies have focused primarily on attitudes between HL and L2 classmates and the ability to perceive differences in linguistic elements of Spanish and English (Agostinelli, 2012; Boomershine, 2013; Callahan, 2004; Campanaro, 2013; Chappell, 2018; Kim, 2015; Oh et al., 2003). Although the use of *perception* in these studies is not synonymous with *perception* as it is discussed in the present study, research by Agostinelli (2012) and Callahan (2004), which suggests that NS and HL learners notice phonetic errors of L2 speakers before noticing other linguistic errors, provides a useful base for the present study. This thesis focuses on HL and L2 learners' perceptions of proficiency, accent, and language ID in three groups of Spanish speakers: NS, HL, and L2 learners. In particular, this study seeks to fill a gap in the literature by concentrating on HL-learner perception of other Spanish speakers.

CHAPTER THREE

Procedure and Method

Research Questions

This chapter first summarizes the study's research questions and subsequent

hypotheses. I then present the participant pool as well as the method of recruitment. Next,

I review the development of the survey and examine its components. Lastly, I summarize

the process of data analysis and present the study's variables.

The study's research questions are as follows:

1. Do HL learners notice pronunciation when assessing proficiency,
accent, and language identity?

2. Do HL learners notice the use of "em" or "um," aspirated stops,
inappropriate use of liquids in Spanish, or use of an intervocalic [z]?

3. How do HL and L2 learners differ in their perception of different types
of Spanish speakers?

With regard to Questions One and Two, I hypothesized that HL learners would be

more likely than L2 learners to notice non-standard pronunciation in Spanish, and

therefore notice the phonetic inconsistencies mentioned above: using "um" or "uh" as a

filler word (instead of "eh" or "em"); use of aspiration in the phonemes /p t k/;

inappropriate use of liquids; and the use of an intervocalic [z] in place of [s]. I similarly

hypothesized that HL learners would notice phonetics when determining the proficiency,

accent, or language ID of each speaker. With regard to Question Three, I hypothesized

that HL and L2 participants would differ in their perceptions and that this difference

would relate to HL learners exhibiting higher Spanish dominance.

Participants

The participants were 112 undergraduate students (age range 18–41+ years) with a background in Spanish recruited via e-mail from university faculty at the following institutions: Baylor University, University of Texas Rio Grande Valley, The Ohio State University, University of Iowa, Midwestern State University, University of Akron, The College at Brockport, Indiana University of Pennsylvania, University of Michigan, University of North Texas, Austin College, and Texas Tech University. All participants had taken (or were taking) college Spanish courses. Some participants also spoke Spanish at home. The participant pool therefore consisted of traditional second language (L2) learners of Spanish (n = 63, 56.3%), HL learners of Spanish (n = 37, 33%), and native speakers of Spanish (n = 12, 10.7%).

Participants were convenience-sampled via an online Qualtrics survey link sent by e-mail to faculty at different universities using the following e-mail script:

> My name is Rachel Sangster and I am a graduate student pursuing a Masters in Spanish at Baylor University. I am currently gathering data for the research portion of my thesis. Below I have included a link to my study. The study has a focus on Spanish Students at the university level. Would you consider distributing this link to your students? All participants above the age of 18 and with a background in Spanish are welcome to participate.
>
> On-Line Survey:
> https://baylor.qualtrics.com/jfe/form/SV_3C9l7otJrcWf7fv
>
> Thank you for your help,
> Rachel Sangster Garza
> Graduate Assistant
> Department of Modern Languages and Cultures
> Division of Spanish
> Baylor University

Survey

The survey was accessible through the online link sent to participants by e-mail (Appendix). Prior to the study, it received institutional approval for human subject research (IRB Project Number 1434971-1). The survey took participants an average of 19 minutes, and participants were not compensated for their involvement. The survey instrument consisted of a consent form followed by seven consecutive sections. To begin, participants completed a demographics questionnaire followed by five sections in which they listened to different voice recordings of a NS, two HS, and two L2 learners. In the last section of the survey, participants identified themselves as either HL learners, native speakers, or L2 learners of Spanish.

The demographics section was predominantly influenced by Shea (2019), which discusses how the dynamic between speakers' language proficiency and dominance affects their phonetic production of that language. The demographic questions used from this article included the indication of which language was spoken inside and outside of the home and the age of onset (AoA) of each language spoken by a participant. Demographic questions were also taken from the Survey for Heritage Language Learners (Ohio Department of Education, 2017) and the Language Experience and Proficiency Questionnaire (Marian et al., 2007) which further detailed language background in both Spanish and English. Questions derived from the Survey for Heritage Language Learners emphasized the presence of Spanish and English within the student's families (i.e. what languages their parents and grandparents spoke), country of birth, and age when the participant moved to the United States (if applicable), whether the participant attended school in another country, and a self-rating of proficiency in both Spanish and English.

Finally, the Language Experience and Proficiency Questionnaire (LEAP-Q) also informed the demographic portion of the questionnaire regarding percentage of exposure to each language, how many courses of Spanish participants had taken at the university level, and the specific circumstances in which each language is used (i.e. with only certain friends or family members, at work, school, etc.) (Marian et al., 2007).

The format of the LEAP-Q was predominantly used in the development of survey questions indicating the proficiency, accent, and identity of speakers in each recording that participants heard. After each recording, participants rated each speaker's proficiency level, degree of native-like accent, language ID (NS, HS, or L2), their confidence level with their response, and which factors led the participant to choose a specific proficiency, accent, and language ID for each speakers' recording. This identification of the speakers' language identities and the subsequent indication of confidence were adapted from a similar study by Hopp & Schmid (2013) in which German speakers rated the native or non-native identity of recordings and then indicated their level of confidence in their answers. I obtained all of the recordings used in the present study from The Spanish in Texas Corpus Project and the Introduction to Oral Proficiency Levels on the Center for Open Educational Resources and Language Learning website, open sources providing video resources for the purpose of both research and classroom instruction (Bullock et al., 2013; Liskin-Gasparro,). The final study question asked participants to indicate their own language identity utilizing definitions for L2 learners and native speakers from Montrul (2011) as well as a definition of HL learners from Valdés (2000). The complete questionnaire utilized in the present study is available in the Appendix.

Data Analysis

   If students submitted an incomplete survey, their scores were only considered if students answered the majority of the survey. I performed a quality check to ensure that all speakers' demographics related to the language ID that they reported. All of the L2 and NS participants who responded to the final question indicated that they were L2 and NS, respectively. In contrast, I determined that two participants who had selected "unsure*"* were HL learners and that one participant who indicated "L2" was also an HL learner. This difference was apparent because participants reported L1, age of acquisition in Spanish and English, languages spoken inside and outside of the home, and a listing of family members who spoke Spanish.

   The primary independent variables in the study include the recorded speakers' actual language proficiency level and language ID (HS, L2, NS) as well as participant demographics. Participants' survey responses (their reporting of the proficiency, accent, language ID, and elements of pronunciation that they noticed) are the dependent variables of this study. In order to analyze these variables, a Fisher's Test for Exact Count Data was first utilized in order to determine whether an association existed between the language ID of each participant and their indication of proficiency, native-like accent, and language ID for each recorded speaker in the study.

   Next, a correlation matrix was created to determine the relationship between the demographic factors in the study (with special attention to factors of Spanish language dominance) and survey responses within the study. Pertinent correlations and their associated *p*-values are discussed in Chapter Four.

CHAPTER FOUR

Results

Demographics

This chapter begins with an outline of participant data before comparing the

demographics of each participant group with survey responses. The chapter presents data

collected from 112 participants with the following demographics: 37 HL learners, 63 L2

learners, and 12 NS. Implications of the collected data will be discussed later in Chapter

Five.

Participants first reported their place of birth (PoB) and whether they had lived in

a Spanish-speaking country (SSC). All L2 participants were born in the United States

(98.4%), except for one individual who was born in India (1.6%). All L2 participants

reported that they had never lived in an SSC, although 9.5% had studied abroad for less

than two months in Spain (n = 4, 6.3%), Costa Rica (n = 1, 1.6%), or Mexico (n = 1,

1.6%). Of the HL participants, 10.8% were born in Mexico (n = 4), and the other 89.2%

were born in the United States (n = 33). One HL participant had lived in Honduras (2.7%)

while the other nine participants lived in other regions of Mexico (24.3 %), including

Reynosa, Tijuana, and Monterrey. Eleven percent of the HL participants who lived in a

Spanish-speaking country (SSC) also attended school there for at least one year (n = 4),

but did not attend past the fourth grade. Of the NS participants, 50% were born in Mexico

(n = 6), 8.3% in Ecuador (n = 1), and others did not specify their country of birth. Most

NS most had lived abroad for 12-15 years with the geographical regions represented

including Mexico (66.7%), Puerto Rico (8.3%), Colombia (8.3%), Ecuador (8.3%), and

Spain (8.3%). All NS also had attended school in an SSC; most attended for at least eight

years.

        Figure 4.1 compares data between participant groups in regard to having lived in

an SSC.
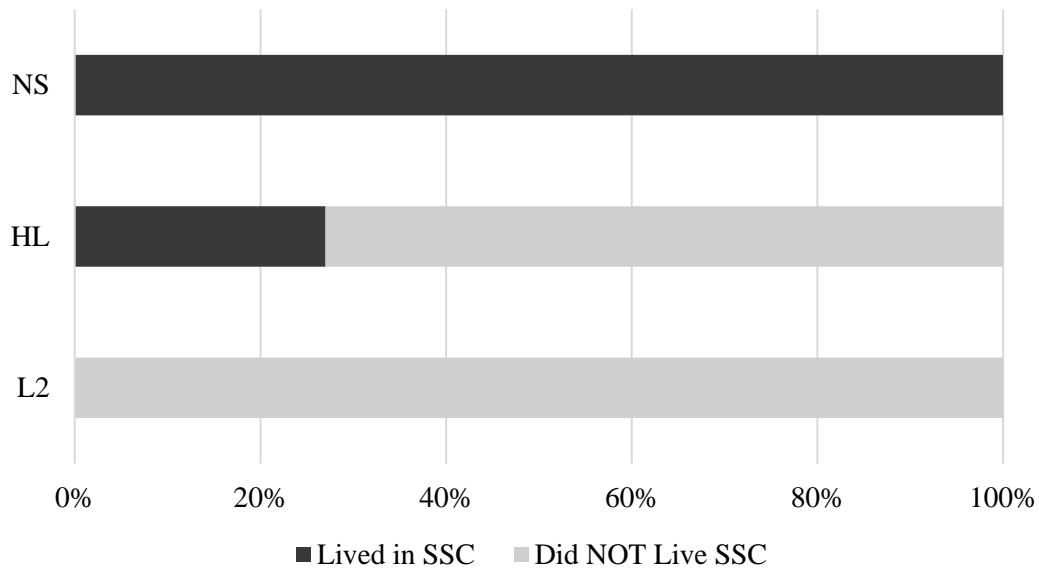
Figure 4.1. Participants Who Lived in a Spanish-Speaking Country

        In order to consider whether experience with languages other than Spanish and

English affects language perception, participants reported all languages that they spoke.

Though not a significant variable in this study, 11.1% of L2 participants (n = 7) spoke

languages other than Spanish or English, including French (n = 4, 6.3%), German (n = 1,

1.6%), Malayalam (n = 1, 1.6%), and Vietnamese (n = 1, 1.6%). Two HL learners spoke

languages other than Spanish and English (5.4%): including American Sign Language

(ASL) and French. One NS reported that they also spoke French (8.3%).

        In previous studies, the L1 spoken by HL learners, along with the age at which

they began to speak Spanish and English, related to their performance on language tasks

in Spanish (Grosjean, 2015; Shea, 2019). Participants in the present study reported all three variables. Ninety-seven percent of L2 participants reported English as their L1: two participants indicated their first languages as ASL (1.6%) and Vietnamese (1.6%). Sixty-two percent of HL participants indicated that Spanish was their L1 (n = 23), 24.3% said English (n = 9), and 13.5% said they learned both languages simultaneously (n = 5). All NS indicated that their L1 was Spanish.

Figures 4.2 and 4.3 show the AoA of English and Spanish reported by each participant group.
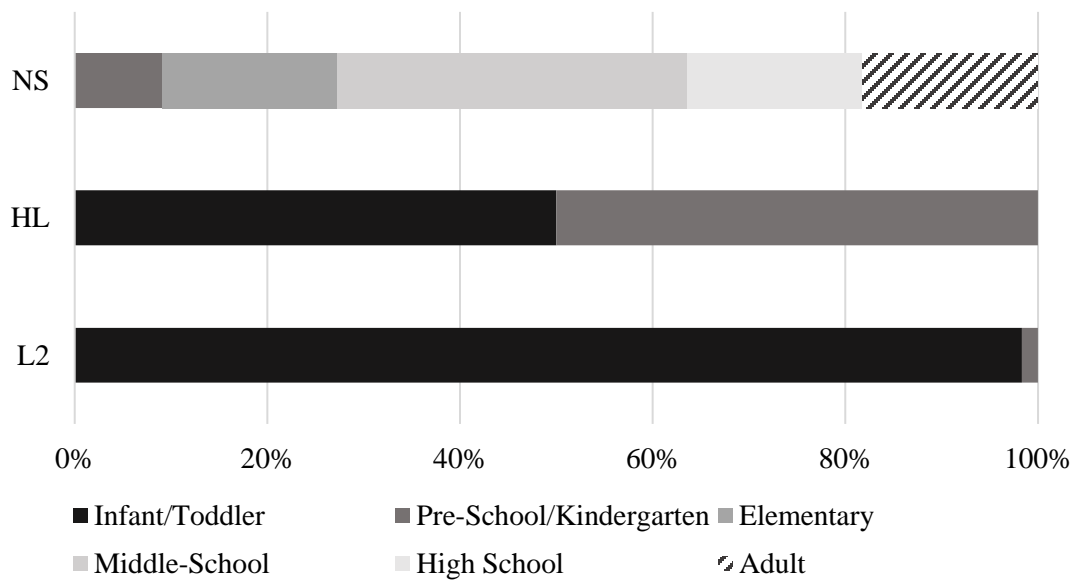
Figure 4.2. Age of Acquisition of English
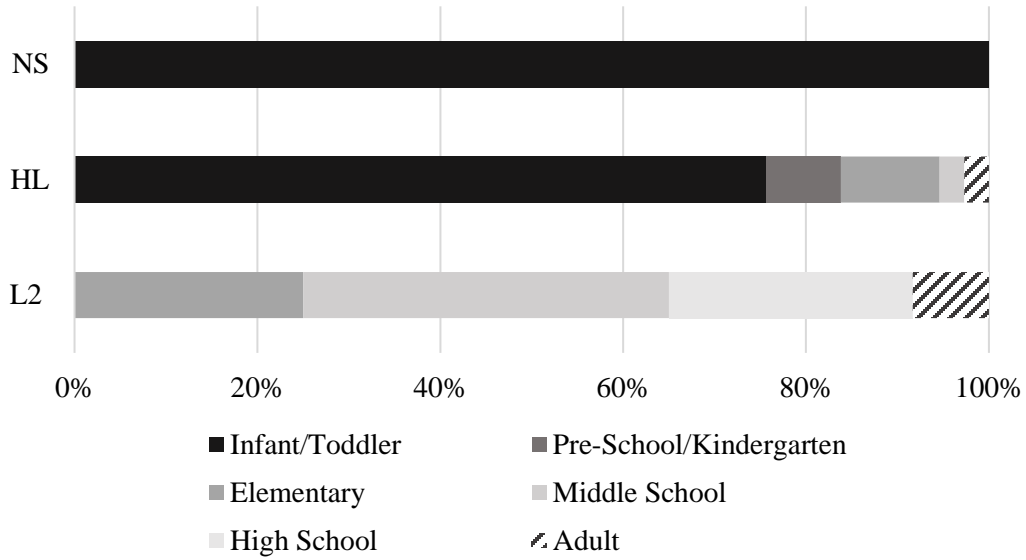
Figure 4.3. Age of Acquisition of Spanish

Previous studies also concluded that the amount of Spanish spoken inside and outside of the home relates to HL performance on language tasks in Spanish (Grosjean, 2015; Shea, 2019). Figures 4.4 and 4.5 depict the percentage of participants in each group who speak Spanish and/or English inside and outside of the home.
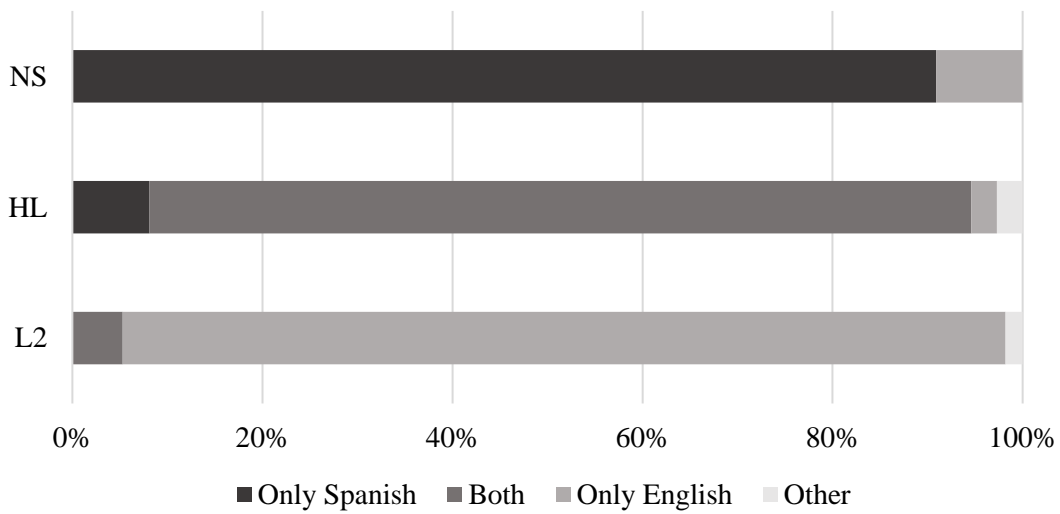
Figure 4.4. Languages Spoken in the Home
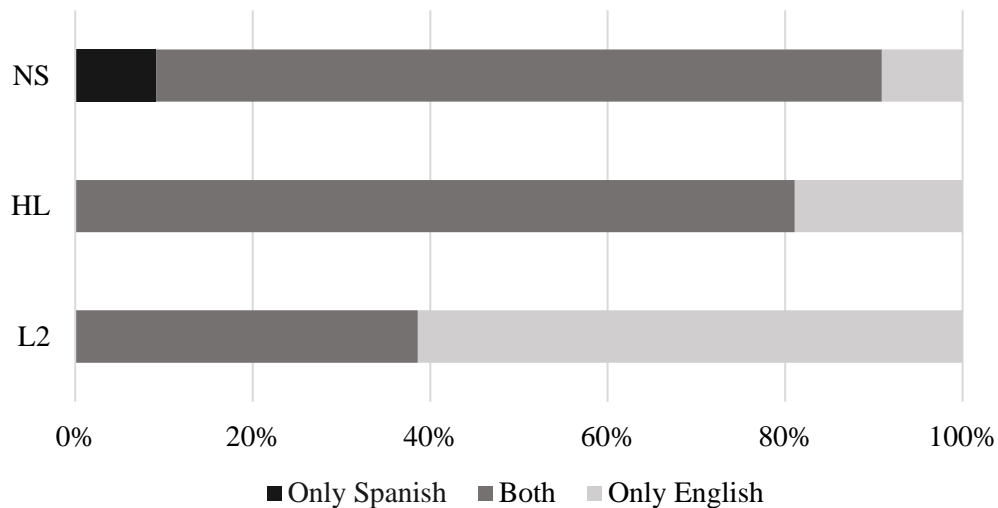
Figure 4.5. Languages Spoken Outside of the Home

The majority of HL learners reported speaking both languages inside (n = 32, 86.5%) and outside of the home (n = 30, 81.1%), where 8.1% of HL learners reported speaking only Spanish in the home (n = 3). In both environments, the language of communication depended upon the person who they spoke with. Conversely, 93% of L2 participants spoke only English at home. Outside of the home, 61.4% reported speaking only English and 38.6% spoke both English and Spanish with friends and coworkers. Lastly, the majority of NS spoke only Spanish in the home (n = 10, 90.9%) but both languages outside of the home (n = 9, 81.8%). In sum, HL learners spoke more Spanish inside and outside of the home than L2 learners, but less Spanish than NS participants in both environments.

With regard to language experiences in the home, participants also reported the languages spoken by relatives. Figure 4.6 displays the number of parents and grandparents in each participant group who spoke Spanish.
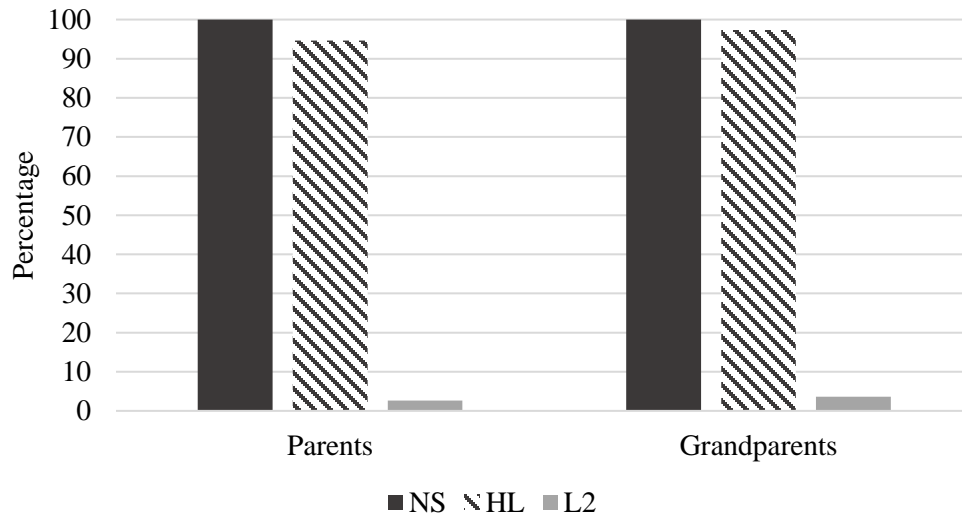
Figure 4.6. Spanish Spoken by Family Members

Eighty-six percent of L2 participants' parents spoke only English (n = 98) and 2.6% spoke both Spanish and English (n = 3). Similarly, 84.2% of L2 respondents indicated that their grandparents spoke only English (n =48) and 1.8% indicated that their grandparents spoke Spanish and English (n = 1). Other languages spoken included Vietnamese, Malayalam, French, Ishan, German, Polish, Yoruba, and Korean. Almost all of the HL participants' parents (94.6%) spoke Spanish, where 36.5% reported that their parents spoke only Spanish. Furthermore, 97.3% of HL participants' grandparents spoke Spanish and 75.7% grandparents spoke only Spanish. Finally, all NS parents and grandparents spoke Spanish. Of note, HL learners and NS reported having a similar number of Spanish-speaking parents and grandparents.

In order to consider how instruction in Spanish might affect perception of pronunciation, participants also provided information about their Spanish education. The age at which students began studying Spanish in school was non-significant in this study; however, the majority of HL (56.8%) and L2 (39.7%) participants were in middle-school

when they began studying Spanish in school. In contrast, 30% of NS began studying

Spanish in pre-school and 50% in elementary school. Figure 4.7 compares the number of

university-level Spanish courses taken by each participant group.
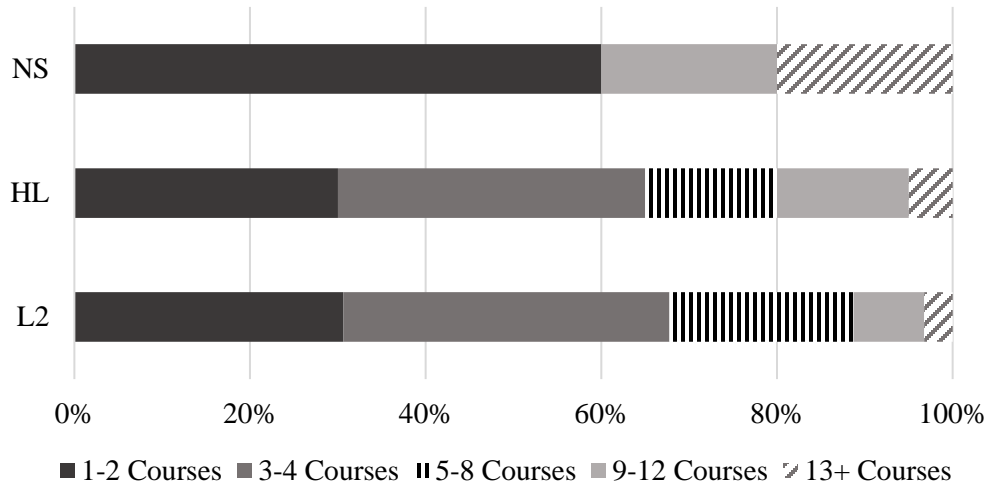
Figure 4.7. Number of University Spanish Courses

The most advanced Spanish courses completed by NS, HL, and L2 learners varied

from freshman to senior-level courses; one L2 participant had completed a graduate-level

Spanish course. Additionally, in order to determine whether experience with Spanish

linguistics related to survey responses, participants provided the number of courses they

had taken in Spanish linguistics. On average, HL learners completed 1.75 linguistics

courses (range 0-9), NS indicated 4.25 courses (range 0-25), and L2 participants took 1.5

linguistics courses (range 0-13). Nevertheless, the number of Spanish linguistics courses

was non-significant in this study. In sum, both HL and L2 participants had quite similar

academic backgrounds in Spanish, suggesting that any discrepancies between their

survey responses related to their differences in language background as HL or L2

learners.

Previous studies found that self-ratings of proficiency also related to performance on language tasks (Marian et al., 2007). Figure 4.8 presents self-ratings of Spanish proficiency by participant group in this study.
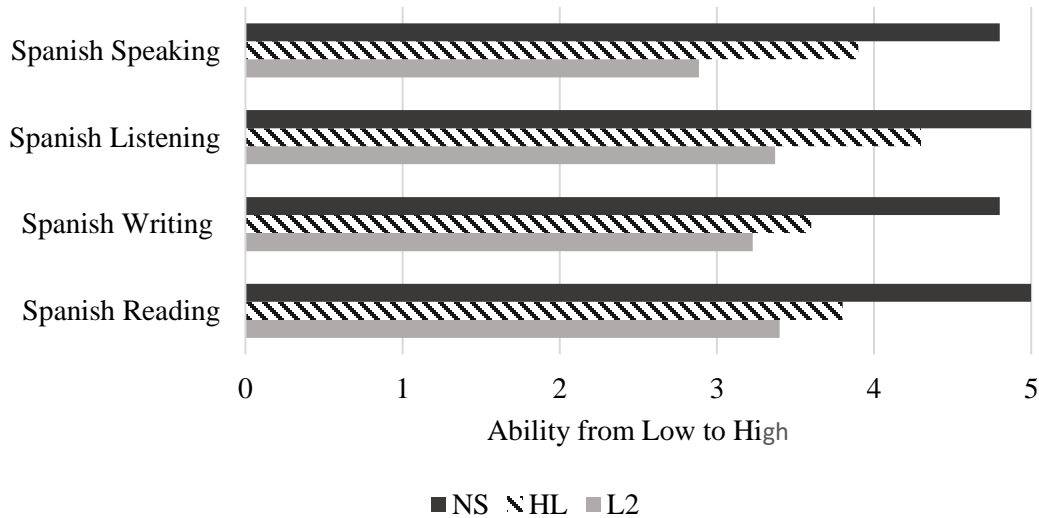
Figure 4.8. Self-Ratings of Spanish Proficiency

Each group also reported the percentage of time they were exposed to Spanish and English on a daily basis, other than in educational settings (e.g., in conversations, music, television, at work). Spanish HL participants were exposed to Spanish 55% of the time on average (range 9%-100%), L2 respondents were exposed an average of 21.6% of the time (range 1% to 80%), and NS indicated 65.5% (range 25%-100%). Conversely, HL learners reported exposure to English 79.2% of the time (range 20%-100%), L2 reported an average of 92.2% exposure to English (range 70%-100%), and NS reported an average of 57.4% exposure to English (range 5%-100%). In general, then, HL learners patterned in between NS and L2 participants with regard to exposure. They reported higher exposure to Spanish, but lower exposure to English, than their L2 counterparts and lower exposure to Spanish than NS participants.

Survey Questions

After completing the demographics portion of the survey, participants listened to

five recordings and assessed the proficiency and accent of each recorded speaker. They

also identified the probable language ID of each speaker (HS, NS, or L2) and provided

explanation for their answers. The questions used in the study are shown in Table 4.1.

Table 4.1. Survey Questions

Question	Answer choices
1. Please select what you think the level of *proficiency* (how fluent they are) of the speaker is:	(a) Very low (b) Low (c) Neither high nor low (d) High (e) Very high
2. From your experience with a **native speaker of Spanish**, what type of accent do you think this speaker has?	(a) Completely non-native accent (b) Mostly non-native (c) Neither non-native nor native (d) Mostly native accent (e) Completely native accent
3. What do you think that the identity of the speaker is?	(a) A native Spanish speaker from or living in a Spanish-speaking country (b) A Spanish heritage speaker who lives in the United States and is not from a Spanish-speaking country but, to some degree, speaks both Spanish and English due to speaking Spanish at home or with peers (c) A traditional second language learner, or a student with no prior background in Spanish before taking courses in school
4. How confident are you that the speaker has the identity that you mentioned above?	(a) Extremely non-confident (b) Somewhat non-confident (c) Neither confident or non-confident (d) Somewhat confident (e) Extremely confident
5. What influenced your above opinions about the speaker's pronunciation (select all that apply):	(a) Their pronunciation of vowels (b) Their pronunciation of consonants (c) Their pronunciation of a specific word (d) The intonation (rhythm, or rise and fall) of their speech (e) The pace/speed at which they spoke (f) Other/further explanation:

Note: Questions in the study are located in the Appendix.

Participants listened to five audio recordings of Spanish with the following order of speakers:

(1) intermediate-high L2 Spanish speaker (female)

(2) advanced-low HS (male)

(3) intermediate-low HS (female)

(4) NS from Mexico (female)

(5) novice-high L2 Spanish speaker (male)

All recordings were in Spanish.

Figure 4.9 compares the accuracy of the HL, L2, and NS participant groups in indicating the correct language ID of each speaker.
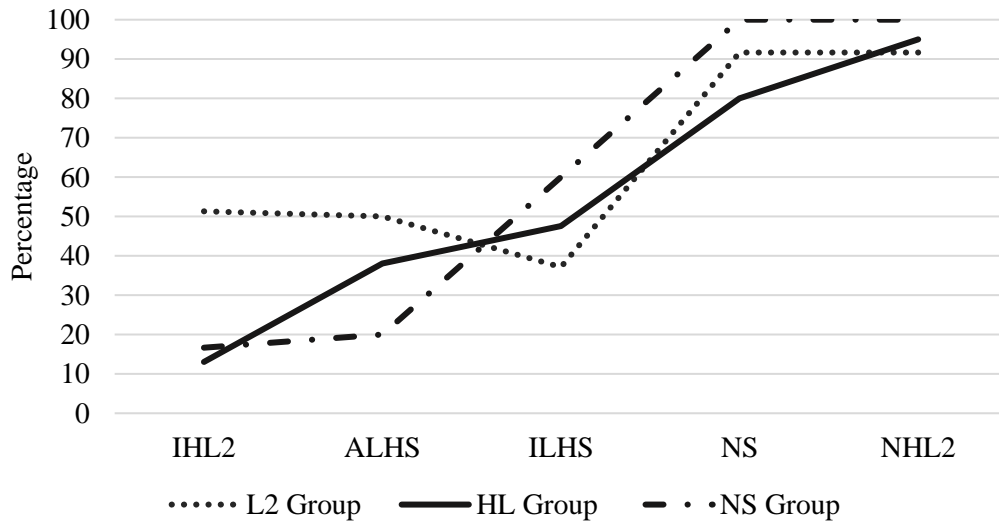
Figure 4.9. Accuracy in Language ID Identification

Key: IHL2 – Intermediate-high second language learner; ALHS – Advanced-low heritage speaker; ILHS – Intermediate-low heritage speaker; NS – native speaker; NHL2 – Novice-high second language learner.

As Figure 4.9 illustrates, all groups were more likely to correctly guess the language ID of last two recordings: the NS and the novice-high L2 speakers. In contrast, the L2 group was least accurate in correctly identifying the intermediate-low HS; with only 37.1% guessing correctly. The HL and NS participant groups were least accurate in correctly identifying the intermediate-high L2 speaker; with only 13% of HL learners and 16.7% of NS guessing correctly. Of note, all three participant groups performed best when listening to speakers of the highest and lowest proficiency: the NS and the novice-high L2 learner.

To better understand the correspondence between the language ID of the participants and their perceptions of each speaker, a Fisher's Exact Test for Count Data was used. This test helped ascertain whether the participant's language ID was independent from the language ID that they indicated for each speaker. If the language ID of each participant was independent from the language ID indicated for each speaker, then the probability that associations between a participant's language ID and the ID they indicated was due to chance would be quite high. Conversely, if the associated p-value was low, then the probability that the association between participants' language ID and the language ID that they assigned each speaker would have a greater chance of being meaningful. Table 4.2 includes the *p*-values found using the Fisher's Exact Test for Count Data on each recording. Due to the low *p*-values found in Recordings 1 and 3, there is a likely relationship between the participants' language ID and their choice of language ID for the intermediate-high L2 speaker and the intermediate-low HS.

Table 4.2. Association Between Participant ID and Language ID Identification

	Recording 1 (IHL2)	Recording 2 (ALHS)	Recording 3 (ILHS)	Recording 4 (NS)	Recording 5 (NHL2)
p-value	*0.01001	0.1232	*0.01459	0.4703	1.0

Note: *$p < .05$
Key: IHL2 – Intermediate-high second language learner; ALHS – Advanced-low heritage speaker; ILHS – Intermediate-low heritage speaker; NS – native speaker; NHL2 – Novice-high second language learner.

For Recording 1 (an intermediate-high L2 Spanish speaker), 78.3% of HL learners chose "Heritage Speaker" (HS) as the language ID, while 13% indicated that the speaker was L2, and 8.7% that the speaker was a native. The majority of the NS participants also selected HS as the speaker's language identity (n = 4, 66.7%). In contrast, 51.4% of L2 participants (n = 19) chose L2 as the speaker's language ID and 17 (45.9%) selected HS. Given these disparate selections, it is likely that the differing Spanish language background of each group contributed to their identification of each speaker.

For Recording 3 (an intermediate-low HS), a relatively small p-value of 0.01459 was also found. For this recording, the majority of HL learners (n = 10, 47.6%) found that the speaker was HS; 28.6 % chose L2 (n = 6), and 23.8% indicated NS (n = 5). Sixty percent of NS (n = 3) also selected HS as the language identity for the speaker. Additionally, the majority of L2 participants (57.1%) chose L2, 37.1% chose HS (n = 13), and 5.7% indicated NS (n = 2). HL and NS participants demonstrated similar trends in their answer choices for Recordings 1 and 3, where the language ID of the participant and language ID choice of the speaker were associated. In the case of Recording 1 (an intermediate-high L2 speaker), each group tended to incorrectly identify the speaker as

HS. For Recording 3, however, the majority of participants in each group correctly identified the intermediate-low HS speaker as HS.

In Recordings 2, 4, and 5 did not have a low *p*-value. Therefore, an association is unlikely between the language ID of the participant and their answer choice of language ID for the speaker. This lack of association between the two variables is likely due to similar answers by all groups in these three cases. In Recordings 4 (NS) and 5 (novice-high L2), for instance, the speakers' accents were more obvious than the accents of the heritage speakers and intermediate-high L2 speakers. In these recordings, all groups were probably familiar with the Spanish accent of an NS versus a novice L2 speaker, so the majority of each test group chose correctly. In other words, a variation in answer choice between groups was less likely to have to do with the language identity of the participants' themselves, but the difference between individuals' demographics within a group.

Participant Groups' Perception of Accent and Proficiency

Participants' language ID was not statistically associated with their answer choices for proficiency and native-like accent after the Fisher's Exact Test for Count Data was performed for all five recordings. Nevertheless, the average proficiency and native-like accent ratings differed between groups. Figure 4.10 demonstrates the average proficiency rating assigned by each group to each recording. For the purpose of data analysis, ratings of "very low, low, neither high nor low, high, and very high" were coded with values of one to five points, respectively, on a Likert scale.
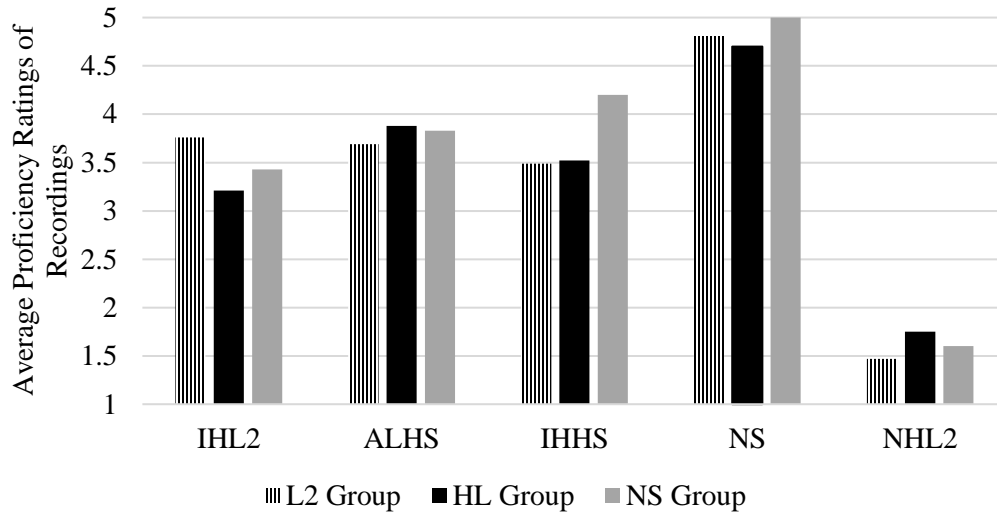
Figure 4.10. Proficiency Ratings

In general, NS were most likely to rate a higher proficiency for each speaker ($M =$ 3.61), followed by L2 participants ($M = 3.44$), and HL participants ($M = 3.41$). As demonstrated in Figure 4.10, the NS recording received the highest ratings of proficiency, on average, by each group: L2 group rating of 4.81, HL group rating at 4.7, and NS group rating at 5.0. Meanwhile, the novice-high L2 recording received the lowest ratings from each test group; L2 participants assigned an average proficiency rating of 1.47, HL participants assigned 1.75, and the NS group assigned 1.6. The intermediate-high L2, advanced-low HS, and intermediate-low HS recordings received similar ratings overall.

After considering the proficiency of each recorded speaker, participants described the native-like accent of each speaker based upon their own experience with an NS of Spanish. Figure 4.11 displays the varying responses of each test group with regard to the accent ratings for each speaker in the study.
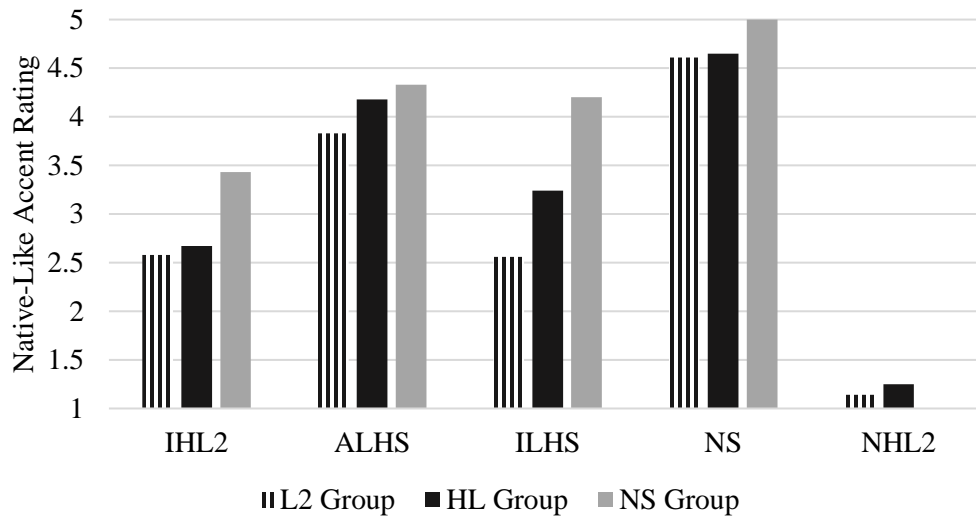
Figure 4.11. Native-Like Accent Ratings

As shown in Figure 4.11, other than the novice-high L2 speaker, the NS group demonstrated a tendency to designate higher ratings of native-like accent to each recording overall ($M = 3.59$). The HL group reported the second highest ratings for native-like accent with an average rating of 3.2, and the L2 group demonstrated the lowest ratings of native-like accent with an average rating of 2.94. Overall, unlike the proficiency ratings, the advanced-low HS received slightly higher ratings of native-like accent than the intermediate-high L2 and intermediate-low HS speaker recordings.

Figure 4.12 illustrates the confidence ratings reported by each participant group with regard to their correct identification of each recorded speaker. On average the L2 group indicated the lowest confidence ratings in their answer choices ($M = 3.79$), the NS group indicated the highest confidence ratings in their answer choices ($M = 4.56$), and the HL group rated their confidence between the two ($M = 4.11$). In general, all three groups demonstrated an upward trend in confidence, with exception to HL learners who felt less confident when assessing the novice-high L2 speaker in the final recording.
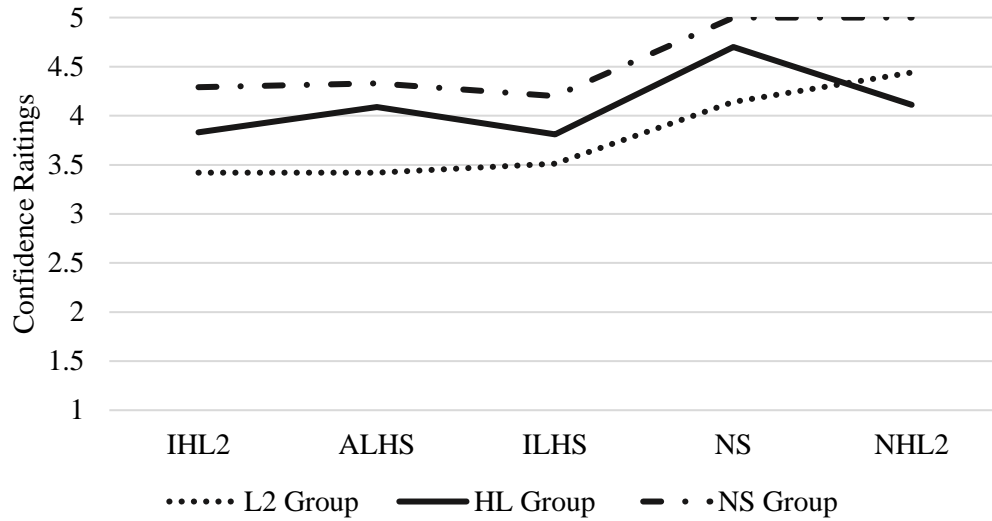
Figure 4.12. Confidence Ratings

Finally, each participant also indicated which factors led them to choose a particular proficiency level, accent rating, and language ID. Figure 4.13 shows which choices each group used on average across all recordings.
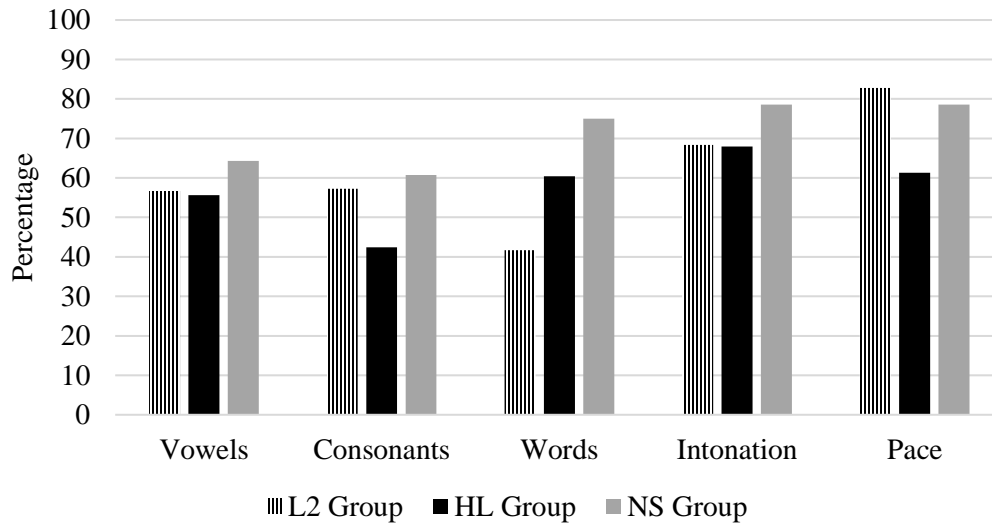
Figure 4.13. Factors of Perception

Participants could select the speakers' pronunciation of vowels, pronunciation of consonants, pronunciation of words, intonation, pace, or other and provide their own comments. In general, HL learners noticed pronunciation of vowels and consonants less often than L2 participants, instead noting pronunciation of words, intonation, or pace. NS speakers were more likely than both HL and L2 participants to utilize all five choices as explanation for their responses within the survey.

Each participant group commented most about the recording of the intermediate-high L2 speaker. Table 4.3 summarizes each groups' perception of the intermediate-high L2 speaker.

Table 4.3. Comments on Intermediate-High L2 Language Use

Speaker	HL group	L2 group	NS group
IHL2 Speaker	She knew what she was saying… her intonation was off and she mis-gendered some words	Falling into another accent	The way in which their verbs did not match.
	[The use of] 'el luz', 'la campo', 'otros niñas', 'ella encanta'	her speech is fluid but also a bit slow [,] you can tell she is thinking but not too hard	Sintaxis.
	The use of incorrect conjugations and pronouns	Consonants because when saying pero… I can tell she may not be able to roll her R's very well. Vowels because her vowels are well pronounced but in combination with other letters the vowels are almost too clear to be a native speaker. Her speech… is also not as high or low as a native's it is more stable, but because she is able to speak freely she [has] more vocal expression.	Syntax is off. Lack of conjugation of verbs.
	It sounded like she was translating in her head with all the pauses she took		
	Missing grammar		
	Word order		

When examining the intermediate-high L2 speaker (Recording 1), the L2 group was the only participant group to mention phonetics. One respondent noted that the speaker "may not be able to roll her R's very well," which was a focal phonetic variable in this study. Both the HL and NS groups seemed more concerned with other language factors that impeded communication effectiveness, such as morphological inconsistencies, mis-gendering of pronouns, or inconsistent syntax.

Table 4.4 displays comments about Recording 2 (the advanced-low HS). Once again, only the L2 group included comments about phonetics, stating that the speaker's use of "acabado" sounded like "acabao." The comment made by an HL participant had to do with fluidity of speech, and both comments by NS participants focused on word choice. It is possible that the L2 learned noticed the use of "acabao" because it didn't confirm to their understanding of pronunciation, or due to a lack of familiarity with colloquial Spanish. Furthermore, it's possible that the HL learners and NS didn't point out the missing /-d-/ because they are more familiar with varying accents.

Table 4.4. Comments on Advanced-Low HS Language Use

Speaker	HL group	L2 group	NS group
ALHS Speaker	It was hard to understand him because of the pauses, but what he said, he said well.	Acabado sounds like 'acabao'	The choice of words[.] He used the wrong verbs to describe falling. The word 'recreo'

Table 4.5. includes comments made by each group with regard to the language use of Recording 3 (intermediate-low HS).

Table 4.5. Comments on Intermediate-Low HS Language Use

Speaker	HL group	L2 group	NS group
ILHS Speaker	Her pronunciation sounds off, you could hear her English accent.	————	Incorrect conjugation of some words.

Here, an HL participant noted that pronunciation was a factor in their perception of the intermediate-low heritage speaker. The L2 group did not provide extra comments, and the NS group again noted the incorrect morphology used by the speaker.

With regard to Recording 4 (NS), only one NS participant commented on the speaker's language use, suggesting that the speaker's use of *hablantina* was influenced by their survey responses. Table 4.6 displays comments about the final recording of a novice-high L2 speaker.

Table 4.6. Comments on Novice-High L2 Language Use

Speaker	HL group	L2 group	NS group
NHL2 Speaker	"His pronunciation of hacer, he said it with a heavy H, and pero"	"'Um' and 'uh'" "The number of mistakes"	————

In the last recording (novice-high L2), both the HL and L2 groups commented that elements of pronunciation affected their decisions about proficiency, accent, and language ID. In particular, an HL participant noted that the pronunciation of *pero* influenced their decision. In the recording, the speaker aspirates the /p/ in the word *pero* and pronounces the orthographic <r> as an English [ɹ]. Both aspirated stops and the production of an English [ɹ] were key variables in the research questions for this study.

The L2 group also noticed a primary phonetic variable in the study: the use of "um" and "uh" by the speaker.

Associations Between Demographic Factors

The following section will discuss significant correlations (p-value < .05) which occurred when comparing the demographics of each participant and their survey responses. Age is not discussed in this section since no significant correlations occurred between age and other factors in the study. Table 4.7 demonstrates that the L1, AoA English, and AoA Spanish tended to yield medium to large correlations with all other factors of Spanish dominance included in the study. With regard to participants' self-rated proficiency, English proficiency did not yield as many correlations as Spanish proficiency ratings, as demonstrated in Tables 4.8 and 4.9.

Table 4.7. Correlations with L1, AoA English, and AoA Spanish

Demographics	Spanish as L1	AoA English	AoA Spanish
PoB	.56*	.56*	−.42*
Live SSC	.59*	.58*	−.54*
School SSC	.42*	.60*	−.35**
L1	—	.84*	−.82*
AoA Eng	.84*	—	−.70*
AoA Span	−.82*	−.70*	—
Span Home	.67*	.54*	−.63*
Span Out	.48*	.30**	−.31**
Exp Span	.44*	.39**	−.47*
Exp Eng	−.59*	−.48*	.42*
Mother	.73*	.62*	−.78*
Father	.78*	.66*	−.76*
Grandparent	.70	.59*	−.76*

Note: *p < .001, **p < .05
Key: PoB – Place of birth; Live SSC – Lived in a Spanish-speaking country; School SSC – Attended school in a Spanish-speaking country; L1 – Spanish as a first language; AoA – Age of Acquisition; Span Home – Spanish spoken in the home; Span Out – Spanish spoken outside of the home; Exp – Percentage of exposure to a language on a daily basis

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Table 4.8. Correlations with Self-Rated English Proficiency

Demographics	Speaking	Listening	Writing	Reading
PoB	−.29**	—	—	—
Live SSC	−.38**	—	—	—
School SSC	−.29**	—	—	—
L1	−.34**	—	—	—
AoA Eng	−.45*	−.27**	−.31**	—
Span Speak	−.29**	—	—	—
Span Write	−.26**	—	—	—
Span Home	−.29**	—	—	−.26**
Exp Span	−.36**	−.37**	−.28**	−.27**
Exp Eng	.40**	.33**	.31**	—

Note: *$p < .001$, **$p < .05$

Table 4.9. Correlations with Self-Rated Spanish Proficiency

Demographics	Speaking	Listening	Writing	Reading
PoB	.41**	.37**	.36**	.33**
Live SSC	.52*	.50*	.47*	.39**
School SSC	.38**	.29**	.29*	.50**
L1	.70*	.64*	.57*	.54*
AoA Eng	.61*	.52*	.56*	.48*
AoA Spanish	-.66*	-.59*	−.44*	−.49*
Study Spanish	—	—	—	−.26**
Span Courses	.26**	.29**	.26**	—
Adv Course	.40**	.44*	—	—
Span Home	.53*	.42*	.34**	—
Span Out	.45*	.53*	.41**	—
Exp Span	.35**	.35**	—	—
Exp Eng	−.44*	−.29**	−.37**	−.30**
Mother	.51*	.42*	.40**	.38**
Father	.51*	.45*	.41**	.36**
Grandfather	.47*	.46*	.38**	.35**

Note: *$p < .001$, **$p < .05$

Key: PoB – Place of birth; Live SSC – Lived in a Spanish-speaking country; School SSC – Attended school in a Spanish-speaking country; L1 – Spanish as a first language; AoA – Age of Acquisition; Study Spanish – age at which participant began studying Spanish; Adv Course – highest level of Spanish taken; Span Home – Spanish spoken in the home; Span Out – Spanish spoken outside of the home; Exp – Percentage of exposure to a language on a daily basis

Higher self-ratings for proficiency in English language abilities tended to negatively correlate with aspects of Spanish dominance. In contrast, higher self-ratings for Spanish proficiency tended to be positively correlated with aspects of Spanish dominance.

As previously discussed in this chapter, the amount of Spanish spoken within and outside the home, the percentage of exposure to Spanish and to English are other important factors in Spanish dominance. Table 4.10 outlines the correlations found between these four variables and others within the study. Speaking Spanish outside of the home had the highest correlation with other variables in the study. This trend was also found in Shea's (2019) study comparing factors of Spanish dominance with vowel production in HS.

Table 4.10. Spanish In/Outside the Home and Exposure to Spanish/English

Demographics	Span in Home	Span out Home	Exposure Span	Exposure Eng
PoB	.28**	—	—	—
Live SSC	.44*	.30**	.27**	−.47*
L1	.67*	.48*	.44*	−.59*
AoA Eng	.54*	.30**	.39**	−.48*
AoA Span	−.63*	−.35**	−.47*	.42*
Span Courses	—	.29**	—	—
Adv Course	—	.38**	—	—
Span Home	—	.33**	.45*	−.42*
Span Out	.33**	—	.43*	−.31**
Exp Span	.45*	.43*	—	−.27**
Exp Eng	−.42*	−.31**	−.27**	—
Mother	.69*	.38**	.55*	−.41**
Father	.69*	.51*	.57*	−.46*
Grandfather	.73*	.39**	.55*	−.40**

Note: *$p < .001$, **$p < .05$
Key: PoB – Place of birth; Live SSC – Lived in a Spanish-speaking country; L1 – Spanish as a first language; AoA – Age of Acquisition; Study Spanish – age at which participant began studying Spanish; Adv Course – highest level of Spanish taken; Span Home – Spanish spoken in the home; Span Out – Spanish spoken outside of the home; Exp – Percentage of exposure to a language on a daily basis

Associations between Demographics and Survey Responses

Significant correlations also occurred between survey and demographic variables.

Table 4.11 denotes the relationship between correct language ID and survey responses.

Table 4.11. Correct Language ID and Other Survey Variables

Survey Responses	IHL2 ID	ALHS ID	ILHS ID	NS ID	NHL2 ID
IHL2 Prof	—	—	–.30**	—	—
IHL2 Accent	–.42*	—	—	—	—
IHL2 ID	—	.29**	—	—	—
IHL2 Cons	.28**	—	—	—	—
IHL2 Inton	—	—	—	—	.30**
IHL2 Pace	—	—	—	.28**	—
ALHS ID	.29**	—	—	—	—
ALHS Pace	.27**	—	—	.37**	.38**
ILHS Prof	—	—	.27**	—	—
ILHS Accent	—	—	.37**	—	—
ILHS ID	—	—	—	—	—
ILHS Cons	—	.28**	—	—	—
ILHS Vowel	.26**	—	—	—	—
ILHS Inton	—	—	—	—	.27**
NS Prof	—	—	—	.80*	.68*
NS ID	—	—	—	—	.63*
NS Accent	—	—	—	.62*	.52*
NS Vowel	—	—	—	.34**	.28**
NS Cons	—	—	—	.35**	.36**
NS Inton	—	—	—	.28**	.33**
NS Pace	—	—	—	.40**	.43*
NHL2 Prof	—	—	—	–.48*	–.53*
NHL2 Accent	—	—	—	–.57*	–.59*
NHL2 ID	—	—	—	.63*	—
NHL2 Vowel	—	—	—	.57*	.55*
NHL2 Cons	—	—	—	.29**	—
NHL2 Word	—	–.35**	—	—	—
NHL2 Inton	—	—	—	.27**	.40**
NHL2 Pace	—	—	—	—	.31**

Note: $*p < .001$, $**p < .05$
Key: IHL2 – Intermediate-high L2 learner; ALHS – Advanced-low heritage speaker; ILHS – Intermediate-low heritage speaker; NHL2 – Novice-high L2 learner; Prof – Proficiency rating; ID – Language identity; Cons – Pronunciation of consonants; Vowel – Pronunciation of vowels; Word – Pronunciation of words; Inton – Speaker's intonation; Pace – Speaker's pace or speed of speech.

Table 4.11 illustrates the correlations between correct language identification of each recorded speaker and other survey responses. Participants who correctly identified the advanced-low HS also tended to correctly identify the intermediate-high L2. Similarly, those who correctly identified the NS also tended to correctly identify the novice-high L2 speaker. Furthermore, survey responses for the NS and novice-high L2 recordings yielded many correlations with one another.

In order to understand how language background affects correct language identification of recorded speakers, I tested the relationship between demographics and language ID. Table 4.12 displays the results.

Table 4.12. Correct Language ID Identification and Demographics

Demographics	IHL2 ID	ALHS ID	ILHS ID	NS ID	NHL2 ID
PoB	—	—	.28	—	—
L1	−.27	—	.28	—	—
AoA English	−.32	—	—	—	—
AoA Spanish	.30	—	—	—	—
Span Home	−.33	—	—	—	—
Expo Span	−.31	—	—	—	—
Mother	−.30	—	—	—	—
Father	−.40	−.29	—	—	—
Grandfather	−.37	—	—	—	—

Note: $p < .05$
Key: IHL2 – Intermediate-high L2 learner; ALHS – Advanced-low heritage speaker; ILHS – Intermediate-low heritage speaker; NHL2 – Novice-high L2 learner; PoB – Place of birth; L1 – Spanish as a first language; AoA – Age of Acquisition; Span Home – Spanish spoken in the home; Exp – Percentage of exposure to a language on a daily basis

Correct identification of the intermediate-low L2 ID significantly correlated with several variables to do with Spanish dominance. Notably, participants whose L1 was Spanish tended to incorrectly identify the intermediate-high L2 recording ($r = -.27$, $p < .05$). Spanish dominance negatively correlated with correct identification of the L2 ID.

Conversely, being born in an SSC and having Spanish as an L1 positively correlated with correct identification of the intermediate-low HS.

With regard to native-like accent ratings in the study, Table 4.13 displays significant correlations found between demographic factors and survey responses.

Table 4.13. Perception of Native-Like Accent and Relationship with Demographics

Demographics	IHL2 Accent	ALHS Accent	ILHS Accent	NS Accent	NHL2 Accent
PoB	—	.28**	.29**	—	—
Live SSC	—	.31**	.35**	—	—
L1	—	—	.46*	—	—
AoA Eng	—	—	.50*	—	—
AoA Span	—	—	−.35**	—	—
Adv Course	—	.35**	—	—	—
Span Outside	—	.35**	—	—	—
Expo Eng	—	—	−.38**	—	—
Mother	—	.26**	.37**	—	—
Father	—	.31**	.28**	—	—
Grandfather	—	.30**	.28**	—	—

Note: *$p < .001$, **$p < .05$
Key: IHL2 – Intermediate-high L2 learner; ALHS – Advanced-low heritage speaker; ILHS – Intermediate-low heritage speaker; NHL2 – Novice-high L2 learner; PoB – Place of birth; Live SSC – Lived in a Spanish-speaking country; L1 – Spanish as a first language; AoA – Age of Acquisition; Adv Course – highest level of Spanish taken; Span Out – Spanish spoken outside of the home; Exp – Percentage of exposure to a language on a daily basis

Table 4.13 specifically highlights how correlations between demographics and native-like accent only occurred for responses to both heritage speaker recordings in the study. In each case, greater Spanish dominance positively correlated with higher ratings of native-like accent.

After discussing the proficiency, native-like accent, and language ID of each speaker, participants specified which language factors influenced their decisions. Again, participants could select pronunciation of vowels, pronunciation of consonants,

pronunciation of words, intonation, pace or other as factors influencing their choices. Although correlated with other survey response factors, pronunciation of vowels did not correlate with many demographic results. Instead, noticing vowels when perceiving language proficiency and language ID of the advanced-low HS negatively correlated with knowledge of a language other than Spanish or English ($r = -.27$, $p < .05$). Additionally, noticing vowels when perceiving the native speaker negatively correlated with the age of onset for studying Spanish ($r = -.34$, $p < .01$). In contrast, noticing the pronunciation of consonants was significantly correlated with variables of Spanish dominance, as displayed in Table 4.14.

Table 4.14. Demographics and Noticing Pronunciation of Consonants

Demographics	IHL2	ALHS	ILHS	NS	NHL2
L1	—	—	—	—	–.29**
AoA Spanish	—	—	—	—	.27**
Span Out	.27**	.41**	—	—	—
Mother	—	—	—	—	–.31*

Note: *$p < .001$, **$p < .05$
IHL2 – Intermediate-high L2 learner; ALHS – Advanced-low heritage speaker; ILHS – Intermediate-low heritage speaker; NHL2 – Novice-high L2 learner; L1 – Spanish as a first language; AoA – Age of Acquisition; Span Out – Spanish spoken outside of the home

Attention to consonants positively correlated with the demographic factor of speaking Spanish outside the home, suggesting that the NS and HL groups who spoke more Spanish outside of the home also noticed pronunciation of consonants as a factor when perceiving language proficiency, accent, and ID of an L2 and HS speaker. On the other hand, those who spoke Spanish as their L1 and had an earlier AoA Spanish did not tend to notice pronunciation of consonants when perceiving the novice-high L2 speaker.

Finally, demographics also correlated with participants' indicating that noticing pronunciation of a word affected their perception of the language proficiency and ID of each speaker. Table 4.15 summarizes these results.

Table 4.15. Demographics and Noticing Pronunciation of Words

Demographics	IHL2	ALHS	ILHS	NS	NHL2
PoB	—	.34**	—	.29**	—
Live SSC	—	.42*	—	.30**	—
L1	—	.42*	—	.28**	—
AoA Eng	—	.37**	—	.28**	—
AoA Span	—	−.42*	—	−.31**	—
Span Home	.26**	.44*	—	—	—
Span Out	—	.36**	—	—	.39**
Exp Span	.32**	.41**	—	—	—
Mother	.30**	.42*	—	.29**	—
Father	.30**	.40**	—	—	—
Grandparents	.33**	.39**	—	—	—

Note: *$p < .001$, **$p < .05$
IHL2 – Intermediate-high L2 learner; ALHS – Advanced-low heritage speaker; ILHS – Intermediate-low heritage speaker; NHL2 – Novice-high L2 learner; PoB – Place of birth; Live SSC – Lived in a Spanish-speaking country; L1 – Spanish as a first language; AoA – Age of Acquisition; Span Home – Spanish spoken in the home; Span Out – Spanish spoken outside of the home; Exp – Percentage of exposure to a language on a daily basis

Of note, pronunciation of words as a factor in perceiving the language ID, proficiency, and native-like accent of the advanced-low HS yielded many correlations with higher Spanish dominance. In contrast, noticing pronunciation of words when perceiving the intermediate-low heritage speaker's language proficiency, accent, and ID did not yield significant correlations with Spanish dominance.

To conclude the analysis in this chapter, recall that the first research question for this study asked whether HL learners notice pronunciation when identifying proficiency, accent, and language identity. Preliminary results suggest that HL learners are less likely than L2 learners to focus on phonetics when they listen to other speakers. In fact, HL

learners may tend to focus on morphological inconsistencies and agreement errors (Tables 4.3 to 4.6).

The second research question asked, "Do HL learners notice the use of "em" or "um," aspirated stops, inappropriate use of liquids in Spanish, or use of an intervocalic [z]?" Results reveal that both L2 and HL learners noticed some of these phonetic characteristics. The last research question asked, "How do HL and L2 learners differ in their perception of different types of Spanish speakers?" The data demonstrate that the varying language background of HL and L2 learners contributed to their perception of each speaker's proficiency, accent, and language ID. Chapter Five further examines the findings from this chapter.

CHAPTER FIVE

Discussion

Organization

In this chapter, I begin with a discussion of the research questions and hypotheses. Next, I discuss whether the results of this study supported each research question.

Research Question One

The primary goal of this study was to discover whether HL learners focus on pronunciation when assessing language abilities of another Spanish speaker. The first research question asked the following:

Do HL learners notice pronunciation when assessing proficiency, accent, and language identity?

For Question One, I hypothesized that HL learners would be more likely to notice pronunciation than the L2 learners in the study. This hypothesis was supported by Agostinelli (2012) who performed a review of Callahan (2004) and other L2 perception studies by NS and HL learners of Spanish, concluding that "pronunciation errors in L2 Spanish are more significant to [native speaker] listeners than other types of errors." Nevertheless, in the present study, HL learners were less likely than both L2 and NS participants to focus on pronunciation in their perception of each speaker's language proficiency, accent, and ID. Given that focus on pronunciation of vowels, consonants, and words negatively correlated with Spanish dominance, it is possible that lower-level HL learners (or HL learners with lower Spanish dominance) may have patterned similarly

to L2 learners in this study; however, the study did not measure the actual proficiency level of participants (only self-assessed proficiency).

In general, HL participants mentioned pronunciation only when it produced problems that interfered with effective communication, such as in the case of the novice-high L2 learner who demonstrated many phonetic problems exhibited by beginning monolingual English-speakers in the United States (use of the English /ɹ/, relaxed vowels, aspirated stops /p t k/, diphthongization of vowels). The pronunciation issues that HL participants noticed focused on phonemic issues (related to contrastive differences in phonemes). Additionally, HL learners tended to focus more on morphological errors and agreement errors (especially between definite articles and their nouns). NS in the study behaved similarly in their perceptions. In contrast, L2 learners more often pointed out phonetic errors and indicated intonation and pace more often as factors that affected their perception of each speaker. This difference between HL and L2 learners suggests that HL learners exhibit linguistic flexibility due to their familiarity with both English and Spanish phonetic systems.

Research Question Two

Related to the first research question, I also asked whether HL learners noticed a few focal phonetic discrepancies within the recordings:

Do HL learners notice the use of "em" or "um," aspirated stops, inappropriate use of liquids in Spanish, or use of an intervocalic [z]?

I hypothesized that HL learners would notice when a speaker used "um" versus "em," aspirated stops, inappropriate liquids, or intervocalic [z]. In the case of the novice-high L2 learner, HL learners focused on pronunciation of vowels, consonants, and

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specific words and one HL participant specified that the novice-high L2 speaker

pronounced the <h> in *hacer* and that their overall pronunciation of *pero* emphasized that

they were lower in proficiency level. The word *pero* includes two key phonetic variables

in this study: the aspirated stop /p/ and the English liquid /ɹ/. This comment suggests that

the HL learners in this study may have noticed a few of the focal phonetic factors of the

study, although they focused more on other elements of language use. Furthermore, this

comment also suggests that HL learners are more likely to focus on pronunciation when

an egregious phonemic error occurs. In other words, these participants noticed sounds

that were not a part of the phonological inventory for Spanish sounds (/h/, /p^h/, /ɹ/).

Of note, besides more frequently noticing pronunciation of vowels, consonants,

and words than HL learners, L2 learners also emphasized two key phonetic factors in the

study. An L2 learner commented on the lack of a trilled [r] for the intermediate-high L2

recording and another noticed the excessive use of "um" and "uh" when assessing the

proficiency-level for the novice-high L2 recording. Both L2 and HL learners noticed

some key phonetic elements of the study.

Research Question Three

Finally, I sought to understand how HL and L2 learners' differing language

backgrounds might contribute to the way they focused on pronunciation when

determining the language proficiency, accent, and ID of other speakers.

The final study question asked:

How do HL and L2 learners differ in their perception of different types of
Spanish speakers?

For Question Three, I hypothesized that HL participants would be more likely to correctly report the language identity (ID) for each recorded speaker than L2 learners and, furthermore, that the proficiency-level and native-like accent that they marked would correspond with the language ID that they had identified. Recall that for the two recordings of an intermediate-high L2 speaker and an intermediate-low HS, participants' language ID was associated with the language ID that they selected for each speaker. This finding suggests that the differing language background of L2 and HL learners (their differing experiences with both Spanish and English) does affect L2 and HL learners' perceptions. It is interesting to note that lower Spanish dominance correlated positively with correct language ID of an L2 recording, whereas higher Spanish dominance correlated positively with correct language ID of a HL speaker. One explanation is that L2 participants were more familiar with the L2 speaker's accent in the recording, whereas HL learners and NS were more familiar with a heritage speaker's accent. In other words, participants in the study more easily identified their own variety of Spanish in the recordings.

HL and L2 learners also diverged with regard to the proficiency and native-like accent ratings they assigned. Spanish dominance (such as Spanish as a L1 and speaking Spanish outside of the home) positively correlated with higher ratings of native-like accent to HS recordings. In general, HL participants tended to give higher ratings for native-like accent (regardless of language ID) than their L2 counterparts. This finding suggests that HL learners may be more accepting with regard to other Spanish speakers' pronunciation than L2 learners. It's also important to note that some differences between HL and L2 perceptions could be due to cultural reasons.

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Although HL and L2 participants differed greatly in their Spanish dominance, each group reported similar educational levels in Spanish, taking roughly the same number of university-level Spanish courses (66% took 1-4 courses and 34% took 5+ courses). The majority of participants in each group began taking Spanish in middle-school and had taken at most one Spanish linguistics course. Finally, the highest level of Spanish (sophomore, junior, senior, etc.) was about the same in each group. These findings suggest that the language ID of each participant (and the differing language backgrounds) played a stronger role in perception than educational experience alone. It is also important to note that the HL learners patterned more similarly to the NS group than to the L2 learners when identifying specific phonetic factors. As previously mentioned, it is still possible that a subgroup of novice HL learners may have patterned similarly to the L2 learners in the study; however, this study did not include actual assessment of Spanish proficiency, only self-identification by participants as L2, HL, or NS learners.

Summary

In sum, this chapter concludes that while HL learners may notice pronunciation when perceiving language proficiency, accent, or ID, they do not focus on pronunciation. Instead, they focus on morphological and agreement errors. Nevertheless, this study suggests that HL learners will emphasize egregious phonemic errors such as pronouncing the <h> in *hacer*. Finally, data from this thesis support differing perceptions by HL and L2 learners of spoken Spanish. Data suggest that each group notices different linguistic elements of language use when assessing Spanish proficiency, accent, and language ID of recorded speakers. Chapter Six further explains this study's implications and limitations and calls for future studies in HL language perception.

CHAPTER SIX

Conclusion and Implications

In this Chapter, I will discuss the limitations, applications, and implications of this study. I will then emphasize a need for future studies in HL perception and summarize the findings from this thesis.

Limitations

Using pre-recorded Spanish interviews posed a limitation for this study in that participants could also focus on errors in morphology, gender agreement, lexical choices, and other factors. Nevertheless, the purpose of the study was to use natural speech to determine whether HL learners more readily notice pronunciation patterns over other linguistic variables. The online-survey format of this study also posed limitations. Since no investigator was present while participants completed the survey, it is possible that participants did not fully listen to each recording in an optimal atmosphere (i.e. free of noise and distraction) and did not truly consider each answer choice given. Similarly, it is also possible that listeners were not prepared to listen to recordings (i.e. if they took the survey in a public environment) and that they may not have been able to hear the recordings well.

The order of recordings could have aided in correct language ID identification or participants' indication of proficiency, native-like accent, and confidence in their choices. The recordings proceeded in the following order: (1) intermediate-high L2 learner, (2) advanced-low HS, (3) intermediate-low HS, (4) NS, and (5) novice-high L2 learner. The

speakers in the first three recordings had a more ambiguous language ID and therefore received a wider range of opinions from the three participant groups. In contrast, the last two recordings received the lowest range of opinions and had the most correct language ID scores across all groups. It is possible that results would have varied if the order of the recordings had been randomized for each participant, especially due to participants' increasing familiarity with the task over the course of the survey.

The language backgrounds of the HL and NS recorded speakers as well as the HL and NS participants could have posed confounding variables. All three HS and NS recordings involved speakers of Mexican heritage. Many HL learner and NS participants also indicated that they were of Mexican heritage. It is possible that including recordings of HS or NS speakers from other varieties of the Spanish-speaking world might yield different results from the HL and NS participants of Mexican heritage who would be encountering an accent different from their own family heritage.

Applications

This study has some pedagogical applications. First, intermediate and advanced L2 learners may place too much of their focus on *form* instead of *function* when perceiving Spanish spoken by others. It is possible that L2 learners may need more explicit instruction to help them focus on function. For example, instructors could include scaffolded activities in which students are encouraged to focus first on form (i.e. pronunciation, verb forms, syntax) and move toward function (i.e. the overall meaning of a conversation, story, or song). In this way, L2 learners may begin to listen earlier on for overall meaning.

Furthermore, throughout the study, when HL and NS participants focused on phonetic inconsistencies, they seemed most concerned with egregious phonemic errors, such as pronouncing the <h> in *hacer* as [h], or pronouncing the written < r > in *pero* as an English [ɹ]. This finding suggests that instructors should consistently emphasize phonemic pronunciation discrepancies between English and Spanish from the beginning of L2 Spanish education, making them aware of sounds that do not ever occur in Spanish. For instance, instructors could incorporate activities in which L2 learners must listen to themselves speak in Spanish in order to actually notice their error production. Through such activities, instructors could discuss and emphasize important phonemic differences between English and Spanish pronunciation.

Alternatively, morphological errors, agreement errors, and word choice affected HL learners' perception of each Spanish speaker. This finding suggests that HL learners are more focused on language factors that impede effective communication. In an effort to orient HL programs towards subjects that are important to HL learners, discussion of grammar, morphology, syntax, etc. is likely more appropriate than focusing on varied pronunciation by HL learners.

Implications

As the literature on perception is scarce, this study provides some of the first empirical evidence within the perception literature. The present study views phonetic perception as a factor in identifying the language proficiency, accent, and ID of other speakers. This definition of perception is important as it emphasizes the linguistic factors an HL learner initially notices when identifying language proficiency and language ID of other Spanish speakers. Other literature tends to discuss perception as attitudes of other

speaker groups within the classroom (i.e. HL speakers' perception of L2 speakers in the Spanish classroom) or as an ability by HL learners to notice a contrast between Spanish and English linguistic elements (Agostinelli, 2012; Callahan, 2004; Campanaro, 2013; Chappell, 2018; Chappell, 2019a; Kim, 2015; Oh et al., 2003). Previous studies in perception as an ability found that HL learners are more accepting of phonetic variation than NS and L2 speakers in both Spanish and English (Campanaro, 2013; Chappell, 2018). Conversely, these studies also suggest that HL learners may have difficulty distinguishing between allophones in both languages. These findings, along with HL learners' tendency not to focus on pronunciation in the present study, suggest that HL learners could benefit from explicit phonetic instruction to distinguish between allophones.

This study concludes that L2 participants tend to give lower ratings of language proficiency and native-like accent than HL participants. It is possible that L2 learners are learning to focus on *correctness* of phonetic form in place of overall communicative abilities due to having learned Spanish in the classroom environment. In contrast, HL learners appear less inclined to listen for *incorrectness* when assessing the language proficiency and ID of other speakers. It is possible that this discrepancy is due to their initial experience with Spanish in a natural environment. Importantly, HL learners also tend to have an intermediate pattern between the NS and L2 learner groups in the study. For instance, their demographic responses placed between the two groups, and they rated proficiency and native-like accent of each recording as higher on average than L2 learners, but lower than NS. HL learners also indicated higher confidence in their assessments of each recording than their L2 learner counterparts, but lower confidence on

average than NS in the study. These findings confirm the intermediary nature of HL learners on the language-learning spectrum; HL learners showed similarities and differences in perception with both NS and L2 study participants.

Future Research

As indicated in this chapter, many associations exist between Spanish dominance and perception of Spanish language proficiency, accent, and ID. This study, however, did not focus on measures of Spanish proficiency (only self-assessment). It would be interesting to understand how scores on proficiency tests might associate with the perception by different survey respondents in order to further understand whether it is truly the L2, HL, or NS background that contributes to perception of Spanish or whether proficiency may play a stronger role. Nevertheless, self-proficiency ratings in both Spanish and English produced many associations with factors of Spanish dominance and with survey responses.

Data from this research suggest that L2 learners are more critical of Spanish-speaker pronunciation than HL and NS participants. This finding implies that L2 learners perceive language differently than both HL learners and NS, who appear more forgiving of varying Spanish proficiency and accents in this study. Future studies should examine whether this difference may have pedagogical implications for learners in the L2 classroom. Perhaps L2 learners are more critical due to having learned Spanish in contexts where they had to perform well in order to pass a course, instead of growing up in an environment where they learned Spanish from a community for the purpose of communication. Future studies could also focus on how assumptions about language ID might lead to lower or higher levels of perceived proficiency. In other words, do HL

learners tend to perceive Spanish proficiency and accent differently when they believe they are listening to an HS versus an L2 learner? To study perception of phonological differences in spoken Spanish, it would be useful to present controlled sentences that differentiate based upon specific sounds in Spanish. In general, future studies should place more emphasis on HL learner perception of spoken Spanish because knowledge of HL perception may help us better understand HL background and language assessment.

Conclusion

Although HL learners may focus on a few egregious phonemic errors, this thesis suggests that they do not notice pronunciation as often as L2 learners when perceiving spoken Spanish. Furthermore, the differing language experience of HL and L2 learners relates to divergent perceptions of spoken Spanish, including noticing different linguistic elements when assessing Spanish. This study also found that HL learners patterned more similarly to NS participants when perceiving Spanish proficiency, accent, and language ID. This fact is an important discovery demonstrating HL learner capabilities in Spanish. In conclusion, studying how HL learners perceive proficiency, accent, and language ID of other speakers could help researchers to better understand HL acquisition and create more effective pedagogy for HL programs. The present research fills this gap in current HL perception research due to its distinctive approach to perception and provides a source for future investigations with the goal of better understanding HL assessment of Spanish language use by other speakers.

APPENDIX

APPENDIX

Survey Questions

Demographics Section

1. Which of the following best describes your age group?
      a. 18-24
      b. 25-30
      c. 31-40
      d. 41+

2. Were you born in the United States? If not, specify where you were born.
      a. Yes
      b. No:

3. Have you ever lived in a country in which Spanish is the official language? If so, specify where you lived, how old you were and for how many years did you live there.
      a. I have never lived in another country.
      b. I lived in_____, for ___ years from the age of _____ to _____.
      c. Other:

4. If you have lived in a country in which Spanish is the official language, did you attend school there? If so, please provide the amount of years you attended school there.
      a. I have never lived outside of the United States.
      b. I have lived in a Spanish-speaking country and attended school there.
      c. I have not lived in a Spanish-speaking country and **did not** attend school there.

5. What language(s) do you speak? Select all that apply.
      a. English
      b. Spanish
      c. Other:

6. Which language did you begin to speak first?
      a. English
      b. Spanish
      c. I learned both simultaneously
      d. Other:

7. How old were you when you began speaking English?

8. How old were you when you began speaking Spanish?

9. How old were you when you began studying Spanish at school/college?

10. How many Spanish courses have you taken at the university level.
       a. 1-2 courses
       b. 3-4 courses
       c. 5-8 courses
       d. 9-12 courses
       e. 13+ courses

11. What is the most advanced course you have taken in Spanish? Please name the course and provide its level (freshman, sophomore, junior, senior, etc.).

12. How many courses have you taken in Spanish Linguistics? Please indicate "zero" if you have not taken a Spanish Linguistics course.

13. Evaluate your abilities in **Spanish**: indicate how well you are able to
a. Speak: Not at all capable -- somewhat capable -- average -- well ---- very well/fluently
b. Listen: Not at all capable -- somewhat capable -- average -- well ---- very well/fluently
c. Write: Not at all capable -- somewhat capable -- average -- well ---- very well/fluently
d. Read: Not at all capable -- somewhat capable -- average -- well ---- very well/fluently

14. Evaluate your abilities in **English**: indicate how well you are able to
a. Speak: Not at all capable -- somewhat capable -- average -- well ---- very well/fluently
b. Listen: Not at all capable -- somewhat capable -- average -- well ---- very well/fluently
c. Write: Not at all capable -- somewhat capable -- average -- well ---- very well/fluently
d. Read: Not at all capable -- somewhat capable -- average -- well ---- very well/fluently

15. What languages do you speak at home?
       a. Only English
       b. Only Spanish
       c. Either English or Spanish with specific family members and the other language
       with different family members
       d. Both are spoken with all/almost all family members
       e. Other:

16. What languages do you speak outside of the house (not including in an academic setting)?
       a. Only English
       b. Only Spanish
       c. Either English or Spanish with specific friends/coworkers/etc. and the other
       language with different friends/coworkers/etc.
       d. Both are spoken with all or almost all friends/coworkers/etc.
       e. Other:

17. Please list what percentage of the time you are *currently* and *on average* exposed to Spanish:

        0% -- 100%

18. Please list what percentage of the time you are *currently* and *on average* exposed to English:

        0% -- 100%

19. What language(s) does/do (select all that apply)
       19a. your mother speak?
              a. English
              b. Spanish
              c. other:
       19b. your father speak?
              a. English
              b. Spanish
              c. other:
       19c. your grandparents speak?
              a. All of my grandparents speak only English.
              b. Spanish and English
              c. English and other:

Survey Questions

1.   Please select what you think the level of *proficiency*
           (how fluent they are) of the speaker is:

Very low, Low, Neither high nor low, high, very high

2.   From your experience with a **native speaker of Spanish,** what type of accent
           do you think this speaker has?

Completely non-native accent; Mostly non-native; Neither non-native nor native;
Mostly native accent; completely native accent

3.   What do you think that the identity of the speaker is?
         a. A native Spanish speaker from or living in a Spanish-speaking country
         b. A Spanish heritage speaker, who lives in the United States and is not from
              a Spanish-speaking country but, to some degree, speaks both Spanish and
              English due to speaking Spanish at home or with peers

    c. A traditional second language learner, or a student with no prior background in Spanish before taking courses in school

4.   How confident are you that the speaker has the identity that you mentioned above?

Extremely not confident; somewhat not confident; neither confident or not confident; somewhat confident; Extremely confident

5.   What influenced your above opinions about the speaker's pronunciation (select all that apply):
    a. Their pronunciation of vowels
    b. Their pronunciation of consonants
    c. Their pronunciation of a specific word
    d. The intonation (rhythm, or rise and fall) of their speech
    e. The pace/speed at which they spoke
    f. Other/further explanation:

Final Question

1. A traditional second language learner of Spanish is a student whose first language is not Spanish and who usually begins to learn Spanish in a class either in middle school, high school, or college (Montrul 2011).

A Spanish heritage speaker is defined as someone "who is raised in a home where [Spanish] is spoken, who speaks or merely understands [Spanish] and who is to some degree bilingual in English and [Spanish]" (Valdés 2000).

A native speaker of Spanish is someone whose first language is Spanish, and who has lived in a Spanish-speaking country for either a significant portion or the entirety of their lives so as to have a native-like command of Spanish (Montrul 2011).

After reading the definitions above, would you consider yourself to be
    a. A traditional second language learner of Spanish
    b. A Spanish heritage speaker
    c. A native Speaker of Spanish
    d. I am unsure
    e. None of the above

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