

The Impact of Regional Phonetic Variation
on the Second Language Acquisition of Spanish

by

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ABSTRACT

This dissertation delves into second language acquisition, sociophonetic variation, and speech perception, investigating how prior linguistic experiences and exposure to regional variations in a second language influence the decoding of dialectal linguistic cues. It aims to enhance the understanding of words pronounced with different phones and their impact on spoken language comprehension. The study involves 108 English-speaking Spanish learners, categorized based on their exposure to Spanish regions with /s/ weakening and /s/ retention. This categorization reflects their level of language exposure and perception of regional variation, considering that around 50% of Spanish varieties exhibit /s/ weakening. The participants' exposure to /s/ weakening varies based on their backgrounds, previous exposure, study abroad experiences, and teacher origins. The study employs various experimental tasks, including a language proficiency test, a listening comprehension activity, an AX discrimination task, and a language background questionnaire. Data analysis involves logistic mixed-effects models and correlation analyses. Results show that participants exposed to conditions where /s/ changed from reduced to retained in isolated word pairs exhibited lower identification accuracy compared to consistent word pronunciations. An important finding is a significant interaction among participants with experience abroad in an /s/ weakening environment when contrasting /s/ weakening with full retention of the sibilant sound. The study also explores how learners' ability to categorize regional phonetic variants affects their listening comprehension. It reveals that accuracy in the AX discrimination task predicts their performance in listening comprehension, demonstrating that strong performance in the former translates to better comprehension. Additionally, the research examines the

influence of participants' language attitudes on their task performance. In summary, this dissertation underscores the significant impact of exposure to regional language variations on individuals' identification accuracy and language processing skills, emphasizing the need to recognize linguistic diversity in language education and research.

DEDICATION

To all international students pursuing their dreams

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CONVENTIONS

L1: native/ first language

L2: second language

SLA: second language acquisition

LBQ: language background questionnaire

IRB: Institutional Review Board

N: number

M: mean

SD: standard deviation

Std. Error: Standard Error

Z-value: Standard Score

Mex: Mexico / Mexican dialect

Arg: Argentina / Argentine dialect

PR: Puerto Rico / Puerto Rican dialect

CHAPTER 1

INTRODUCTION

1.1 The Current Study

The primary objective of this dissertation is to investigate how second language (L2) learners decode linguistic signals that vary dialectally, based on their prior linguistic experiences and exposure to regional variation. Prior research on the recognition and comprehension of regional varieties by L2 learners has demonstrated a positive correlation between accurate decoding, awareness of dialectal features, and previous exposure and experience with the specific variety (Schmidt, 2009; Schoonmaker-Gates, 2018). Hence, acquiring sociolinguistic competence is a crucial aspect of L2 acquisition, where learners must go beyond adhering to non-variable or normative syntax and vocabulary, adapting their language to different social contexts. Sociolinguistic competence finds its roots in communicative competence (Canale & Swain, 1980), which equips language learners with the necessary tools to engage appropriately in various situations (Geeslin et al. 2021). Then, sociolinguistic variation, representing diverse language use patterns among speakers and settings, plays a vital role in sociolinguistic competence and serves as a measure of language acquisition progress. Research focused on variation has been at the forefront of examining how sociolinguistic competence develops among individuals and in various learning environments. Studies on the perception of sociolinguistic competence of L2 learners help to reveal the extent to which learners comprehend the patterns of variation within a specific speech community and how they make conscious or subconscious decisions to align themselves with particular social groups through their linguistic choices (Bayley & Escalante, 2022).

However, despite the copious amounts of research on L2 acquisition over the years, there is limited understanding of what happens when students are exposed to longer utterances that emphasize global proficiency rather than isolated words or short explanations of language variation (Colantoni et al., 2021). Moreover, little is known about the type of input students receive inside the classroom as opposed to solely study abroad contexts. The main goal of this dissertation is to gain a better understanding of the dialects to which students at the intermediate level of Spanish have been exposed, both inside and outside the classroom, as well as their study abroad experiences and their preferences regarding the type of exposure they encounter based on their chosen immersion location. As a means of better comprehending previous language exposure to regional variation in Spanish, this dissertation utilizes the dialectal feature of /s/ weakening as a vehicle to explore this phenomenon. This feature was chosen as a salient marker of regional variation in the language.

1.1.1 Production vs perception abilities. A significant body of research has been primarily dedicated to examining the production of variants by second language learners, as it has been established to yield valuable insights into the learners' communicative competence in the target language (Geeslin, 2011). Consequently, several studies have sought to determine whether a correlation exists between the time spent in a location where the target language is spoken and the acquisition of regional variation (Baker, 2008; Linford et al., 2021). The findings of these studies have revealed a range of possible outcomes when it comes to the adoption of dialectal variants. On the one hand, some studies have reported low or non-adoption of regional features (eg. Fox & McGory, 2007; Ringer-Hilfinger, 2012; George, 2014; Escalante, 2018; Linford et al., 2021). On

the other hand, other studies have shown instances of high adoption (e.g., Friesner & Dinkin, 2006; Geeslin et al., 2010; Kanwit t al., 2015; Pozzi, 2017). First, the following study examines a case in which the majority of learners did not incorporate variants after experiencing a study abroad program. Ringer-Hilfinger (2012) studied the production of a phoneme typical of Peninsular Spanish, the interdental fricative [θ] by 15 L1 English speakers. Data was collected four months prior to, two months into, and six months after their four-month study abroad program in Madrid, Spain. The study compared their data to that of two non-study abroad participants. At all stages, participants completed various tasks, including a background questionnaire; a matched-guise test in which they evaluated recordings of different Spanish-speaking individuals based on a 6-point scale encompassing physical and mental characteristics; a reading aloud exercise containing 27 potential occurrences of [θ]; an informal 30-minute interview; and a self-assessment questionnaire, including their language usage outside of the classroom environment. The analysis involved the transcription and examination of a total of 14 hours of oral data. The results indicated that participants who studied abroad displayed greater awareness of the usage of [θ] in Castilian Spanish compared to those who did not engage in a study abroad program in Madrid. However, the incorporation and usage of [θ] remained exceedingly limited, with a mere six instances identified out of 209 possible contexts (2.9%), even following the study abroad experience. Notably, these six occurrences were produced exclusively by two speakers. Moreover, studying abroad failed to significantly influence the participants' attitudes toward the use of [θ], although linguistic insecurity emerged as a prominent factor influencing its incorporation, or lack thereof. In conclusion, the findings revealed that while participants reported heightened linguistic

awareness subsequent to their study abroad experience, the integration of this particular feature into their repertoire was not observed uniformly.

Another research study also revealed a low to non-existent adoption of dialectal variants. Linford et al. (2021) investigated the development of /s/ weakening by 22 L2 Spanish learners following a four-month study abroad program. The participants were divided into two groups: 11 learners who studied in Santiago, Dominican Republic—a region known for /s/ weakening—and 11 learners who studied in Madrid, Spain—a region where /s/ retention is prevalent. The study employed a range of assessment tools, including a grammar test, a background questionnaire, and a semi-guided interview conducted in Spanish. These tasks were completed upon arrival in the host country and shortly after returning home. The analysis encompassed a total of 4,319 instances of coda /s/. Overall, both groups exhibited no noticeable alteration in their production of /s/ following the semester abroad, as all participants consistently pronounced coda /s/ as a sibilant sound. However, similar to the aforementioned study, nine out of the 11 participants who studied in the Dominican Republic indicated their awareness of the “dropping” characteristic of /s/ in this dialect, yet they did not produce this feature. Consequently, the findings indicate that studying abroad does not necessarily facilitate the integration of region-specific sociolinguistic variables into their phonological systems of language learners. The authors propose that the acquisition of dialectal variants might be contingent upon the complexity of phonological cues. In the case of /s/ weakening in coda position, this particular phonetic pattern is absent in the English sound system, thereby necessitating its acquisition by L2 Spanish learners. Moreover, L2 learners might exhibit reluctance to produce /s/ weakening due to the stigma associated with this

variable (for a detailed description of this phenomenon, please refer to section 2.6.2 of this dissertation). Nonetheless, only one participant demonstrated a negative attitude towards the utilization of this variable.

Other research has demonstrated the feasibility of acquiring dialectal variants during a study abroad experience. Pozzi (2017) investigated the acquisition of region-specific linguistic features, specifically *sheísmo/zheísmo* and *voseo*, by 23 L2 Spanish learners after engaging in a semester-long study abroad program in Buenos Aires, Argentina. The majority of the participants had either never visited Argentina before or had minimal contact with native Spanish speakers from that country. Regarding language proficiency, 14 participants were classified as advanced, five as intermediate, and four as beginners. The participants completed various tasks, including a sociolinguistic interview, a reading task, a word list, a role play, and others. These tasks facilitated the collection of more than 5,000 phonological tokens and over 1,200 morphosyntactic tokens prior to, during, and at the end of the semester. Additionally, participants engaged in semi-structured interviews where they responded to inquiries pertaining to language attitudes, the use of Spanish dialects, social networks, and related topics. The findings revealed that participants were capable of acquiring the aforementioned linguistic features during the study abroad experience, particularly within the initial 2.5 months of their time abroad (*sheísmo*: 17.3% usage prior to study abroad, 65.9% usage after 2.5 months; *voseo*: 0% usage prior to study abroad, 65.3% usage after 2.5 months). Notably, social networks with native speakers exhibited a significant correlation with the use of *vos*, but not with the use of *sheísmo/zheísmo*.

Although less common than production studies, research has also been conducted to investigate the gains associated with the perceptual abilities of language learners. While it is unquestionably important to focus on the development of production abilities, it is worth noting that learners can still maintain intelligible speech even if they are unable to accurately produce a dialectal feature (Zárate-Sández, 2019). As mentioned previously, earlier studies have noted that students often encounter challenges when trying to reproduce specific dialectal phonological features (e.g., Ringer-Hilfinger, 2012). Nevertheless, an increased awareness of these features can significantly enhance their comprehension of the dialect and facilitate their participation in conversations. Conversely, if students fail to understand the dialect, it can lead to breakdowns in communication. Therefore, it is essential to obtain a comprehensive understanding of learners' perceptual skills before placing significant emphasis on developing their production abilities. Consequently, this dissertation primarily centers on investigating learners' perceptual skills and the factors that influence L2 comprehension of dialectal variations.

Perception in second language phonology pertains to the ability of language learners to categorize and process the meaning of phonetic sounds in their second language. Studies focusing on perception can aim to investigate the development of learners' recognition and comprehension of regional varieties in relation to their previous language exposure. For instance, Trimble (2013) conducted a study to explore the L2 perceptual abilities of Spanish learners with varying levels of proficiency and exposure to dialectal variation in comparison to native Spanish speakers. The research involved 43 second language learners of Spanish and a small control group consisting of three native

speakers. These second language learners had diverse experiences, including study abroad programs in various Spanish-speaking countries. In the study, participants engaged in a perception task where they listened to audio samples of Spanish sentences spoken by speakers from different regions. Their task was to distinguish between statements and questions presented in both partial and complete utterances, with the order randomized. The study's results revealed that many learners encountered difficulties in perceiving intonational cues in L2 Spanish, particularly those absent in their native language. However, advanced learners, particularly those with study abroad experience, demonstrated improved perceptual skills regarding L2 intonational cues. The author explains that extended exposure to an L2 dialect characterized by distinct intonational patterns can enhance learners' ability to perceive these cues and contribute to the development of an interlanguage intonational system that incorporates L2 features. Moreover, he argues that these findings support the idea that immersion in contexts with unexpected linguistic cues can lead to more accurate perception and the integration of L2 elements into learners' speech. Moreover, Schoonmaker-Gates (2018) conducted a perceptual study involving 60 L2 English speakers. The participants were stratified into different groups based on their enrollment in Spanish courses: second semester, third and fourth semester, and Spanish minors and majors with a minimum of five semesters of Spanish. The data collection process involved exposing the participants to speech samples from native Spanish speakers from diverse regions, including Buenos Aires, Argentina, coastal Colombia, central Mexico, Northern Central Spain, among other locations. Initially, the participants transcribed novel sentences produced by various speakers to assess their comprehension. Subsequently, they took part in a dialectal

identification task, wherein they listened to two identical excerpts produced by speakers from the aforementioned countries and endeavored to identify the region from which each Spanish-speaking speaker originated. Additionally, the participants completed a comprehensive language background questionnaire (LBQ), which sought information pertaining to their familiarity with each regional dialect in terms of study abroad experiences, exposure to language instructors, use of media, and social contacts. The results suggested that advanced students exhibited a heightened ability to identify regional variation when they possessed familiarity with specific dialects. Furthermore, higher levels of comprehension were observed among students who had engaged in study abroad programs, received instruction from native speakers, and utilized media resources. Schmidt (2023) conducted another study exploring the impact of dialect exposure on the processing of dialectal features. In this study, twenty-two English-speaking second language learners of Spanish, hailing from various regions of the United States, participated in a short-term summer study abroad program in Buenos Aires, Argentina. These students self-identified as high-intermediate or advanced Spanish learners. Despite their exposure to a variety of Spanish-speaking dialects, they reported minimal exposure to the Argentine variety, with none having spent time there. The participants completed a lexical decision task within the first week of their arrival in Buenos Aires and repeated it after four weeks into their program. This task required them to listen to common disyllabic words and pseudowords in Spanish, with the main objective of determining whether the heard words existed in Spanish or not. The target items included instances of the Argentine regional phones - the assibilated palatal [j] and the aspirated [h]. Participants also underwent a vocabulary familiarity test to ensure their familiarity with

the real items and completed a LBQ. The findings revealed that, within four weeks of immersion in Argentina, English-speaking second language learners of Spanish demonstrated a significant shift in their ability to process dialectal variants. Although they initially faced challenges with the Argentine [ʃ] variant, they quickly adapted, achieving the same accuracy and speed as with the familiar [j] variant. In contrast, the dialectal lenited [h] sound continued to impede processing speed even after four weeks. The author attributed this distinction to the perceptual saliency of these sounds, with [ʃ] being more salient due to its presence in English, while [h] was often overlooked.

In conclusion, research conducted in the domain of second language perception has yielded valuable insights into the influential role of exposure in decoding dialectal variants, as demonstrated in the studies mentioned earlier. While language learners may exhibit varying levels of proficiency in decoding dialect-specific phonological cues, their exposure to and awareness of regional variations can, to some extent, enhance their ability to comprehend messages, depending on the saliency of these features.

Additionally, the learning context significantly influences the extent to which learners understand regional variations and their motivations to comprehend such differences, as demonstrated by the results presented before and after study abroad experiences. The following chapter will present additional examples of learners dealing with variation in various contexts, providing a detailed explanation of relevant theory and previous research conducted in the field. Thus, this dissertation focuses on how second language learners of Spanish perceive regional variations in different contexts and the role of previous language exposure.

1.2 Research Questions

To address the core objectives of this study, several key research questions were formulated to guide the exploration of various facets of the topic of the acquisition of regional variation.

1. To what extent do L2 Spanish learners perceptually group both the weakened and maintained (sibilant) variants of Spanish /s/ into the same phonetic category?
2. What effect does previous exposure to different Spanish language varieties have on L2 perception of the regional variants of Spanish /s/?
3. How does a learner's performance when perceiving and grouping said sounds into the same phonetic category impact listening comprehension?
4. To what extent do learners' language attitudes impact their performance categorizing dialectal linguistic cues?

The first research question aims to assess the perceptual abilities of L2 Spanish learners when recognizing and understanding the phonological phenomenon of /s/ weakening in Spanish. Its objective is to determine the extent to which learners can accurately decode and identify this linguistic feature under different conditions, including instances where words are pronounced similarly or differently due to regional variation.

The second question seeks to investigate the impact of learners' prior exposure to various Spanish language varieties on their ability to perceive and decode /s/ variants in Spanish.

The goal is to understand how exposure to different dialects influences their perceptual skills in recognizing /s/ variants. The assumption is that learners with higher levels of experience with regional variation will perform better in decoding /s/ weakening due to their previous exposure. Moreover, the type of exposure, whether solely in classroom

contexts or through study abroad experiences, could significantly influence their performance. The third research question aims to explore the relationship between learners' proficiency in categorizing /s/ variants and their overall listening comprehension skills in the presence of Spanish dialectal features. It seeks to determine how accurately recognizing and categorizing these variants influences their ability to understand spoken Spanish. In this case, the assumption is that students who are better adept at recognizing /s/ variants will also perform better in understanding longer passages of specific dialects. Exposure to regional variation might enable them to comprehend the general message of passages spoken by individuals from different dialectal backgrounds, even in cases with high levels of variation. The fourth and final question investigates the relationship between learners' language attitudes and their performance in decoding dialectal linguistic cues, with a particular focus on /s/ variants in Spanish. It aims to shed light on how learners' attitudes towards the Spanish language and its dialectal diversity, along with their motivations for language learning, influence their ability to perceive and interpret regional linguistic differences. This exploration of language attitudes delves into whether learners hold positive or negative perceptions of specific dialectal features and how these attitudes affect their willingness to engage with and embrace linguistic diversity. By investigating the impact of language attitudes, this dissertation aims to provide insights into the intricate interplay between learners' psychological and sociocultural factors and their language learning outcomes. Understanding how these factors influence perceptual skills can inform language educators in designing more effective language learning programs that consider not only linguistic features but also learners' attitudes as crucial components of successful language acquisition.

Consequently, the final section of this dissertation will present pedagogical implications and provide examples of how to incorporate dialectal variation into the classroom, allowing students exposure to variation even in their home locations.

1.3 Organization of the Dissertation

This chapter has provided the context and justification for conducting this research, demonstrating how the research questions address the current needs to better aid in the development of sociolinguistic competence by second language learners of Spanish. Moving forward, Chapter 2 presents a discussion of sociolinguistic competence and emphasizes the importance of interpreting utterances within their social context. It also offers insights into the acquisition of regional phonetic variants and distinguishes between different settings where students are exposed to regional variation, such as the classroom and immersion contexts. Another aspect covered in this chapter is the topic of students' attitudes when exposed to regional variation and its subsequent effects. The chapter also addresses listening comprehension, emphasizing the use of longer utterances as training stimuli to facilitate the perception of variation, in contrast to the commonly employed isolated words and sentences found in current research. Furthermore, the chapter delves into the theoretical approaches of speech perception, with an emphasis on second language speech perception and, in particular, usage-based exemplar models in SLA. The field of sociophonetics is later introduced, followed by a comprehensive overview of dialectal variation in Spanish, with a particular emphasis on the Spanish /s/ sound in word- and syllable-final position. Chapter 3 presents a detailed description of the methodology employed in the current study, guided by the research questions. It includes an overview of the participants, a description of the instruments utilized, and an

outline of the data coding and data analysis employed. Chapter 4 presents the quantitative results obtained from the various instruments utilized, namely the LBQ and the perception tasks, which encompassed the listening comprehension activity and AX discrimination task. This chapter is divided between the accuracy in the perception of /s/ variants, the role of exposure in the perception of /s/ variants, the influence of /s/ variants perception accuracy on listening comprehension, and the role of language attitudes in task accuracy. The final section includes qualitative information and enhances understanding of learners' attitudes by presenting several examples from the participants' responses to the LBQ. Finally, Chapter 5 offers a comprehensive discussion of the findings in relation to each of the research questions that guided the study. The chapter concludes by highlighting the limitations of the research and providing suggestions for future directions. Additionally, it outlines the implications for teaching variation in the second language classroom, especially with an emphasis on a critical overview of pronunciation training. This includes highlighting the essential components needed in language curricula and from instructors to better equip students in their interactions and decoding of messages across different regional varieties.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter presents a comprehensive examination and analysis of the existing literature pertinent to the current study. The initial section provides an exploration of the development of sociolinguistic competence, an important aspect of communicative competence that tends to be neglected by second language teachers, and it influences the language learners' awareness of regional variation. Building upon this topic, the subsequent section explores the acquisition of regional phonetic variants in diverse contextual settings, with the aim of gaining a better understanding of where students are exposed to regional variation and how this exposure could potentially influence their perception of Spanish dialectal linguistic cues. The role of attitudes is also discussed, as positive or negative evaluative judgments, feelings, and beliefs toward the language itself or specific Spanish varieties can influence the perception of regional variation. As of high interest to this study, the importance of developing listening comprehension skills is discussed, highlighting how previous studies have tended to solely focus on isolated words rather than analyzing longer utterances that emphasize global proficiency. The chapter then delves into theoretical models of speech perception, with special emphasis on usage-based exemplar models of phonological representation, which serve as the foundation for comprehending the link between phonetic variants and social properties. Following that, a description of the field of sociophonetics is explored. Lastly, as a means to better understand the ability to correctly decode dialectal linguistic cues, a description of dialectal variation in Spanish is presented, with a specific focus on /s/ weakening, a

salient marker of regional variation in the language, at least amongst native Spanish speakers.

2.1 Developing Sociolinguistic Competence

Over time, there has been a notable transition from a primary focus on grammar to a more communicative-oriented approach in language learning (Cunningsworth, 1995). When acquiring a second language, language educators play a crucial role in creating an environment that facilitates the development of the learners' ability to effectively convey meaning in the target language (Dörnyei, 2012; Spada, 2007). Canale and Swain (1980), followed by Canale (1983), proposed a communicative model that not only encompasses knowledge of grammatical rules but also incorporates the acquisition of sociolinguistic information. According to these authors, four distinct abilities are necessary to achieve communicative competence: 1) grammatical competence, which involves knowledge of the grammatical rules and lexical items of the target language; 2) strategic competence, which entails knowledge of communicative strategies to overcome breakdowns in communication, 3) discourse competence, which encompasses knowledge of how to combine form and meaning in discourse, and 4) sociolinguistic competence which enables the interpretation of utterances in their social context to discern their social implications.

Unfortunately, within the second language classroom, the emphasis is often placed solely on the acquisition of grammatical competence, with insufficient attention given to the development of the skills required for interpreting the social meaning embedded within utterances (Canale, 1983; Geeslin & Long, 2014; Schmidt, 2022). Hence, Geeslin (2011) observes that learners who have not acquired sociolinguistic

variation “may well be limited in their expressive ability, unable to correctly interpret language directed to him or her or, worse, he or she may project an inappropriate social image in certain contexts” (p. 462). With that in mind, it is important to acknowledge that the development of sociolinguistic competence should be regarded as both a fundamental aspect of communicative competence and a valuable asset. Furthermore, Geeslin and Long (2014) highlight that the perception of sociolinguistic variation, including alternative pronunciations of the same word, poses significant challenges for second language learners. Thus, it becomes evident that the acquisition of sociolinguistic competence, achieved through extensive exposure to the L2, must also encompass an awareness of regional variations (Bayley & Regan, 2004; Uritescu et al., 2004). Learners who lack sensitivity to these variations may encounter challenges in their social interactions and relationships (Bedinghaus, 2015). Moreover, lack of awareness regarding dialectal variation can result in the misinterpretation of the fundamental meaning conveyed by specific linguistic forms, as well as the intended meaning of the speaker and the social implications associated with particular linguistic choices (Geelin, 2011).

In conclusion, it is apparent that a learner's ability to comprehend nuanced meanings embedded in utterances extends beyond mere grammatical knowledge and should be regarded as a vital aspect of a comprehensive second language acquisition (SLA) process. However, it is crucial to bear in mind that this should not come at the expense of undermining grammatical competence. After all, learners cannot comprehend or generate utterances without this foundational knowledge (Long, 2014). Hence, considering the importance of the acquisition of sociolinguistic competence, this dissertation will focus on the acquisition of regional phonetic variants as a crucial aspect

of developing this competence. The following sections will delve more into this topic, providing a detailed exploration and discussion.

2.2 The Acquisition of Regional Phonetic Variants

For second language learners, the development of proficiency in the target language entails the processing and storage of linguistic input that contributes to the acquisition of knowledge in the L2. This acquired knowledge serves as the foundation for more effective language processing (Shea, 2021). Nonetheless, the presence of variability in the speech signal can pose challenges to this process, particularly when it does not align with the existing mental representations of the language (Weber & Cutler, 2004; Bent & Holt, 2017). Language comprehension involves intricate processes, such as lexical activation and speech segmentation. Thus, in the case of exposure to a new dialect, learners need to recognize and activate lexical items from the L2 input to effectively process language variation. However, learners may encounter challenges in comprehending both known or unknown words, primarily due to a potential inability to segment lexical items from the acoustic signal. Consequently, this difficulty can hinder vocabulary acquisition and grammatical processing (Shea, 2021).

These challenges can be overcome as learners gain experience with the linguistic variability (Cooper & Bradlow, 2018). Language learners' sensitivity to language variation increases as they are exposed to more target-language input and speakers from diverse linguistic backgrounds (Chappell & Kanwit, 2022). When processing speech, learners not only process linguistic data, but also register indexical information such as the speaker's gender, social class, and dialect (Bayley & Regan, 2004; Foulkes & Docherty, 2006). As a result, L2 learners are influenced not only by a neutralized variety,

but by exposure to and perception of dialectal structures, enabling them to discriminate between different regional varieties (Geeslin & Gudmestad, 2008; Schmidt, 2022).

2.2.1 Perception of regional variation in different learning contexts. The context in which second language learning takes place has been established as directly linked to the development of sociolinguistic competence (Knouse & Hodges Abreu, 2022). Consequently, current research has devoted increased attention to the language learning context for two primary reasons. First, the quality and quantity of input, encompassing the type and timing of exposure to regional variation, have been recognized as critical factors in the process of acquiring a second language (Krashen, 1982; VanPatten, 2004). Secondly, the nature of contact that learners have with native speakers of the target language, the social characteristics of all parties involved, and the learners' attitudes towards different dialects have emerged as significant determinants (Schmidt et al., 2022). With that in mind, the acquisition of regional variation by traditional L2 classroom learners can occur in two primary settings: in the traditional classroom and during study abroad programs, as both environments offer second language learners' diverse types and amounts of input (Tarone, 2000; Howard, 2011; Schmidt, 2022).

2.2.2.1 Traditional classroom setting. It has been observed that in the classroom setting, exposure to formal language varieties or *standard dialects* is more prevalent compared to informal registers (Knouse & Hodges Abreu, 2022). A standard language refers to the variety of a language documented in dictionaries and grammars, and commonly employed in formal domains such as media, commerce, education, and government (Schoonmaker-Gates, 2020). A standard variety can be also considered the

most common variety prescribed by language textbooks, with the *standard Peninsular variety* being a typical example (Gutiérrez & Fairclough, 2006; Padilla & Vana, 2019). Furthermore, in a conventional classroom setting, the input received is often limited to only that provided by the instructor, fellow students, or a restricted range of instructional materials. In this last particular case, as highlighted by Lafford (2006), the implementation of instructional materials, including online videos, does not always offer learners authentic input that accounts for a wide range of possible instances of variation. In addition, the author also notes that the processing of input within the classroom context often centers around isolated words and sentences, leaving aside the analysis of complex discourse, even at the intermediate level.

Despite the acknowledgment of these limitations, it is crucial to highlight that there is a scarcity of existing research on the acquisition of dialectal features in the foreign language classroom, specifically in relation to pronunciation (Zárate-Sánchez, 2019). Consequently, there is limited knowledge about how language variation is actually being incorporated and taught in this type of setting, and the extent of students' exposure to it on a daily basis remains unclear. Furthermore, and even when looking at the acquisition of regional variation from the standpoint of a language classroom, research tends to predominantly center on what learners have acquired during study abroad experiences or after being given explicit instruction on regional variation as part of the research study. Therefore, it overlooks what was exclusively learned within the classroom setting.

On the bright side, and to start changing this situation, it is noteworthy that Schmidt (2022) has made a valuable contribution by incorporating information about the

country of origin of the Spanish teacher within a formal language classroom setting. In her research, 229 English-dominant L2 language learners participated in a study focused on the development of dialectal awareness in Spanish. These participants were categorized based on the courses in which they were enrolled or their college degree. The categories included beginning Spanish, intermediate Spanish, introductory Spanish literature and culture, advanced Spanish literature and linguistics, and M.A. or Ph.D. near-native Spanish speakers. The research utilized data from a LBQ, which gathered information on linguistic and extralinguistic experiences, social networks, the region of origin of Spanish language instructors, and previous knowledge of regional variation in terms of pronunciation. In addition to the LBQ, participants also completed several tasks to assess their perception and comprehension of dialectal features. One of the tasks was a perceptual identification task where participants had to identify consonants and vowels from nonce-words read by a Venezuelan and an Argentine speaker. The other task involved a comprehension and translation exercise, where participants transcribed and translated into English common Spanish words read by two Venezuelan, two Argentine, and one Peninsular Spanish speaker. The data obtained from the questionnaires revealed that students had a range of experiences with speakers from different Spanish regional varieties. It was observed that the majority of university Spanish instructors were non-native speakers (187) or from Spain (110), Argentina (45), Mexico (43), and Colombia (26). Regarding study abroad experiences, Spain was the most frequent destination (37), followed by Mexico (16). Furthermore, participants reported having primary contacts outside of class with speakers from Mexico (25) and Spain (22). Results of the study indicated that, in general, participants showed a higher level of awareness of the dialectal

features commonly found in Peninsular Spanish. However, they also demonstrated some knowledge of other pronunciation features and regions. Notably, as proficiency levels increased, students exhibited a greater understanding of Spanish dialectal features. The main findings of this classroom-based study, although it was just one case study, highlight that the participants were primarily exposed to non-native Spanish speakers or speakers from Spain, with Spain being the predominant study abroad destination. However, there is limited knowledge about the specific strategies employed by instructors in the classroom to expose students to regional variation.

2.2.2.2 Immersion context. Another setting in which the acquisition of language variation can occur is through immersion in a country where the target language is spoken. This provides language students with a valuable opportunity to gain exposure to regional variation in Spanish, for instance, particularly through experiences such as studying abroad in Spanish-speaking countries. Studying abroad is recognized as a "high-impact educational practice that offers numerous engagement opportunities and yields a wide range of potential outcomes" (Kuh, 2008; George, 2022). However, before delving into previous studies on the benefits of studying abroad, it is important to take into consideration the following information on the preferred locations and countries chosen by L2 learners of Spanish. This contextual information assumes great significance in evaluating the students' overall familiarity or awareness of regional variation, as it is contingent upon the countries most frequently chosen for study abroad programs. Moreover, it allows for a nuanced examination of how these preferences may shape students' perspectives and comprehension of the intrinsic value associated with acquiring knowledge about regional variation. Furthermore, the data presented herein will serve as

a fundamental foundation for comprehending the origins of stereotypes and negative attitudes, as well as for exploring ways in which language institutions and programs can foster students' understanding and appreciation of diverse language varieties.

The annual Open Doors report, funded by the ECA (Educational and Cultural Affairs) program, provides a comprehensive survey on student mobility in international and U.S. higher education. This report serves as a valuable resource, offering the public and media access to the latest data from the Institute of International Education (IIE), which publishes the Open Doors Report on International Educational Exchange. The report covers various aspects, including students participating in academic credit programs abroad through their home colleges or universities. Given the influence of the COVID-19 pandemic on more recent data, the Open Doors 2020 report offers a more precise depiction of current trends. Hence, it is the selected report for analysis in the present literature review, without taking into account more recent reports. According to the 2020 report, a total of 347,099 U.S. students studied abroad for academic credit during the 2018/19 academic year, indicating a 1.6% increase compared to the previous year. The top field of study, accounting for 20.7% of the total, was *Business and Management*. On the other hand, *Foreign Language and International Studies* constituted 6.9% of the total, ranking last among the top 5 fields of study. Table 1 displays the preferred Spanish-speaking destinations during the 2018/19 academic year, along with their ranking, the number of students, and the corresponding percentage of the total. It is important to note that the ranking of the preferred destinations does not establish a distinction between the reasons for studying abroad.

Table 1.

Open Doors 2020 Spanish Study Abroad Report

# in ranking	Destination	# of students	% of total
3	Spain	33,849	9.8
10	Costa Rica	8,333	2.4
11	Mexico	6,340	1.8
19	Peru	4,041	1.2
20	Ecuador	3,675	1.1
23	Argentina	3,317	1.0
24	Chile	3,190	0.9

As evidenced in the provided Table 1, Spain is the preferred destination for studying abroad, with significantly higher enrollment numbers compared to other Spanish-speaking destinations. Despite the fact that Spanish is spoken in over 20 countries, the choices for studying abroad seem to be limited to around seven countries. This suggests that either students are predominantly selecting these specific countries or universities are offering study abroad programs in a limited number of places. This can be attributed to various factors, including safety concerns. However, regardless of the underlying reasons, this represents the current state of affairs. Therefore, in light of these findings, it is crucial to recognize the realities faced by students studying abroad in Spanish-speaking countries, particularly their limited exposure to certain phonological cues, given that the majority opts for the same study abroad destination. Thus, it is important to consider the contextual factors influencing students' experiences despite the

potential benefits associated with acquiring dialectal variants through study abroad programs.

Returning to the literature on the acquisition of dialectal variants in immersion settings, studying abroad has emerged as an effective method to enhance the comprehension and processing of dialectal variants, thus fostering learners' sociolinguistic competence (Cunningham-Andersson, 1996; Segalowitz et al. 2004; George, 2022). Over the past few years, there has been a notable increase in interest regarding the potential of study abroad to facilitate second language linguistic development (Solon & Long, 2018). It has been reported that by participating in language learning programs within a classroom setting abroad, learners tend to exhibit a greater inclination towards adopting informal variants and experiencing more naturalistic speech (Geeslin & Long, 2014; Knouse & Hodges Abreu, 2022). Thus, learning in a naturalistic setting heightens the likelihood of better perceiving the speech patterns of variable structures (Escalante, 2018). Moreover, it has been established that study abroad programs afford learners with increased opportunities to receive more complex and meaningful language input, allowing them to actively put into practice various linguistic aspects they have previously acquired (Shea, 2021). Consequently, numerous extralinguistic factors come into play, influencing the language outcomes of study abroad experiences. Factors include interactions with student-host families (e.g., Schmidt-Rinehart & Knight, 2004), duration of the study abroad period (e.g., Llanes & Muñoz, 2009), social interactions with native speakers (e.g., Martinsen et al., 2014), use of the native language while abroad (e.g., Stevens, 2011), levels of motivation (e.g., Trenchs-Parera & Juan-Garau, 2014), attitudes (e.g., Alvord & Christiansen, 2012), the presence

of formal instruction during the study abroad program (Lord, 2010), and interactions with instructors (Lafford, 2006), among others. In terms of proficiency levels, advanced learners, compared to their lower-level counterparts, are believed to have acquired a greater amount of declarative knowledge and could be better positioned to benefit from the available opportunities presented during the study abroad experience (McManus et al., 2020).

In this context, several research studies have been conducted to explore the acquisition of sociolinguistically-variable structures during study abroad programs in Spanish-speaking countries. Firstly, Schmidt (2009) investigated the influence of dialect familiarity and previous language exposure on the comprehension of dialectal variants. The study involved 11 learners of Spanish with English as their first language, most of whom rated their language proficiency as intermediate or advanced. Prior to their three-week study abroad program in Santo Domingo, Dominican Republic, participants engaged in preparatory activities, including assigned readings and class discussions conducted in English. Then, during their time in Santo Domingo, they were exposed to the Dominican language variety through talks by invited speakers and tour guides, as well as instructions given by the program coordinator. They also encountered the language through media sources such as television and radio, which often deviate significantly from everyday speech (Alba, 2011). Additionally, participants interacted with locals in various contexts such as restaurants, hotels, and shops. Notably, before the study abroad experience and after completing the pretest, participants attended a lecture by an expert on Dominican Spanish, where they were exposed to examples of dialectal features related to Dominican phonology, syntax, and lexicon. Participants completed a LBQ and self-

ranked their language proficiency in the four skills only during the pretest. Moreover, they completed three comprehension tasks, with this study focusing on two tasks: a word-task and a phrase-task. The word-task involved listening to nineteen words pronounced by five Dominican male speakers, featuring phonological features such as syllable- or word-final /s/ deletion, lambdacism, word-final nasal velarization, and /d/ deletion. Six words were also included from speakers of other Spanish-speaking regions that did not exhibit any dialectal phonological features. The phrase-task comprised ten phrases read by Dominican speakers with the same phonological features as the word-task, as well as four phrases read by speakers from other Spanish varieties. The results revealed a significant improvement in the participants' comprehension of the Dominican dialect at both the word and phrase levels. However, it is important to note that this group of students received explicit explanations of various phonological features prior to their study abroad experience, which might have contributed to their enhanced knowledge of dialectal variants. Nonetheless, the extent to which explicit awareness or input during the study abroad program influenced the observed improvement remains uncertain, as acknowledged by the author.

In another study conducted by the same author (Schmidt, 2018), it was found that participants were not fully successful in categorizing syllable-final /s/ aspiration. However, individuals who had studied abroad or had exposure to regional variation through social contact performed better compared to those without such experiences. In this particular research study, participants enrolled in five levels of Spanish courses completed an identification task, a written language background, and dialect contact questionnaire. The identification task involved listening to and selecting the made-up

word they believed they heard from a set of six options. The stimuli consisted of 158 bisyllabic pseudowords read by speakers from Venezuela and Argentina. These words were pronounced with either the full sibilant /s/ or with /s/ aspiration in word-medial, syllable-final position. The stimuli included 50 control items that featured <f, l, r, n> in the same phonetic contexts, as well as 80 distractors that targeted different positions and sounds. Additionally, the questionnaire included inquiries about participants' previous experiences with Spanish and other languages, exposure to regional Spanish varieties, and awareness of dialectal pronunciation. The results indicated that Spanish learners did not associate the aspirated variant with Spanish /s/ to the same extent as they did with the sibilant. However, participants who reported studying abroad or having exposure through social contact demonstrated a more accurate perception of language variation. The author further noted that this was particularly evident among participants at higher proficiency levels, highlighting the importance of having a greater knowledge of the language in achieving accurate perception.

Similarly, Shea (2021) conducted a study examining the impact of L2 dialectal familiarity on processing changes over a three-month study abroad program in Buenos Aires, Argentina. The participants completed a pre-test in the form of an auditory priming task with lexical decisions, which also included proficiency tasks to categorize them into advanced and intermediate proficiency levels. The post-test, administered in weeks 14 and 15 of the study abroad program, mirrored the pre-test. It is noteworthy that none of the participants had prior experience with the Argentine dialect, nor had they taken a Spanish dialectology course or resided in a Spanish-speaking country before their study abroad experience. In the priming task, participants listened to a prime word followed by

a target word and had to determine if the target word was a real word in Spanish. The hypothesis was that if the prime and target words were identical, the learners' reaction time would be faster. However, if the prime and target words differed in one phonetic feature, specifically /z/ or /ʃ/ for /j/, their reaction time would vary due to the dialectal difference. Learners who processed both dialects equally would demonstrate faster reaction times compared to those in whom one dialect inhibited the activation of the other. Half of the stimuli were produced by two Mexican speakers from Mexico City, while the other half were produced by two Argentine speakers from Buenos Aires. The results indicated that, once again, advanced learners outperformed those with lower proficiency levels, possibly because they arrived at the study abroad program with an established dialect background. However, the results of the pretest indicated that the advanced group displayed faster processing of the Mexican dialect, while on the posttest, they demonstrated faster processing of the Argentine dialect compared to the Mexican dialect. The author had initially hypothesized that no significant differences would be found, but the results contradicted this assumption. The advanced group did not “incorporate” an additional dialect into their existing knowledge of L2 dialects. Moreover, the lower-level group did not exhibit a significant shift as observed in the more advanced learners. However, the author acknowledged that it was difficult to confidently state whether the lower-level group had any specific dialect representation at the beginning stages of their study abroad experience.

Moreover, Del Saz (2019) also conducted a study examining learners' perception abilities over time during a study abroad experience. The author investigated how well Spanish learners at multiple proficiency levels could perceive word-final /s/ aspiration in

L2 Western Andalusian Spanish and how this ability related to their exposure time to the L2 in quiet settings and their proficiency level in noisy environments. Two experiments were conducted. The first experiment involved fifty-six American college students with intermediate-level proficiency in Spanish, divided into three groups based on testing times. They listened to recorded word-final /s/ sounds in Spanish embedded in sentences. The second experiment included 68 participants, including American English learners of Spanish at different proficiency levels, proficient listeners with varying exposure to Western Andalusian Spanish, and native listeners of Western Andalusian Spanish. The stimuli were derived from the same corpus as the previous task, incorporating recordings from eight speakers with varying backgrounds, and three levels of white noise were added to simulate real-life background noise. Results from the first experiment revealed that listeners accurately identified the standard variant of word-final [s] with 100% accuracy, regardless of their length of stay in Seville. However, their ability to identify the dialectal variant word-final [h] improved with longer exposure. Exposure duration positively impacted accuracy, with significant odds increase between no exposure, three weeks, and two months. Nevertheless, the overall effect of the length of stay on identification accuracy was not significant. This suggests that more time is needed for nonnative listeners to effectively identify aspiration of word-final /s/. The results from the second experiment highlight that participants with two months of exposure achieved high accuracy in identifying word-final [s], but their perception of word-final [h] was associated with their L2 competence and inversely affected by noise levels. Those with longer exposure showed improved identification of aspiration. Proficient L2 learners and native listeners performed better on the standard variant, with native listeners

outperforming proficient learners. Noise levels had a negative impact on the identification of word-final [h] for learners in the early and intermediate stages of L2 learning, while those with longer exposure were less affected by noise.

In addition to study abroad contexts, individuals can also be exposed to language variation by simply residing abroad, even without participating in a formal study abroad program. To exemplify this scenario, Escalante (2018) conducted an analysis on the perception of /s/ aspiration among 14 learners who engaged in a 12-month volunteering experience in Guayaquil, Ecuador, a region known for /s/ weakening. The primary objective was to examine how participants' perception of aspirated /s/ changes over time as their exposure increases. The study also considered extralinguistic factors, such as individual variations in experience with dialectal variations featuring /s/ weakening. The participants completed a perception task where they had to listen to and identify coda-aspirated nonce-words, which were read aloud by a Cuban speaker. The task focused on four distinct phonological positions (V/s/C, V/s/#C, V/s/#V, and V/s/##) that represented different combinations of vowels, /s/ sounds, and consonants. Sections 1-3 of the task focused on identifying the first word in the pair, while section 4 focused on identifying the second word. The positioning of the /s/ sound varied across the word pairs, appearing in different positions relative to the vowels and consonants. The perception task was administered one week before participants' departure and at five intervals during their time abroad, with each interval lasting 8-10 weeks. The results revealed that participants demonstrated improved perception of /s/-weakening before consonants after being abroad for two months, with an average accuracy rate of 40%. However, no further improvements were observed throughout the rest of the year. Although the participants'

proficiency level did not show a significant effect, intermediate-high learners performed better than intermediate-low learners, who, in turn, performed better than novice learners.

2.2.2 Language attitudes. It is important not only to assess the learning context, which can offer diverse input and opportunities for communicative interactions that may contribute to the processing of language variation, but also to consider the impact of language attitudes on the perception, or lack thereof, of regional phonetic variants. The study of language attitudes focuses on learners' beliefs and emotions towards languages (Schleef, 2022; Lenz, 2022). Attitudes involve the evaluation of objects based on various dimensions, with positive or negative sentiments associated with language (McGuire, 1989). Consequently, recent studies have been exploring the connection between social judgements toward regional varieties and language acquisition (Schmidt, 2020).

Portolés Falomir (2015) explains that words, accents, dialects, or languages can evoke emotional reactions. When it comes to attitudes towards regional variation, existing research indicates that they can be influenced by attitudes towards the speakers of those varieties and the social context in which they are used (Schmidt et al., 2022). It is well-established that listeners tend to associate specific social qualities and stereotypes with different language varieties (Giles & Billings, 2004), as they make judgments about speakers' social identities, perspectives, and permanent qualities (Eckert, 2008).

Additionally, various factors influence the development of learners' attitudes towards regional variation, including the chosen instructional model, study abroad experiences, interactions with speakers of different regional varieties, preferences for language accents, and perceptions of dialect difficulty (Schmidt et al., 2022). Consequently, attitudes towards different language varieties have an impact on language learning and

shape the target accent models that L2 learners strive to attain (Baker, 2008; George, 2014; Schmidt, 2020; Schmidt et al., 2022).

Schmidt (2020) conducted a study examining the influence of social factors on the adoption, or lack thereof, of dialectal sounds in L2 pronunciation. The research focused on investigating the relationship between attitudes toward the local variety and community in a study abroad setting, specifically the Argentine dialect, and the adoption of dialectal variants. The study included 24 L1 English speakers who participated in a 6-week Advanced Language and Culture program in Argentina. None of the participants had previously traveled to Argentina, although they reported prior interactions with speakers from various countries such as Spain, Puerto Rico, Argentina, Peru, and others. The participants underwent a pretest and a posttest, which involved a listening task, a production task, written questionnaires about their background and study abroad experiences, as well as a contextualized grammar task. The pretest questionnaire gathered information about the participants' backgrounds, including their linguistic history, prior Spanish learning experiences, exposure to different Spanish dialects through travel, study abroad, and social contacts, as well as their awareness of dialectal differences in Spanish pronunciation and personal preferences for emulating a specific Spanish dialect. The posttest questionnaire captured details about the students' experiences during the study abroad program, their use of Spanish while in Argentina, and any newfound awareness of dialectal differences in Spanish pronunciation. The questionnaire also included questions about awareness and attitudes. The results revealed that a higher adoption of regional sounds was associated with previous contact with Argentine speakers, positive attitudes toward the Spanish language in general (expressing a "love for the Spanish language"), a

desire to sound native-like, and personal preferences for emulating the Argentine dialect when speaking Spanish.

Moreover, Geeslin and Schmidt (2018) also explored the relationship between language attitudes and L2 experience. In this study, 110 Spanish learners ranging from first to fourth year completed a dialect contact questionnaire and a matched-guise test. This technique usually aims to uncover participants' subconscious attitudes and biases towards specific language varieties or groups of individuals by presenting them with audio recordings of the same message spoken by different speakers of distinct language varieties, while keeping other elements of the presentation consistent, such as content, intonation, and delivery. Participants are then asked to rate the speakers on various dimensions, including intelligence, friendliness, social status, and competence (Lambert et al., 1960; Díaz-Campos, 2014). Thus, in this particular study, the participants were presented with 24 sentence stimuli read by male speakers from Spain, Argentina, Puerto Rico, and Mexico. Each sentence was then rated using a six-point semantic scale that included kindness-related adjectives, such as *simpático* ('nice') or *cariñoso* ('kind'), as well as prestige-related adjectives, such as *inteligente* ('intelligent') or *rico* ('rich'). Results revealed that out of the 110 participants, only 29 reported having studied abroad, with Spain being the most popular destination. Specifically, 16 students studied in Spain, while 6 students studied in Nicaragua, El Salvador, and Costa Rica collectively. Additionally, 2 students studied in Puerto Rico, Argentina, Chile respectively, while one in Ecuador. Regardless of their study abroad experience, learners rated all dialects as similar in terms of kindness. Among the L2 group, Argentine speakers received the highest rating for kindness, followed by Mexican Spanish. In terms of prestige, Puerto

Rico Spanish received the lowest rating, while the other three varieties were rated equally prestigious. Among the participants with study abroad experience, Castilian Spanish was considered the most prestigious variety. Learners who studied abroad in Argentina tended to give higher ratings for kindness to this dialect. Interestingly, the two students who studied abroad in Puerto Rico rated this dialect as less kind compared to the overall L2 group. In sum, learners' evaluations of dialects from different countries varied, demonstrating differing perceptions for each variety.

Furthermore, while matched-guise techniques have primarily been employed to assess attitudes towards regional variation, they have also been utilized to determine whether L2 learners possess the ability to classify dialectal variants. To illustrate, Chappell and Kanwit (2022) employed a matched-guise test to ascertain whether 76 L1-American English speakers could utilize sociophonetic information from their L2, Spanish, to discern regional and social characteristics of unfamiliar speakers. The specific target feature investigated in their study was the reduction of the coda /s/, which exhibits extensive geographical distribution and carries significant social implications. Moreover, the authors examined factors that could potentially influence learners' sensitivity to sociophonetic information, including Spanish proficiency, study abroad experience, and explicit phonetic instruction. Participants were required to complete a LBQ designed to gather information about their demographics and their exposure to the Spanish language. For example, participants were asked to provide information regarding their age at the onset of Spanish language acquisition, the Spanish courses they had taken, their study abroad experiences and durations, as well as their daily use of the Spanish language. During the matched-guise test, participants evaluated three speakers of Mexican Spanish

and two speakers of Puerto Rican Spanish using a series of six-point scales. These evaluations were based on perceived intelligence, work ethic, niceness, Hispanicity, confidence, humility, proficiency in Spanish, and masculinity/femininity. Participants were also required to identify the age and region of origin of the speakers. Regarding their study abroad experiences, participants reported spending time in various countries, including Argentina, Bolivia, Chile, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Spain (both Southern and Central/Northern regions), and Uruguay. The results indicate that more advanced learners, compared to less advanced learners, demonstrated a greater sensitivity to sociolinguistic variation. They were able to make connections between reduced /s/ and social status and place of origin. Furthermore, advanced learners who had completed a phonetics course were significantly more likely to associate /s/ reduction with the Caribbean dialects. Those who had lived in countries where /s/ aspiration is common also exhibited better performance in categorizing /s/.

2.3 Listening Comprehension Skills

The act of listening is a complex cognitive process that contributes to the comprehension of spoken language. It encompasses receptive, constructive, and interpretative aspects of cognition. Moreover, listening serves as the medium through which individuals process language in real time, employing mechanisms such as pacing, pausing, and encoding unique to spoken language. Additionally, the act of listening involves three simultaneous processing phases: 1) decoding, which entails attention, speech perception, word recognition, and grammatical parsing to identify lexical items; 2) comprehension, which involves activating prior knowledge to connect the input with

relevant knowledge sources; and 3) interpretation, which encompasses comparing meaning with prior expectations and evaluating discourse meanings to generate a range of viable listener response options (Rost, 2005).

In the case of acquiring an L2, a more direct intervention is necessary compared to L1 acquisition, as individuals may be learning the L2 after cognitive processing skills in their L1 have already developed (Rost, 2005). Thus, during a listening task, learners engage in both "bottom-up" and "top-down" processing. The former involves attending to incoming speech signals, while the latter involves utilizing prior knowledge to guide the understanding process (Rost, 2005). Thus, a crucial aspect of L2 acquisition lies in the development of listening comprehension skills (Hadley, 2001). This process encompasses various skills, including the ability to differentiate between individual speech sounds (Rasmussen & Zampini, 2010). Acquiring knowledge of phonological processes present in native pronunciation is believed to assist students in better recognizing them in native speech, resulting in more accurate perception of individual speech sounds and overall improvement in listening comprehension skills (Rost, 2005). Thus, explicitly teaching pronunciation in the L2 classroom has been found to enhance listening comprehension skills, as evidenced by several studies (Brown, 1992; Gilbert, 1995; Arteaga, 2000; Aliaga-García & Mora, 2008; Aminaei & Jahandar, 2015; Rasmussen & Zampini, 2010).

Unfortunately, the impact of phonetic training on L2 listening comprehension skills has received limited attention (Rasmussen & Zampini, 2010; Agostinelli-Fucile, 2017). For instance, Arteaga (2000) found a predominance of absent information regarding phonetics and pronunciation in several first-year Spanish textbooks. Moreover, Rasmussen and Zampini (2010) further assert that more advanced textbooks in L2

Spanish phonetics tend to prioritize speech production, often leaving perception practice aside. The main focus of L2 phonetic training is commonly viewed as a means to improve pronunciation or reduce foreign accent, rather than to develop listening comprehension skills.

Previous research on the impact of L2 phonetics training on listening comprehension has predominantly centered on learners' capacity to discern L2 sounds within words and phrases, commonly referred to as decontextualized speech. However, these studies have often overlooked the assessment of learners' overall listening comprehension proficiency (Rasmussen & Zampini, 2010). Therefore, Colantoni et al. (2021) emphasize the crucial role of incorporating contextualized speech into pronunciation instruction, wherein extended dialogues or monologues may be used. By doing so, the primary objective is to accurately reflect natural language usage (Isaacs, 2009). In real-life communication, students are not normally exposed to isolated words and phrases, but rather participate in conversations or listen to speeches that consist of longer sentences, as well as the use of multiple linguistic elements simultaneously. Keeping this in mind, students should be exposed to and assessed based on their comprehension of longer utterances, rather than solely isolated words or phrases alone. Considering that previous research has mainly focused on perceptual skills related to isolated words or short phrases, this dissertation aims to explore the extent of exposure Spanish learners have to different language varieties and its influence on their ability to perceive and comprehend regional phonetic variants, especially in the context of longer utterances.

2.4. First and Second Language Speech Perception

Before delving into the primary models of L2 speech perception, it is important to acknowledge a prominent model in native/first language (L1) acquisition, known as the Native Language Magnet Model (Kuhl, 1993; Kuhl et al., 2008). This model focuses on the initial year of life, during which infants establish phonetic prototypes that exert a substantial influence on later L2 perception. Essentially, it posits that native language exposure "warps" speech perception as a consequence of early linguistic experiences, with this warping process commencing as early as 6 months of age. It also suggests that the acoustic space for L2 sounds undergoes adjustment to align more closely with L1 phonetic prototypes, leading to the perception of L2 sounds as either conforming to or diverging from these prototypes.

With that in mind, several theoretical models of speech perception account for predictions based on how the phonetic and phonological organization of speech sounds in the L1 influence speech in the second language L2. These models include the Perceptual Assimilation Model-L2 (PAM-L2), the Speech Learning Model (SLM), and the Second Language Linguistic Perception Model (L2LP). Firstly, PAM-L2 (Best & Tyler, 2007) is an adaptation of the original PAM (Best, 1995), which describes various patterns of cross-language assimilation at both the phonological and phonetic levels. In the context of L2 acquisition, PAM-L2 posits that initial challenges arise for learners when distinguishing between two sounds that would fall within the same category in their L1. However, they experience fewer difficulties in discriminating between sounds found in different L1 categories. An important distinction between PAM-L2 and its predecessor lies in the incorporation of the role of experience, as the updated model recognizes that

learners' exposure and interaction with the L2 contribute to the development of their perceptual sensitivity to crucial phonetic differences.

The SLM (Flege, 1995), and the revised version, the SLM-r (Flege and Bohn, 2021), also predict that L2 sounds undergo a process of assimilation based on differences and similarities between the L1 and the L2. When learners encounter a sound that differs from the closest sounds in their L1 category, they create a new category within their L2 phonological system. As a result, these sounds are assimilated and become easier to perceive. Consequently, if a sound is similar to one in the L1 category, learners tend to assume that the L2 sound belongs to the same L1 category. Furthermore, similar to PAM-L2, the SLM recognizes that individuals can make further progress through experience. Over time, learners will be able to categorize each sound as either belonging to their L1 or their L2, whereas previously both were classified as L1 sounds. Then, the SLM-r extends the original SLM by focusing on the lifelong process of learning the sound system of an L2 in response to the naturalistic phonetic input received. According to the SLM-r, the input plays a crucial role in shaping language-specific phonetic categories for the L2 and creating categories that combine elements of both the native language and the L2. As L2 learners are exposed to statistically defined input distributions for L2 sounds, they accumulate detailed phonetic information, leading to the emergence of new phonetic categories. Importantly, the SLM-r emphasizes that the formation of L2 phonetic categories is a gradual process, not a one-time occurrence, and it can occur at any age, contributing to phonetic organization and reorganization throughout one's life. Specifically, the SLM-r suggests that the development of new L2 phonetic categories and composite L1-L2 categories is influenced by factors such as how dissimilar an L2 sound

is from the closest L1 sound, the quantity and quality of L2 input received in meaningful conversations, and the accuracy with which the nearest L1 category is defined, specifically referring to the level of explicit knowledge about the L1 category at the onset of L2 learning.

Then, the L2LP model (Escudero, 2005) shares similarities with the aforementioned perception models by offering predictions concerning the perceptual accessibility of sounds based on the relationship between the L1 and the L2. Similar to PAM-L2 and SLM-r, it also allows for predictions regarding the perceived difficulty or ease of discriminating sounds by comparing the L1 and the L2. This model presents three distinct learning scenarios: the *new scenario*, wherein two L2 sounds are mapped to the same L1 category; the *similar scenario*, where two L2 sounds are mapped to two different L1 categories; and, unique to L2LP, the *multiple category assimilation scenario*, wherein a single L2 sound is assigned to more than one L1 category. Experience plays a significant role here as well, as speakers can gradually develop two separate phonetic systems over time, thereby attaining native-like performance in both languages.

In summary, the PAM-L2, SLM-r, and L2LP models share the prediction that during the initial stages of language acquisition, perceptual identification is influenced by L1 perceptual norms, with speakers demonstrating progress as their proficiency increases. However, Chappell and Kanwit (2022) assert that none of these models establish an explicit connection between the sociophonetic information previously stored and the identification of unfamiliar speech produced by speakers of distinct regional varieties. Consequently, they highlight the need to broaden the scope of traditional L2 speech perception studies to encompass the domain of usage-based exemplar models of

phonological representation (Bybee, 2001, 2002, 2006, 2007). Even though the aforementioned models have been used to predict the perception and learning of L2 Spanish variants, this dissertation will explore the ability to store speaker-specific information and use it when decoding dialectal variants produced by native Spanish speakers. The following section presents an overview of this theoretical framework as it pertains to the association between phonetic variants and social properties (Docherty & Foulkes, 2014).

2.4.1 Usage-based exemplar models. The present study lies at the intersection of SLA and cognitive approaches to sociolinguistics. Earlier theories of speech perception posit that when listeners receive new input that deviates markedly from anything represented in memory, they undergo a process of normalization, wherein they will not experience difficulties when processing this new information over time. During this process, any information related to the context or the speaker will be erased leaving the listeners with new information that cannot be traced or linked to anything or anyone in particular. Consequently, when listeners encounter variable input, the newly acquired information is stored solely in the lexicon as a string of phonemes and is linked to the same string previously formed, without any extra information (Klatt, 1979; Boomershine, 2006).

During investigations into this normalization process, researchers discovered that the speaker-specific information actually facilitates listeners' ability to perceive speech and recognize words (Mullennix & Pisoni, 1990). The evidence suggests that listeners utilize memory traces to categorize and process both new and stored stimuli. Usage-based exemplar models of phonological representation (Bybee, 2001, 2006) have been proposed

to explain this ability. In a usage-based model, listeners store in the lexicon a more detailed representation of the stimuli received creating what are known as exemplars (Medin & Schaffer, 1978; Nosofsky, 1992). When listeners receive new input, they compare it with previously stored exemplars in their minds and determine whether the new input should be categorized as the *same* or *merely similar* to what they have already stored. If the stimulus is the same, listeners consider it as belonging to the same category and reinforce their existing knowledge. However, if the stimulus is perceived as similar, they will generate new exemplars or clusters of exemplars. These newly formed exemplars are considered to be experiences with a large amount of both linguistic and extralinguistic information, including semantic, pragmatic, and social properties (Johnson, 1997). Consequently, in this case, listeners process and store detailed talker-specific information received from the speech signal (Goldinger, 1996, Nosofsky, 2014, Frisch, 2018). Moreover, the frequency and recency of exposure also influence exemplar models of perception. Frequent or recent exposure to an exemplar of a category makes that specific example easier to access. If a new stimulus is similar to said exemplar, the category will be quickly activated (Frisch, 2018).

In terms of sociophonetics, as will be described in the subsequent section 2.4.1, exemplar theory has played a significant role in the perception of dialects (Frisch, 2018). Hay et al. (2006) explain that prior exposure to a given dialect can influence the perception of ambiguous phonetic information. Moreover, they emphasize that adequate and substantial experience is essential when dealing with variable input. Research has shown that the creation of exemplars linked to a given language variety, resulting from previous exposure, has been found to be of crucial aspect of dialect identification tasks

(Clopper & Pisoni, 2004; Gradoville, 2023). Hence, the main goal of this study is to explore the application of usage-based exemplar models in modeling L2 phonology, considering the influence of previous language exposure to and experience with regional variation.

2.5 The Field of Sociophonetics

Sociophonetics, as its name implies, emerges from the convergence of sociolinguistics and phonetics (Thomas, 2013). This subfield of linguistics primarily utilizes phonetics methodologies to address fundamental sociolinguistic questions. Consequently, it comprises three principal branches: 1) articulatory phonetics, the study of speech articulation; 2) acoustic phonetics, the examination of the physical properties of speech sounds; and 3) auditory phonetics, the investigation of how humans perceive sounds. In the past decade, this rapidly expanding field has gained significant visibility, opening doors for the application of sociophonetic methods in the study of second language phonology (Gnevshcheva, 2022). Thus, it has served as the foundation for identifying and explaining the sources, parameters, and communicative functions of socially conditioned phonetic variation in speech. In this case, the primary goal of sociophonetics involves how socially structured variation in the sound system is learned, stored, evaluated, and processed in both listening and speaking contexts (Foulkes et al., 2010). In essence, it entails the study of speech production and perception with regards to language variation.

By examining the production and perception of sounds, researchers can enhance their understanding of language change, the formation of stereotypes, the storage of linguistic variation in the brain, and the cognitive processes involved in language use

(Drager, 2010). Currently, as previously explained, the majority of available research has predominantly focused on variation in speech production. Nevertheless, particular attention has been devoted to exploring the intricate relationship between variation and social factors within perceptual contexts, considering that regional language variation can serve as a source of social identity and pride for individuals, while also potentially fostering negative attitudes and stereotypes. Studies indicate that individuals perceive sounds differently based on their own articulation, previous exposure to other dialects, and social characteristics associated with specific speakers (Drager, 2010). Furthermore, listeners may make judgments and assumptions about speakers solely based on their articulation of sounds, resulting in the assignment of social categories to different groups of people (Drager, 2010). Now, having thoroughly examined the acquisition of regional phonetic variants in diverse contexts and the ways individuals perceive sounds influenced by their previous language experiences, the subsequent and final section will offer a more in-depth exploration of Spanish regional variation, specifically focusing on the Spanish /s/. This will serve as a valuable opportunity to later delve deeper into the theoretical aspects of socially conditioned phonetic variation in speech.

2.6 Dialectal Variation

Numerous grammatical functions can be fulfilled by multiple forms, but in cases when one form fulfills multiple functions, language variation arises (Geeslin, 2011). It is evident that individuals who speak the same language but reside in different territories would not speak in the same manner, and dissimilarities can be observed even among speakers residing in the same geographical area. Consequently, speech exhibits variation that is influenced by factors such as age, race, sex, education, income, social class, and

occupation (Penny, 2000). Nevertheless, these differences between individuals can be categorized as *smooth* and *gradual*, without compromising mutual intelligibility. In a broader context, this linguistic phenomenon is commonly referred to as a *dialect*, denoting a collection of linguistic features employed by a particular social group or for a specific communicative purpose (Penny, 2000). Therefore, speakers from a specific region become associated with a distinctive dialect of a language. It is worth noting that the term *dialect* may carry very negative connotations; thus, contemporary research tends to employ the term *variety* when referring to the language spoken by a particular group of individuals. Therefore, in the present study, the terms *dialect* and *variety* are used interchangeably. Below, an exploration of the case of Spanish and its *dialects* or *varieties* will be presented.

2.6.1 The case of Spanish. As previously discussed, a dialect can be defined as a particular language variety spoken within a specific geographic location. In the context of Spanish, dialects are commonly delineated based on national borders (Schoonmaker-Gates, 2020). The estimated number of native or near-native Spanish speakers worldwide reaches 500 million individuals. In Europe, Spanish holds official language status in Spain (other official languages: Catalan, Galician, Basque, and Occitan). Moreover, it maintains a quasi-official position in Andorra (official language: Catalan), and it is the main vernacular language of Gibraltar (official language: English). Spanish is also spoken in adjacent parts of Morocco (official languages: Standard Arabic, Moroccan Arabic, and Berber) and in a former Spanish colony, Western Sahara (official languages: Arabic, Berber languages). In Africa, Spanish is the official language of Equatorial Guinea, along with French and Portuguese. In Asia, Spanish is spoken in the Philippines

(official languages: Filipino and English) and in the Pacific, in the Mariana Islands (official languages: Chamorro, English, Carolinian, Turkish). In the case of the Americas, Spanish is the official language in South America, including Argentina, Bolivia (co-official languages: Quechua, Aymara, Guarani, and other indigenous languages), Chile, Colombia (co-official language: Quechua), Ecuador, Paraguay (co-official language: Paraguayan Guarani), Peru (co-official: Quechua, Aymara, and other indigenous languages), Uruguay (co-official language: Uruguayan Sign Language) and Venezuela; (but excluding Brazil (official language: Portuguese), Suriname (official language: Dutch), French Guiana (official language: French), and Guyana (official language: English);) the Caribbean including Cuba, Puerto Rico (co-official language: English), and the Dominican Republic; Mexico (plus 69 national languages); and all Central America including Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua (plus several regional recognized languages), but excluding Belize (official language: English). Spanish is also the unofficial language in the United States, where almost 45 million native Spanish speakers live and Canada (official languages: French and English) with half a million speakers ("Ethnologue," n.d.).

Due to the significant geographical separation, dialects can exhibit variations at multiple levels of language, including morphology, lexicon, syntax, phonology, and pragmatics (Lipski, 1994; Moreno Fernández, 2009; Knouse & Hodges Abreu, 2022). Additionally, dialects can be categorized based on the same level of language variation. Labov (1972) explained that phonological variation among native speakers is extensive, with extralinguistic factors such as place of origin, sex, age, socioeconomic class contributing to the differences. Consequently, specific speakers of various regional

variations may share the same common phonological traits, such as the pronunciation of the Spanish /s/. Thus, Spanish dialects can be classified into two main groups: those in which the /s/ sound in word- and syllable- final position is predominantly maintained and those in which it is predominantly weakened. It is worth mentioning that there is an additional group of (limited) Spanish language varieties that reduce syllable-initial /s/ which could be considered. However, due to the scope of this dissertation, it will not be discussed. The next section provides an overview of the Spanish /s/ pronunciation in word- and syllable-final position.

2.6.2 Spanish phonological variation: the case of the Spanish /s/. Within the field of Hispanic Linguistics, word- and syllable-final /s/ weakening, most often manifested as a degree of aspiration to deletion, has received significant attention, making it one of the most extensively researched phonological processes (Ferguson, 1990; Hammond, 2001; Bybee, 2002; File-Muriel, 2007; Brown & Torres Cacoullós, 2002, etc.). Aspiration refers to the absence of an oral constriction in the alveolar ridge, allowing airflow solely from the lungs (Widdison, 1997), while deletion makes reference to the complete phonetic loss of the /s/ segment (Lipski, 1994). The inclusion of this feature in research studies stems not only from its status as a salient marker of regional and social identity among Spanish speakers (Lipski, 1984) but also due to its prevalence in a wide range of Spanish varieties worldwide (Gradoville et al., 2021). Consequently, there is a higher likelihood of encountering learners who have been exposed to this phonological phenomenon during their language acquisition process (Schmidt, 2011). As a result, there is abundant information regarding the linguistic and social factors that influence the production of the variable, which can be utilized as a reference point for

studying perception (Escalante, 2018). Furthermore, in contrast to other sociolinguistic variables that are highly noticeable and potentially easier for learners to observe, such as the Argentine sheísmo or the use of /θ/ in Spain, /s/ weakening can be described as a less prominent variable that poses challenges for learners in terms of comprehension (Trimble, 2014). Lastly, it is worth noting that syllable-final /s/ weakening does not occur in coda position in English (Agostinelli-Fucile, 2017), requiring its acquisition by English-speaking learners of Spanish (Schmidt, 2011). Thus, it is worth noting that English also contains the phoneme /h/, as evidenced in words such as *happy*, and it is typically described as a voiceless glottal fricative. Nevertheless, despite some similarities between the Spanish aspirated-/s/ and the English /h/, these two sounds differ in terms of their syllable position and the phonemes they are associated with. In English, /h/ is distinctive in syllable-initial position (e.g., "hate" versus "eight"), but is not found in syllable-final position. Conversely, Spanish [h] (aspirated-/s/) is not contrastive and typically appears in syllable-final position, except in certain dialects (Schmidt, 2011).

The dichotomy between /s/ weakening and /s/ retention in Spanish varieties establishes a distinction between highland and lowland dialects in the Americas (Canfield, 1981). In fact, it has been estimated that approximately 50% of Spanish-speaking populations worldwide demonstrate some degree of /s/ weakening, encompassing regions such as the Caribbean, Central America, South America, and southern Spain (Terrell, 1981; Hammond, 2001; Lipski, 2005; Penny, 2000). Certain scholars argue that the maintenance of /s/ is more prevalent in areas that experienced extensive and prolonged contact with prestigious speakers from Central Spain, specifically the seats of the viceroyalties (Penny, 2000). In contrast, varieties exhibiting

/s/ weakening were geographically isolated from Central Castilian influence and instead had significant interaction with Andalusian Spanish varieties, where syllable-final /s/ weakening is commonly observed (Penny, 2000). Although pinpointing the exact origins of /s/ weakening is impossible (Lipski, 1984), for comparative purposes, it is worth noting that Central Mexico, characterized by /s/ retention, was a focal point of Spanish colonization with extensive interactions between Spain and the region known as the New World in this Mexican area. Conversely, Puerto Rico, a region associated with /s/ weakening, faced significant marginalization by the Spanish crown following the depletion of its gold resources (Lipski, 1995).

In general, the weakening of /s/ in Spanish can occur in syllable-final positions before a consonant and in word-final position, resulting in different degrees of lenition, namely aspiration or deletion (File-Muriel & Brown, 2010; Schmidt, 2013). As a result, the articulation of /s/ in this position has traditionally been grouped into three categories: retention (high frication); aspiration (period of glottal frication); and deletion (total absence of the sibilant). The cases of *pastel* ('cake') and *lápiz* ('pencil') serve as illustrations of these different varieties:

Retention of sibilant /s/: [pas.'tel] or [un.'la.pis]

Aspiration of /s/: [pah.'tel] or [un.'la.pih]

Deletion of /s/: [pa0.'tel] or [un.'la.pi0]

During the articulation of [s], the tip of the tongue or the predorsum is elevated to the alveolar ridge, creating constriction that facilitates the production of high sibilant frication. Conversely, the /s/ sound can also be weakened by assimilating to the voicing of the following consonant. Thus, the voicing of /s/ can be viewed as a phonetic

reduction, as it is physiologically easier for the vocal cords to keep vibrating across sound segments (Pagliuca & Mowrey 1987; Linford et al., 2021).

As is the case with many linguistic variables, /s/ weakening can be linguistically conditioned (Walker et al., 2014). It is more commonly observed in prevocalic and preconsonantal positions (Terrell, 1978), when preceding fricatives > nasals > stops > laterals (File-Muriel, 2007). While all three positions occur in syllable-initial contexts, the weakened variants are less frequent (Lipski, 1984; Brown, 2005). The weakening of /s/ is more prevalent within words rather than at word boundaries (Hammond, 1980). Furthermore, the likelihood of /s/ weakening is higher in unstressed environments (Brown & Torres Cacoullos, 2003) and increases with higher speech rates (File-Muriel & Brown, 2011). Higher frequency words are more prone to exhibit weakening compared to low frequency words (Brown, 2009). In certain language varieties, the weakening (or complete deletion) of /s/ may be accompanied by vowel lengthening (Hammond, 1978; Figueroa, 2000) and lengthening of voice onset time (VOT) in the following consonant (Torreira, 2006). In terms of linguistic status, /s/ retention is recognized as the prestige variant (Mack, 2009), while /s/ deletion is regarded as the most stigmatized form (Lafford, 1986). It is less common to encounter /s/ aspiration and /s/ deletion in the speech of educated individuals (Samper Padilla, 1990). However, there has been a shift over the years where aspiration has been regarded as a marker of prestige, primarily used by high-status speakers, particularly in Rioplatense varieties (Carvalho, 2006). Furthermore, /s/ weakening is more prevalent in the speech of men and younger speakers (Fontanella de Weinberg, 1973; Cedergren, 1973).

It is important to consider that the reduction process from sibilant [s] to aspiration [h] to deletion [0] is gradient in nature and it varies across Spanish dialects, thus a distinction would not be advisable (Erker, 2010; File-Muriel & Brown, 2011). Gradoville et al. (2022) explain that acoustic measures have been successful in distinguishing sibilant [s] from aspiration [h], but have encountered challenges in differentiating between aspiration [h] and deletion [0]. In other words, the authors highlight that there was significantly less perceptual agreement regarding what was “[h] and [0]” compared to “[s] vs. everything else.” This disparity in agreement on [s] vs. other sounds suggests that it is not a clear-cut categorical division. Moreover, the disagreement regarding [h] and [0], coupled with the challenge of capturing such distinctions with fewer acoustic measurements, supports the methodological approach of not differentiating between both options. Thus, for this dissertation, both symbols, [h] and [0], will be employed to represent the weakened variants when compared to the sibilant [s]. Figure 1 presents the relationship between [s], [h], and [0].

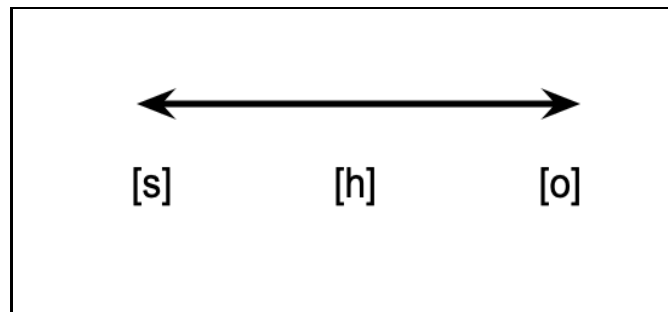


Figure 1. Visual representation of [s] > [h] > [0] range

To illustrate the variation of /s/ in the Spanish-speaking world, the current study included three distinct Spanish varieties, Mexican, Argentinian, and Puerto Rican Spanish, as they all differ in a number of linguistic features and tend to be easily

distinguished by Spanish speakers (Boomershine, 2006; Walker et al., 2014). In the case of Mexican Spanish, this variety is generally recognized for its tendency to maintain the /s/, with the exception of coastal areas (Moreno de Alba, 1994). Although instances of /s/ weakening can be observed across the country (Lope Blanch, 1994), the norm in Mexico, particularly in Mexico City, is the retention of /s/ (Hidalgo, 1990). In the interior regions of Mexico, such as central Mexico, syllable-final /s/ is rarely weakened, while it can be subject to reduction in many rural areas of northwestern Mexico, including Sonora and Baja California Sur (Brown, 1989; López Chávez, 1977), as well as in the coastal regions of Veracruz/Tabasco and Acapulco. Lipski (1994) explains that the reduction of /s/ in Mexico carries negative social stigma and is typically avoided by educated urban residents.

In the context of Argentinian Spanish, the weakening of syllable-final /s/ is typically observed. Among educated speakers of Buenos Aires, aspiration predominates over deletion, which carries sociolinguistic stigma (Terrell, 1978, 1984). In word-final prevocalic positions, such as the case of *los amigos* ('the friends'), the use of sibilant /s/ prevails in formal speech and among the upper socioeconomic classes in Buenos Aires (Lipski, 1994). However, in other regions of Argentina, /s/ weakening is more common and less stigmatized, as seen in Bahía Blanca (Fontanella de Weinberg, 1974) and in Rosario (Donni de Mirande, 1987). In several provinces, such as Corrientes, Misiones, Mendoza, and Jujuy, the loss of syllable-final /s/ is widespread among educated individuals (Lacunza de Pockomy and Postigo de Bedia, 1977; Lipski, 1994). In the case of Buenos Aires, previous research has indicated that /s/ reduction is more common

among male speakers compared to females, and among lower socioeconomic classes (Fontanella de Weinberg, 1974).

Lastly, in the case of Puerto Rican Spanish, the weakening of /s/ is a phenomenon observed throughout the island (López Morales, 1983). In Puerto Rico, the aspirated variant prevails before a consonant, and it is the most commonly employed variant across all social groups and genders, regardless of the formality of the setting. Consequently, due to its widespread usage among the population, it does not carry the same level of social stigma as observed in other Spanish varieties (Canfield, 1981).

2.7 Chapter Summary

This chapter explores the changing landscape of language learning, shifting from a grammar-centered approach to one that prioritizes effective communication. Concern arises due to the prevalent overemphasis on grammar in language classrooms, which often sidelines sociolinguistic skills. Neglecting sociolinguistic competence can limit learners' expressive abilities and hinder their grasp of social nuances in language use. Then, the chapter underscores the importance of acquiring sociolinguistic competence, including an awareness of regional variations, as a crucial element of successful language learning. Ignoring these subtleties can obstruct social interactions and lead to misunderstandings.

The perception of regional language variations in second language learning is closely tied to the learning context, influencing the acquisition of sociolinguistic competence. Two primary settings are discussed: the traditional classroom and study abroad programs, each offering distinct types and levels of linguistic input. In traditional classrooms, learners are typically exposed to formal or standard dialects, with instructors,

peers, or instructional materials shaping their linguistic input. However, research has predominantly focused on what learners acquire during study abroad experiences or explicit instruction on regional variation, overlooking what is learned within the classroom setting. Then, the chapter underscores the unique opportunities that studying language variation in immersion contexts, especially through study abroad programs, offers to second language learners. However, students' preferences for some study abroad destinations and not others significantly impact learners' exposure to regional language variations. Spain remains the most popular destination, yet this limited choice can potentially hinder students' comprehension and appreciation of diverse language varieties. Study abroad experiences play a pivotal role in enhancing learners' comprehension and processing of dialectal variants, thus fostering sociolinguistic competence. Learners immersed in naturalistic settings tend to adopt socially and stylistically variable variants more readily and improve their ability to discern variable speech patterns. Proficiency levels also play a role in this process, with higher-level learners benefiting more significantly.

Another facet of this chapter explores language attitudes, encompassing learners' beliefs and emotions toward languages that significantly shape their language learning trajectories and accent goals. These attitudes are malleable and are influenced by exposure, social context, and personal preferences. In the context of study abroad settings, learners with positive attitudes toward the local variety and the community are more likely to embrace regional dialectal sounds. Advanced learners tend to exhibit greater sensitivity to sociolinguistic variation, adeptly connecting phonetic features with social status and regional origin.

Moreover, this chapter delves into listening comprehension in SLA, elucidating its multifaceted nature, which includes receptive, constructive, and interpretative aspects. Developing listening skills in a second language, including the ability to distinguish speech sounds accurately, is integral to effective language acquisition. However, it is noted that L2 phonetic training frequently prioritizes pronunciation over listening comprehension. To bridge this gap, the incorporation of contextualized speech in phonetics instruction, such as extended dialogues or monologues, is highlighted as a crucial step. Real-life communication inherently involves longer utterances, and this dissertation undertakes an exploration of how exposure to different language varieties impacts Spanish learners' capacity to accurately perceive and process regional phonetic variants, particularly in the context of longer speech. Previous research has predominantly focused on isolated words or phrases, making this an area of interest.

Further expanding the horizon, the chapter explores speech perception models within both first and second language acquisition. It introduces models like the Native Language Magnet Model, which elucidates how early linguistic experiences in one's first language profoundly influence the perception of second language sounds. Additionally, three models for second language speech perception are introduced: the Perceptual Assimilation Model-L2 (PAM-L2), the Speech Learning Model (SLM and SLM-r), and the Second Language Linguistic Perception Model (L2LP), all of which provide valuable insights into how the first language's characteristics reverberate in the perception of second language sounds.

This chapter also touches upon the usage-based exemplar models that center on how listeners store and process speech sounds, taking into account speaker-specific

information, contextual cues, and the frequency of exposure. The relevance of these models becomes particularly pronounced in the perception of dialects and variable linguistic input, offering a nuanced perspective. Furthermore, the chapter introduces the field of sociophonetics, a convergence of sociolinguistics and phonetics that undertakes the study of socially conditioned phonetic variation in speech production and perception. It underscores how listeners may perceive sounds differently, influenced by a constellation of factors including articulation patterns, prior exposure to diverse dialects, and the social characteristics of the speakers. Sociophonetics offers a multifaceted lens through which to explore the intricate interplay of language, society, and phonetics, enriching our understanding of language variation.

In conclusion, the chapter navigates the complex terrain of dialectal variation, which refers to the multifaceted differences in language use influenced by an array of factors including geography, age, social status, and more. Specifically, it delves into the case of Spanish, a language with numerous dialects or varieties, each characterized by unique linguistic features. One prominent phonological feature discussed is the pronunciation of the Spanish /s/ in word- and syllable-final positions. This /s/ sound can be either retained, aspirated, or deleted, and its usage exhibits considerable variation across regions and social groups.

CHAPTER 3

METHOD

This chapter provides information about the participants of this study, the instruments utilized, the data collection procedure, and the way data was coded and analyzed.

3.1 Participants

Participants were recruited from a large public university located in the Southwestern United States. In total, 132 students enrolled in the fifth, sixth, and seventh semesters of Spanish courses completed a series of tasks. As the goal of the study was to evaluate second language learners of Spanish, 16 participants were excluded based on the results of their LBQs, which indicated that they were speakers of Spanish as a heritage language. Additionally, eight participants were excluded due to self-reporting a hearing disability.

After all exclusions, the participants of this study were English-speaking individuals learning Spanish as a second language at the intermediate level [$N = 108$], who predominantly acquired Spanish within a classroom setting. They were enrolled in university-level Spanish courses at a public university in the Southwest United States. Participants were either enrolled in Spanish Conversation and Composition I [$N=41$], Spanish Conversation and Composition II [$N=47$] or in Advanced Conversation and Composition [$N=20$]. The age range of the participants spanned from 18 to 23 (mean = 19, $SD = 1.16$). Collectively, the participants had a mean score of 12.68 on the 18-item proficiency test ($SD = 2.86$). Participants reported an average of two years of Spanish courses taken during elementary and middle school ($SD = 2.31$, range = 0 to 9), an

average of four years of Spanish taken during high school (SD = 0.99, range = 0 to 5), and an average of 1.5 years of Spanish courses taken in college (SD = 0.96, range = 0.5 to 4). Only 17 participants reported having taken Spanish in community college for an average of 1.3 years (SD = 0.80, range = 0.5 to 3).

Additionally, participants in this study were subgrouped based on their previous language exposure to Spanish varieties characterized by /s/ weakening. As a result, they were categorized into either “the exposure group” or “the non-exposure group”. Table 2 provides a summary of the participants in both groups.

Table 2

Distribution of Participants Per Group

	Exposure group (N=35)	Non-exposure group (N=73)
Age	19.68 (SD = 1.07)	19.39 (SD = 1.21)
Sex	25 females 10 males	56 females 15 males 2 “other”
Proficiency test (Range= 1 to 18)	12.88 (SD = 2.68)	12.58 (SD = 2.95)
Majors and minors	Spanish major: 9 Spanish minor: 25	Spanish major: 6 Spanish minor: 61
Spanish courses in elementary and middle school	2.42 years (SD = 2.80, range = 0 to 9 years)	1.87 years (SD = 2.04, range = 0 to 8 years)
Spanish courses in high school	3.15 years (SD = 1.02 , range = 0 to 4 years)	3.28 years (SD = 0.98 , range = 0 to 5 years)
Spanish courses in community college	(7 participants) 1.5 years (SD = 1 , range = 0.5 to 3 years)	(10 participants) 1.2 years (SD = 0.71 , range = 0.5 to 2 years)
Spanish courses in college	1.54 years (SD = 0.98, range = 0.5 to 4 years)	1.54 years (SD = 0.96 , range = 0.5 to 3.5 years)

To be included in the exposure group, participants needed to exhibit one or both of the following characteristics (as reported by the participants in the Language Background Questionnaire): having been instructed by a teacher from an /s/ weakening region and/or having prior experience in an /s/ weakening region. The exposure participants' average age was 19.68 (SD=1.07), and their average proficiency test score was 12.88 (SD=2.68) out of 18. Among the exposure participants, the majority were

Spanish minors (N=25), while 9 were Spanish majors. On average, they had spent 2.42 years (SD=2.80) studying Spanish courses in elementary school and middle school, 3.15 years (SD=1.02) in high school, and 1.54 years (SD=0.98) in college. Additionally, only 7 participants took Spanish courses for an average of 1.5 years (SD=1) at the community college level. On the other hand, if students had no prior exposure to /s/ weakening at all, they were assigned to the non-exposure group. In this instance, the average age of the participants was 19.39 (SD=1.21), and their average proficiency test score was 12.58 (SD=2.95) out of 18. Similarly, the majority were Spanish minors (N=61), with 6 participants being Spanish majors. On average, they had spent 1.87 years (SD=2.04) studying Spanish courses in elementary school, 3.28 years (SD=0.98) in high school, and 1.54 years (SD=0.96) in college. Additionally, only 10 participants pursued Spanish courses at the community college level, with an average duration of 1.2 years (SD=0.71).

When it comes to spending time abroad in an /s/ weakening region, seven exposure group participants reported the following locations: Argentina (Cordoba), Chile, Dominican Republic, Peru (Lima), Puerto Rico, and Spain (Malaga and Granada). Furthermore, 28 participants from the exposure group reported having teachers from /s/ weakening regions, including Argentina, Chile, Nicaragua, Panama, Puerto Rico, Uruguay, and Venezuela. Meanwhile, six participants in the non-exposure group reported spending time abroad in Costa Rica (San Ramon), Guatemala, Mexico (Guanajuato and Mexico City), and Spain (Madrid and Barcelona). Moreover, 73 participants from the non-exposure group reported having teachers from /s/ conserving regions, including Colombia (Bogota), Ecuador (Quito), Guadalajara, Mexico, Guatemala, and Spain

(Madrid and Barcelona). Both groups also reported having teachers from the United States.

3.2 Instruments

The instruments used in this study are described in this section, starting with the group of five native Spanish speakers representing three distinct dialectal regions, whose speech samples were recorded and used for the listening tasks. These speakers were carefully selected to generate the stimuli used during data collection. As part of the implemented instruments, participants completed a language proficiency test to confirm their enrollment level and to assess potential variations among students in the same Spanish course. Subsequently, they completed a listening comprehension activity and an AX discrimination task to evaluate their overall comprehension of different instances of regional variation in spoken speech and their perceptual discrimination of the regional sounds targeted. Lastly, participants filled out a Language Background Questionnaire (LBQ), which gathered information about their demographics, previous exposure to Spanish and other languages, dialectal pronunciation, as well as language attitudes. All tasks were embedded into QuestionPro, an online survey software. The audios were recorded and edited with Audacity (Audacity Team 2017), where loudness was normalized across the sound files. The language proficiency test and the LBQ remained consistent across all six versions. A comprehensive description of each instrument is provided in this section.

3.2.1 Native-speaker guises. A group of five female native Spanish speakers was recruited to produce the audio stimuli presented in the instruments. Four participants, who were born and raised in either Puerto Rico (n=2) or Argentina (n=2), were selected

to represent varieties where word- and syllable- final /s/ show some degree of weakening. The fifth participant, who was born in the United States but raised from a young age in Mexico, was chosen to represent a variety where /s/ is retained (no reduction). All participants, except one, were current doctoral students in the United States, and the recordings were conducted individually and in-person with the assistance of the researcher. Instructions on how to record the stimuli were given via Zoom for the participant who resides abroad.

3.2.1.1 Argentina. Both speakers from Argentina were born and raised in Rosario, Santa Fe, Argentina. Rosario, situated in the central region of Argentina, is the biggest city in the province of Santa Fe. It is positioned on the western side of the Paraná River, approximately 186 miles northwest of Buenos Aires. This city is the third most densely populated city in Argentina and is the most populous non-capital city in the country. As of 2022, the estimated population of Rosario, which encompasses a growing and significant metropolitan region, is 1,342,619 (“censo.gob.ar,” n.d.).

Donni de Mirande (1968) explains that in Rosario the /s/ in syllable-final position is not only aspirated but also deleted. Thus, both speakers were selected to be part of this study as their speech includes the production of /s/ weakening. Participants in this group were sisters, one completing her doctoral program in Spanish Linguistics in the United States and the other one working as an architect in their home city. Both reported no reading or hearing difficulties. Their average age at the time of the recruitment was 29.5 years (SD=1.5). The participant who resided in the United States emigrated almost 8 years prior to the recruitment date and has spent 4 years in Ohio and almost 4 years in Arizona. Moreover, she reported traveling to Argentina once or twice per year and having

spoken communication in Spanish with her family. Their father was born and raised in Rosario, Argentina and their mother was born in the province of Chaco, Argentina and raised in Rosario, Argentina from the age of 2.

3.2.1.2 Puerto Rico. The second group comprised two speakers hailing from Puerto Rico. The birthplaces of both speakers were in close proximity to San Juan, Puerto Rico, specifically Bayamón (the mother was born in New York but emigrated to Bayamón at the age of 9, and the father born and raised in Bayamón) or in Ponce (both parents were born and raised in either Santa Isabel or Bayamón, Puerto Rico). Subsequently, they both migrated to the contiguous United States at the age of 23 and 24. San Juan is the most populous municipality and capital city of the Commonwealth of Puerto Rico, an unincorporated territory of the United States. According to the 2020 census, it ranks as the 57th largest city under the jurisdiction of the United States, with a population of 342,259 ("Puerto Rico's Population Change Between Census Decade," n.d.). In the context of /s/ weakening in Puerto Rican Spanish, it has been reported that /s/ aspiration is present across all social classes and age groups, and that /s/ deletion, in particular, had its origins in the capital, San Juan (Lipski, 1998).

The average duration of their residence in the contiguous United States was 10.5 years (SD= 1.5), during which they both reported residing in Arizona for an average of 4.5 years (SD= 4.5). Only one of them reported living in other states, such as Illinois, Massachusetts, and Texas. Both were doctoral students in Spanish Linguistics, and, on average, they both were 33 years old at the time of recruitment. Both reported no reading or hearing difficulties. Moreover, they both travel to Puerto Rico either once or twice per year and utilize Spanish more frequently than English in their personal lives.

3.2.1.3 Mexico. The third group consisted of a single individual who was born to Mexican parents in Chicago, United States. At the age of 5, she emigrated to Atoyac, Jalisco, Mexico and returned to the United States at 18 years of age. The town of Atoyac is situated within the boundaries of Atoyac Municipality in Jalisco State, Mexico. Atoyac is located 55.3 miles south of Guadalajara, the capital of Jalisco. The population of the village is 5,389, making it the most populous among all the towns in the municipality (“CityPopulation.de.” n.d.). When it comes to the articulation of /s/, syllable-final /s/ rarely gets deleted or aspirated in Mexico's inland regions (Lipski, 1998).

At the time of recruitment, she was a 28-year-old doctoral student in Spanish Literature and had been residing between California and Arizona. She reported no reading or hearing difficulties. In her personal life, she primarily communicates in Spanish with her family and friends and travels to Mexico at least once per year. Her parents, although currently residing in the United States, were born and raised in Atoyac, Jalisco, Mexico.

3.2.2 Language proficiency test. The first task that the second language learners of Spanish completed was a language proficiency test. The primary goal of including this test was to determine the participants' proficiency level and gain a better understanding of their Spanish language skills. It consisted of 18 multiple-choice items and served as a condensed version of the Wisconsin Spanish Placement Test (2009, 2011), a widely recognized standardized assessment employed in the field of SLA to evaluate foreign language proficiency (García-Alcaraz, 2018). The researcher selected items from multiple versions of the same test to assess participants' knowledge of various aspects of the Spanish language use, including verb tense, aspect, and agreement; mood; highly

frequent verbs; lexicon; direct and indirect object pronouns; other pronouns, conjunctions, and negatives; uses of “se”; “gustar” and similar verbs; and modifiers and comparisons. Comprehensive instructions were provided in English, and each item offered four options, of which only one was the correct answer, as seen in figure 2.

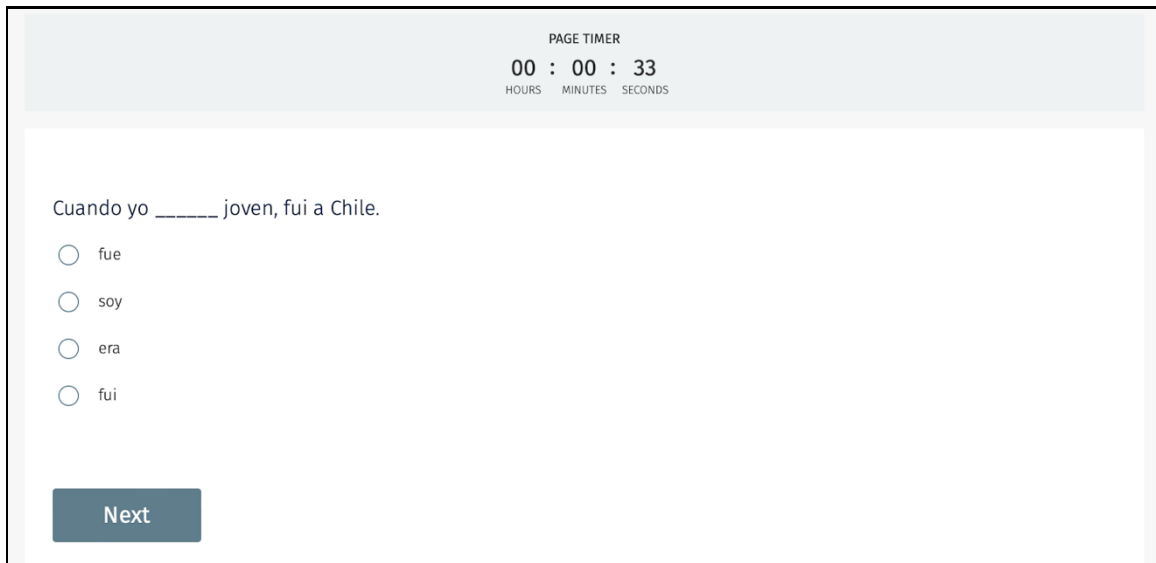


Figure 2. Screenshot of sample question from the language proficiency test

Participants were given a sentence with a missing word or phrase and were required to select the appropriate option to fill in the blank. Once they selected the option, they had to click 'Next.' A strict time constraint of 40 seconds was imposed on each item, which started running immediately. It is worth noting that participants were required to respond to all items, and they were unable to review their previous responses due to one item being displayed at a time. For reference, a copy of the proficiency test can be found in Appendix A.

3.2.3 Listening comprehension activity. The initial perception task consisted of a listening comprehension activity. The task was designed based on the practice items from the B1 level of the DELE Spanish Diploma, which is a prestigious certification

issued by the Ministry of Education, Culture and Sport in Spain. These diplomas serve as recognized credentials that confirm an individual's proficiency and expertise in the Spanish language. Specifically, the third level, B1 (Threshold), assesses candidates' ability to comprehend the main ideas of coherent texts written in standard language, particularly those related to common subjects such as work, education, or leisure. Additionally, and in particular interest to this study, the DELE B1 evaluates participants' comprehension skills, focusing on their capacity to extract key information from simple informational texts. The DELE Spanish Diploma was chosen to evaluate listening comprehension, and it was crucial to select items that corresponded to the participants' proficiency level. In this case, the B1 level was deemed most suitable by the researcher for the assumed proficiency level of the participants. Differences in responses should be attributed to variations in talker pronunciation rather than differences in proficiency level. Thus, maintaining consistent testing materials across the same proficiency level was essential.

To create the listening comprehension activity, a sample from the second task of the DELE B1 examination, known as "comprensión auditiva" or "listening comprehension," was utilized. The activity consisted of six monologues presented as voicemail recordings, as illustrated in figure 3.

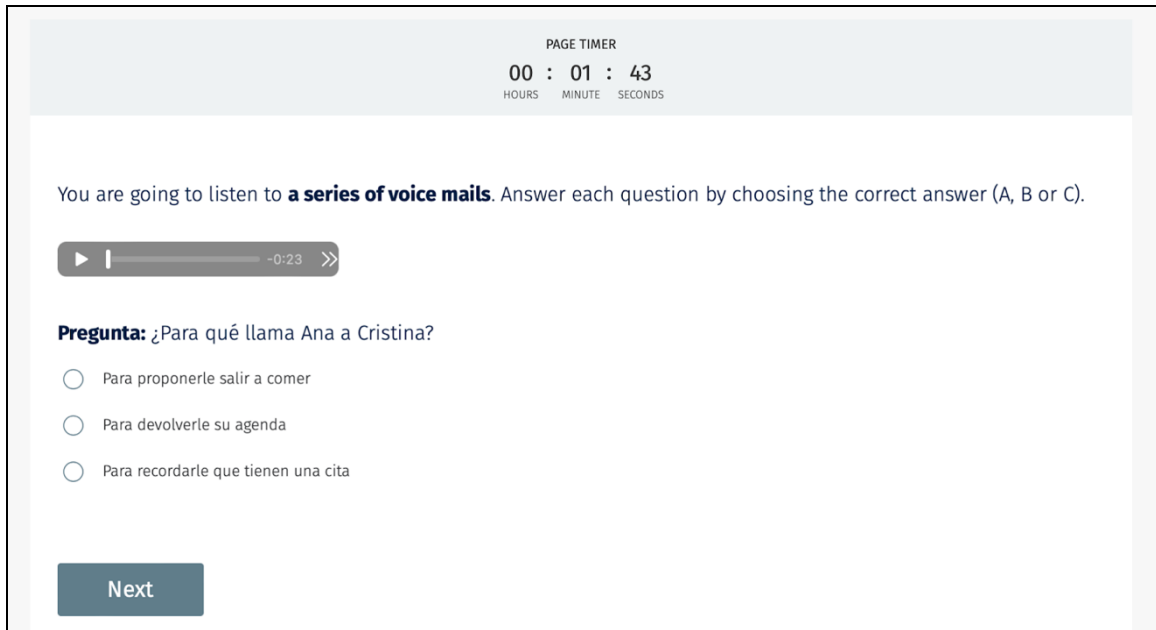


Figure 3. Screenshot of sample question from the Listening comprehension activity

Here participants were required to select the correct response from three given options for each question. For instance, they were presented with the following script:

“Hola, Cristina, soy Ana. Seguro que has estado buscando por toda la casa tu agenda. La tengo yo, te la olvidaste ayer en el restaurante. Me la llevé sin querer entre mis cuadernos. Esta tarde tengo una reunión cerca de tu oficina, así que, si te parece bien, voy y te la doy. Llámame para decirme si vas a estar.” (English translations can be found in the Appendix section).

Then, participants were prompted with the question *¿Para qué llama Ana a Cristina?* with possible answers including a) *Para proponerle salir a comer*, b) *Para devolverle su agenda*, or c) *Para recordarle que tienen una cita*. In this case, participants were given a total of two minutes to listen to the audio and select the most appropriate answer. It is important to highlight that participants were required to manually click the "play" button

to listen to the audio recording, as it was not set to play automatically. Additionally, they needed to click "next" to proceed to the next recording. Once again, participants were required to respond to all items, and they were unable to review their previous responses due to one item being displayed at a time.

Prior to the completion of the activity, participants were provided unlimited time to read the instruction section, allowing for a comprehensive understanding of the activity and its associated tasks, as seen in figure 4.

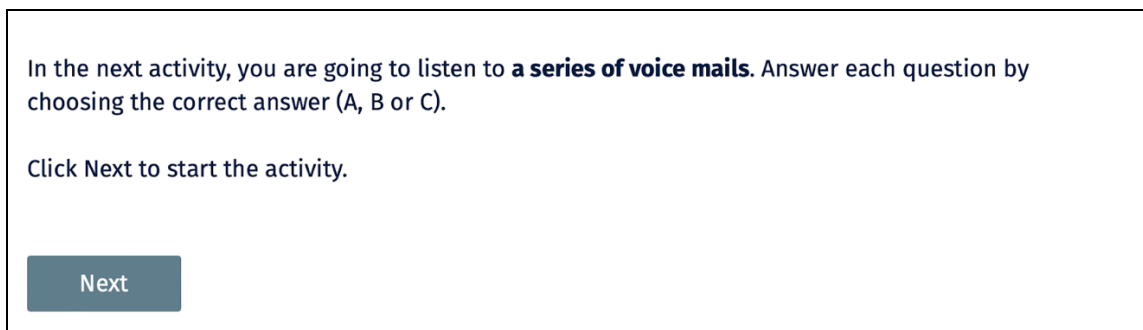


Figure 4. Untimed Instruction Section Screenshot - Listening Comprehension Activity

In this instance, participants were provided with the following prompt: "In the next activity, you will listen to a series of voicemails. Please answer each question by selecting the correct answer (A, B, or C)." Subsequently, they were required to click "Next" to initiate the activity after reading the prompt.

Considering that one native Spanish speaker from each dialect (Argentinean, Mexican, and Puerto Rican) would be producing the audios, it was essential to take regional variation into consideration in ways that go beyond sociophonetic variation. Thus, each native Spanish speaker received the script of each original version of the DELE B1 monologue, which reflects a peninsular variety of Spanish, and was tasked to adjust it to their dialect. For instance, in one of the audio segments discussing 'buying a

cake’, the term *biscocho* was used in Puerto Rican Spanish, *pastel* in Mexican Spanish, and *torta* in Argentine Spanish. This regional adaptation aimed to reflect authentic language usage and provide listeners with audio materials that they might encounter in real-life situations, spoken by individuals of different regions. As a result, a total of 18 words/phrases (per audio: mean=3, median=3, SD=0.81) were changed across the three versions of the same texts, accounting for differences in regional lexicon and morphosyntax. However, it is important to note that only a limited number of instances were taken into account to avoid having completely different texts. Additionally, only the suggestions of the native speakers recording the audios were considered, as it was crucial for them to feel comfortable while reading the texts in the most natural manner.

In order to account for speech rate, each audio was recorded twice by each speaker: once at a normal speech rate and one at a slower pace. Previous research in the area of speech rate and second language comprehension has suggested that listeners face more difficulties when speech was faster as language learners may fail to perceive individual phonemes, resulting in difficulties in identifying familiar words (Stanley, 1978; Buck, 2001). Hence, taking speech rate into consideration was an important part of this study. Moreover, to prevent generating unnatural speech or losing the principal phonological cues specific to each dialect when recording at different speeds, a series of recordings was conducted to attain the most optimal stimuli. This resulted in slower versions with slightly longer durations, thereby guaranteeing the preservation of essential linguistic elements. It is important to note that speakers were instructed to record different versions, adjusting their speed to generate both slower and faster speech samples. Thus, the objective was to create both slower and faster versions that maintain

the authenticity of the samples. Once recordings were completed, speech rate in syllables per second was calculated to confirm the differences in speech rate. Thus, this was achieved by dividing the number of syllables by the duration in seconds of each audio recording. Pauses at the beginning and end of each audio were not considered in the calculation, while pauses between words were included as part of the audio duration.

Table 3 presents the speech rate of syllables per second for each recorded audio segment.

Table 3.

Speech Rate

		Text 1	Text 2	Text 3	Text 4	Text 5	Text 6	Mean
ARG	Normal	3.55 syl/sec	3.60 syl/sec	3.51 syl/sec	3.07 syl/sec	3.04 syl/sec	3.26 syl/sec	3.33 syl/sec
	Slow	3.09 syl/sec	3.13 syl/sec	3.16 syl/sec	2.86 syl/sec	2.78 syl/sec	2.88 syl/sec	2.98 syl/sec
MEX	Normal	3.57 syl/sec	4.10 syl/sec	4.38 syl/sec	3.82 syl/sec	3.82 syl/sec	3.92 syl/sec	3.93 syl/sec
	Slow	3.27 syl/sec	3.55 syl/sec	3.91 syl/sec	3.52 syl/sec	3.61 syl/sec	3.50 syl/sec	3.56 syl/sec
PR	Normal	4.54 syl/sec	4.35 syl/sec	4.52 syl/sec	4.35 syl/sec	4.33 syl/sec	4.26 syl/sec	4.38 syl/sec
	Slow	3.57 syl/sec	3.52 syl/sec	3.8 syl/sec	3.48 syl/sec	3.42 syl/sec	3.5 syl/sec	3.54 syl/sec

*syl/sec: syllables per second

In Table 3, the average number of syllables per second for each of the six texts recorded by each speaker of each dialect is presented, both at normal and slow speeds. The mean values can be found in the last column on the right.

Having carefully considered the aforementioned specifications, six distinct versions of the task were created, each corresponding to a specific listening comprehension version. It is worth mentioning that only one speaker from each dialect

was selected to record each corresponding audio, as the research chose one speaker of each dialect to be the ones recording. A detailed description of each version is presented in Table 4.

Table 4.

Versions of Listening Comprehension Activity

	Version 1		Version 2		Version 3		Version 4		Version 5		Version 6	
Text	RoS*	Origin	RoS	Origin	Ros	Origin	Ros	Origin	Ros	Origin	Ros	Origin
1	Normal	MEX	Normal	PR	Normal	ARG	Slow	MEX	Slow	PR	Slow	ARG
2	Slow	MEX	Slow	PR	Slow	ARG	Normal	MEX	Normal	PR	Normal	ARG
3	Normal	PR	Normal	ARG	Normal	MEX	Slow	PR	Slow	ARG	Slow	MEX
4	Slow	PR	Slow	ARG	Slow	MEX	Normal	PR	Normal	ARG	Normal	MEX
5	Normal	ARG	Normal	MEX	Normal	PR	Slow	ARG	Slow	MEX	Slow	PR
6	Slow	ARG	Slow	MEX	Slow	PR	Normal	ARG	Normal	MEX	Normal	PR

*Rate of speech

In Table 4, it can be observed that variations in speech rate and speakers' country of origin were taken into consideration when creating the final versions. Each text recorded by each Spanish speaker at a different speech rate was allocated to each version. Each version presents a unique combination of speech rate and origin according to each audio recording. No two versions have the same audio, as it was imperative to create diverse representations of speech patterns for analysis. Participants completed the different versions as follows: Version 1 by 22 participants, Version 2 by 20, Version 3 by 18, Version 4 by 17, Version 5 by 15, and Version 6 by 16.

The complete versions of all monologues from each dialect can be found in Appendix B. An English translation of the task is provided at the end.

After creating all versions, a detailed quantification analysis was conducted to examine the variables and variants used. The primary objective was to evaluate the

prevalence of dialectal features. The comprehensive list can be found in Appendix C, while a condensed overview of this information is provided in Table 5. Consequently, data regarding the quantity of dialectal traits observed in each dialogue, along with the corresponding frequencies of occurrence for each trait within its respective dialect, were computed. Following these frequencies, the actual number of occurrences is presented. It is important to note that a subdivision for speech rate has been included in the pronunciation section.

Table 5.

Quantifying Variables in Listening Comprehension Versions

Morphosyntax	Voseo (vs. tuteo)	
	Verb tense	
Lexicon	e.g. “bizcocho” vs “pastel” (<i>cake</i>)	
Pronunciation	Syllable- and word- final /s/ weakening	Normal
		Slow
	Intervocalic /d/ elision	Normal
		Slow
	Sheísmo (vs yeísmo)	Normal
		Slow
	Lateralization of /r/	Normal
		Slow

The features encompass various aspects, including lexicon, grammatical structures, and phonetics and phonology. It is worth noting that any potential inaccuracies may stem from the coders' perceptual biases, influenced by their personal experiences

with variant distributions. However, these inaccuracies are likely to reflect existing language patterns and should not be of major concern.

3.2.4 AX discrimination task. The second task, an AX discrimination task, evaluated participants' perceptual discrimination abilities of the distinct realizations of /s/ (weakened vs. maintained) in word-internal position. In this task, participants were orally presented with two items and had to decide whether they were the *same* or *different* words (García, 2015). For instance, in the following case, /'ba[h].pe/ or /'ba[0].pe/ and /'ba[s].pe/, the words are pronounced differently, but the correct response would be *same* since they represent identical words. It should be emphasized that in this task, both aspirated and deleted variants are grouped in the same category of “/s/ weakened [h] or [0]”.

For this study, the stimuli consisted of nonce-words produced by four female speakers, two from Argentina and two from Puerto Rico, as these dialects typically exhibit phonetic weakening of /s/ (Lipski, 1994). Nonce-words were employed to direct participants' attention to their prior phonetic and phonological knowledge, while disregarding the lexical representation of actual lexical items. This is crucial as it minimizes the potential influence of listeners' familiarity with certain words, regardless of the speaker's dialect (Schoonmaker-Gates, 2014). Thus, the stimuli presented consisted of nonce-words previously recorded within the carrier sentence “di _____ para mí” (‘say _____ for me’). Two task versions, as shown in Table 6, were created and equally distributed among the final surveys. It is important to note that the series of AX stimuli heard by the listeners were always produced by two speakers of the same dialect.

Table 6.

Distribution of Speakers Per Version

	Version 1	Version 2
Argentinean Spanish	A: Speaker #1 X: Speaker #2	A: Speaker #2 X: Speaker #1
Puerto Rican Spanish	A: Speaker #1 X: Speaker #2	A: Speaker #2 X: Speaker #1

In Table 6, it can be observed that speakers of each dialect were interchanged.

Specifically, in each version, if a speaker from one dialect appeared as the first speaker, the same speaker would then appear as the second speaker in the alternate version. This pattern was consistently applied to all items. For instance, in the first version, Speaker A was always designated as speaker #1, while Speaker X was consistently assigned as speaker #2. Conversely, in the second version, Speaker A became speaker #2, and Speaker X became speaker #1 in every instance.

A total of 54 pairs of disyllabic nonce-words were created for the study, with 27 pairs as *same* (18 for the target stimuli and 9 for the distractor stimuli), while the remaining 27 pairs were *different* (distractor stimuli). The words in question were stressed on penultimate syllable, followed the pattern [CVC.CV], such as /'bas.pe/. For the target stimuli, the pair of nonce-words included were categorized into three main groups, as seen in Table 7. The combination stimuli were always presented in the order established in the Table, with the weakened condition appearing first, followed by the word containing the retained sibilant. Each pair represented different manifestations of the phoneme /s/.

Table 7.

Manifestations of the Phoneme /s/

Manifestations of the phoneme /s/		
	First word	Second word
1	/s/ weakened [h] or [0]	sibilant
	Example: /'ti[h].pa/ or /'ti[0].pa/	Example: /'ti[s].pa/
2	/s/ weakened [h] or [0]	/s/ weakened [h] or [0]
	Example: /'po[h].ku/ or /'po[0].ku/	Example: /'po[h].ku/ or /'po[0].ku/
3	sibilant	sibilant
	Example: /'ga[s].pa/	Example: /'ga[s].pa/

Thus, a total of six pairs of nonce-words were created for both dialects to represent each of the three conditions described above (18 in total). The speakers were specifically instructed to produce both the weakened version and the standard manifestation of the sibilant, regardless of its frequency in their respective dialects. They were advised to adopt a casual and relaxed speech style while reading the weakened version, as if they were conversing with friends or family members. Then, they were asked to re-read the words while imagining they were speaking to non-native Spanish speakers or adopting the role of a news presenter on a television program. Multiple recording sessions were conducted until the desired pronunciation was achieved. Moreover, within each group (weakened vs sibilant, sibilant vs sibilant, etc), two pairs of words represented either an /sp/, /st/, or /sk/ cluster. For instance, the sibilant was retained in the case of /sp/ = /'ba[s].pe/, /st/ = /'pa[s].te/; and /sk/ = /'re[s].ka/. This

implementation was based on the observation that there is a distinct division phonetic between the /s/ and the voiceless stop in the majority of cases. Thus, the target stimuli were constructed to include a word-internal /s/ followed by a voiceless stop consonant (File-Muriel, 2007; Schmidt, 2011). To ensure an equal representation of the Spanish dialects included in the study, a balanced distribution of pairs of words read by Argentine (N = 9) and Puerto Rican (N = 9) speakers was considered during the creation of the target stimuli. Examples of all the pronunciation variations are available in Table 8. For the complete list, please refer to Appendix D.

Table 8.

Examples of Target Stimuli

Type of target stimuli		Dialect	A: weakened	X: sibilant	Answer
Weakened vs Sibilant	/sp/	Argentina	/'ba[h].pe/ /'ba[0].pe/	/'ba[s].pe/	Same
Weakened vs Weakened	/st/	Argentina	/'lu[h].ti/ /'lu[0].ti/	/'lu[h].ti/ /'lu[0].ti/	Same
Sibilant vs Sibilant	/sk/	Argentina	/'fo[s].ka/	/'fo[s].ka/	Same

In the first set of distractor stimuli (for the complete list, see Appendix E), designed to elicit the response "same" from participants, a total of nine disyllabic nonce-word pairs were created. An example can be seen in Table 9.

Table 9.

Example of Distractor Stimuli: Same

#	Dialect		A	X	Answer
1	Arg	Coda 1st syllable:	/'ti[r].co/	/'ti[r].co/	Same

While designing the distractor stimuli, a roughly equal representation of the Spanish dialects included in the study was taken into account, with five pairs of words read by the Argentinian speakers and four by the Puerto Rican speakers (see Appendix E). In summary, a total of 27-word pairs, encompassing both target and distractor stimuli, were created with the correct answer being *same*. Even though no modifications were introduced as all items remained identical, it is crucial to emphasize the significance of the categorizations (e.g. “Coda 1st syllable”) for the forthcoming explanation of the items that elicit the *different* response. Thus, for this particular case, three nonce-words featuring the same coda in the first syllable, two items sharing the same initial consonant, two items with the same initial consonant in the second syllable, and two items including the same vowel were created (see Appendix E).

Lastly, for the distractor stimuli categorized as *different*, a separate set of 27 items was created. In order to create distinct words within each pair, a single phoneme was modified. For that, six items had a different coda in the first syllable, seven items had a different first consonant, seven items had a different initial consonant in the second syllable, and seven items had a different vowel. Once again, to ensure a balanced representation of Spanish dialects, an equal distribution was maintained, 14 pairs of words produced by Argentinean speakers and 13 by Puerto Rican speakers. An example

of the distractor stimuli linked to the correct response "different" is presented in Table 10.

To access the complete list, please refer to Appendix E.

Table 10.

Example of Distractor Stimuli: Different

#	Dialect		A	X	Answer
1	Arg	Coda 1st syllable	/'po[l].ti/	/'po[m].ti/	Different

Finally, the first three pairs of made-up words included in the task served as practice items and were not included as part of the analysis (/'[ʃ]e.ma/ vs /'[l]e.ma/; /'[k]ur.mo/ vs /'[g]ur.mo/; and /'[b]ic.to/ vs /'[p]ic.to/). The task included a designated break period of 1 minute and 30 seconds after participants listened to 18 pairs of words. This break allowed them to rest before continuing with the task.

Three of the final surveys included version one of the AX discrimination task, while the other three surveys featured version two. It is important to note that the list of target and distractor stimuli was randomized using an online list randomizer to ensure that all word pairs appeared in a different order. Both versions were created using the same order; the only difference between them was the assignment of speakers to either A or X. It is worth mentioning that no additional randomization was applied to the survey itself for each participant. Figure 5 depicts a representation of what was presented to the participants.

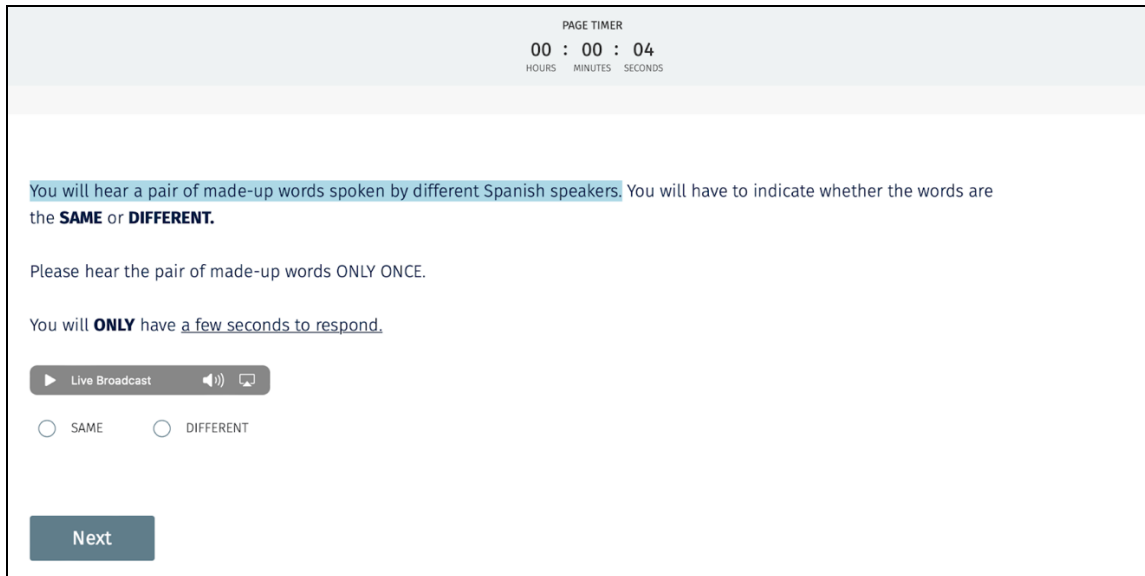


Figure 5. Screenshot of sample question from the AX discrimination task

Here participants were presented with the task where they had to select the correct response, either "same" or "different," after reading the prompt that explained, "You will hear a pair of made-up words spoken in Spanish. Please indicate whether the words are the same or different". Participants were instructed to listen to each pair of made-up words only once, unless external distractions affected their listening or comprehension. To ensure efficiency, a time limit of 15 seconds was allocated for each pair. Once again, participants needed to manually click the "play" button to listen to the audio recording, as it was not set to play automatically. To proceed to the next recording, they needed to click "next." Furthermore, they were required to respond to all items, and they couldn't review their previous responses since only one item was displayed at a time.

However, before starting to complete the AX discrimination task, and to allow participants sufficient time to read the instructions and adjust the volume before proceeding with the activity, a pair of nonce words (*tena* vs *dena*) was included in the untimed instruction section, as seen in figure 6.

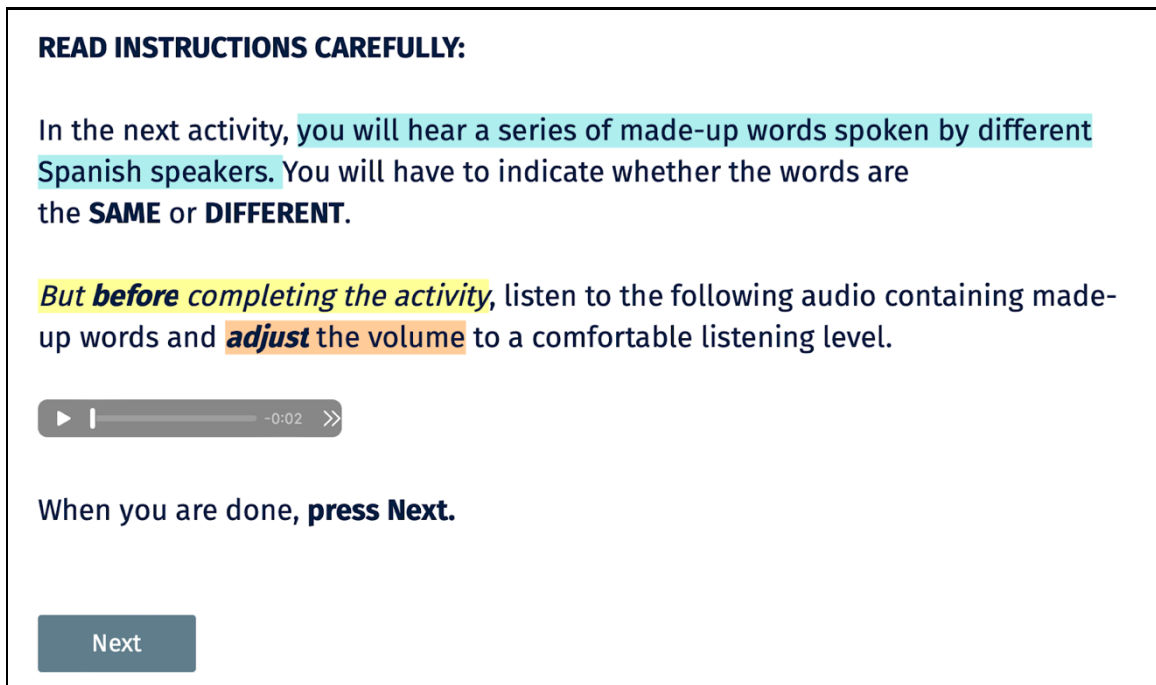


Figure 6. Untimed instruction section screenshot – AX discrimination task

Here, participants were presented with the following instruction, highlighted in different colors: "In the next activity, you will hear a series of made-up words spoken by different Spanish speakers. You will have to indicate whether the words are the same or different. But before completing the activity, listen to the following audio containing made-up words and adjust the volume to a comfortable listening level." Upon reading the instruction, participants were required to click "play" to listen to the audio and then proceed by clicking "Next" when they were ready to move on.

3.2.5 Language background questionnaire. The last activity completed by the participants was a LBQ. Table 11 illustrates the specific types of information elicited.

Table 11.

Summary of Language Background Questionnaire

Extralinguistic information	Date Age Gender Current place of residence Place of birth Spanish course currently taking
Linguistic information	Native language Knowledge of other languages and proficiency level Major Minor Language history (including sub-questions) Language use (including sub-questions) Language proficiency (including sub-questions) Hearing or reading difficulties
Exposure information	Number of years of Spanish courses and origin of instructors Native language and parents' city of origin Languages spoken at home Study abroad experience Living abroad experience
Dialectal pronunciation information	Description of dialectal pronunciations of Spanish Detailed previous exposure
Attitudes information	Dialect preferences Language varieties Importance of dialectal awareness “Funny” sounds or dialectal pronunciations in the tasks

The LBQ included questions regarding the participants' extralinguistic information (e.g. age, gender), linguistic background (e.g. native language), exposure to varieties of Spanish (e.g. study abroad; live abroad; origin of teachers), knowledge of dialectal pronunciations (description of dialectal pronunciations of Spanish), and attitudes towards

different varieties (importance of dialectal awareness). The questionnaire items included all the questions present in the Bilingual Language Profile (BLP): English-Spanish, used to assess participants' language dominance and, in that way, identify heritage Spanish speakers (Birdsong et al., 2012). The primary objective of the LBQ was to acquire a more comprehensive understanding of each participant's language exposure and linguistic history. It is important to highlight that all participants completed the same questionnaire, and no time constraint was imposed. The complete LBQ can be found in Appendix F.

3.3 Procedure

To develop the audio stimuli for the research instruments, the researcher held individual in-person meetings with each native Spanish speaker, with the exception of the Argentinean speaker who resided in her home country. The recordings took place in a small computer lab equipped with a high-quality microphone headset. Multiple iterations of each audio file were recorded and refined using Audacity to attain the utmost quality. The speaker residing in Argentina received detailed instructions on the audio recording process, and multiple versions were also generated using a high-quality microphone headset.

Each group of second language learners gathered in the same computer laboratory and completed the assigned tasks on a designated day during their regularly scheduled class time. Thus, on the day of data collection, the instructors of each course received an email containing a link, which was subsequently shared with the students through the university's learning management system. The link provided access to six different versions of the same tasks. Prior to initiating the activities, the researcher provided instructions for each section of the experiment in English. Additionally, each participant

was assigned a number ranging from one to six, which corresponded to the survey number they were to select. Participants were informed that their participation was voluntary, and their names were not collected. Furthermore, it was clarified that the tasks were not graded, but rather, extra credit would be awarded at the end of the semester.

Participants were instructed to utilize Google Chrome as their preferred web browser to avoid potential technical issues that may arise when completing the activities on QuestionPro. Moreover, they were advised to ensure that the audio output was properly configured to the headphones by watching any YouTube video. During the completion of the activities, participants were explicitly directed to listen to each audio recording only once to capture their initial reactions. However, if external distractions hindered their ability to perceive the audio clearly, they were granted the option to replay the audio. Participants were informed that any data in which multiple playback instances occurred would be excluded from analysis, as QuestionPro registered the number of clicks on each audio recording by individual participants.

Following instructions and recommendations, participants who provided informed consent proceeded to complete the language proficiency test, the AX discrimination task, the listening comprehension activity, and the LBQ at individual computer stations equipped with ear-cup headphones. Given that the first three activities were timed, participants had the flexibility to work at their own pace when completing the LBQ. As a result, there was variation in the amount of time dedicated to completing the experiment. On average, participants took 35 minutes ($SD=7.01$, range = 24 to 67 minutes) to complete all the designated activities. After the participants completed all activities, the course instructor resumed teaching if there was any time remaining.

3.4 Data Coding

All participant responses were automatically recorded into Excel files corresponding to each survey version. These files were subsequently merged into a unified document and converted into tidy data format with the tidyverse packages (Wickham et al., 2019) for analysis using R (R Core Team, 2019). When creating the survey on QuestionPro, binary accuracy scores were assigned as possible answers. In the case of the AX discrimination task, if participants heard /'pi[h].te/ or /'pi[0].te/ next to /'pi[s].te/ and chose *Different*, they received a score of 0 because, despite the differing pronunciation of both words, they actually represent the same word. The same principle was applied to the listening comprehension activity. Out of the three available options for each question, only one was considered correct and assigned a score of 1. If participants selected either of the other two options, they received a score of 0. Then the same approach was also adopted for the language proficiency test, where correct answers were awarded a score of 1, while incorrect answers received a score of 0.

With regard to the crucial aspects within the LBQ, information pertaining to the teacher's origin and experiences abroad (studied and/or lived abroad combined) were recorded in the Excel Sheet. The responses included the names of cities/countries, the term "unknown," or "N/A" if the question did not apply. In addition, the selected questions to be analyzed regarding linguistic and extralinguistic information, along with responses to the open-ended questions, were included in the Excel Sheet. If a numerical scale was present, it remained unaltered. However, for responses categorized as 'agree,' 'neutral,' or 'disagree,' they were transformed into numerical scores of 1, 0, and -1, respectively. Furthermore, a qualitative analysis was conducted for the open-ended

questions concerning students' preferences for imitating dialects of Spanish varieties. This analysis was organized and reported based on themes, distinguishing between those who expressed no preference for imitating any dialect and those who described their preferences and reasons. The same analytical approach was employed for questions related to previous exposure to different Spanish dialects in class, questions explicitly inquiring about pronunciation instructions, and sounds detected by students while completing activities. Thus, all responses were subsequently categorized into the most prominent and relevant themes.

In conclusion, the participants' finalized file contained the following information: versions of the listening comprehension activity (1, 2, 3, 4, 5, 6), versions of the AX discrimination task (1, 2), user ID, completion time, proficiency test scores, AX discrimination task scores (0, 1), listening comprehension activity scores (0, 1), and various responses from the LBQ.

For the first research question, “To what extent do L2 Spanish learners perceptually group both the weakened and maintained (sibilant) variants of Spanish /s/ into the same phonetic category?” mean scores and standard deviations were calculated for the AX discrimination task using R. To address the second research question, “What effect does previous exposure to different Spanish language varieties have on L2 perception of the regional variants of Spanish /s/?”; Table 12 presents the predictor variables, their levels, and the random effects used in the analysis of the AX discrimination task, along with participants' reported previous language experiences.

Table 12.

Predictor Variables and Random Effects for the AX Discrimination Task

AX discrimination task	
Response – Binary: Correct (1) or Incorrect (0)	
Predictor Variables	Variable Levels
AX Condition	AXweakened_sibilant AXweakened_weakened AXsibilant_sibilant AXdistractors
/s/ weakening teacher	Teacher_s_weakening Teacher_s_conserving Teacher_notclear Teacher_native
/s/ study abroad	Abroad_s_weakening Abroad_s_conserving Abroad_notclear
Performance on Proficiency Test (range = 0 to 18)	
Random Effects	
Participant	
Item	

The participants' responses were coded using a binary system, where a value of 1 denoted a correct response and a value of 0 represented an incorrect response. In order to classify the different /s/ conditions in the pairs of words from the AX discrimination task, items were categorized based on the origin of the speaker and the type of /s/ condition. The categorical variables were as follows: 1) "AXweakened_sibilant," where the first

occurrence of /s/ was reduced and the second retained, 2) "AXweakened_ weakened," where both /s/ sounds in both words were reduced, and 3) "AXsibilant_ sibilant," where both /s/ sounds were produced as sibilants.

For the predictor variables “/s/ weakening teacher” and “/s/ weakening studying abroad”, a binary classification of True or False was assigned to each respective case. For instance, if participants reported having a teacher from Argentina, they were placed under True in the "origin of the teacher" category. Countries that demonstrate significant regional variation with respect to /s/ weakening and lacked specific city names in the responses of the LBQ were classified as "not clear." Additionally, and solely in relation to the origin of the teacher, a separate classification was created for non-native Spanish teachers. Table 13 presents the Spanish regions reported by participants in the LBQ, divided according to their experiences abroad and the origin of their teachers.

Table 13.

Division of Spanish Dialects for those Varieties Reported in the LBQ

	Experience Abroad	Origin of the teacher
/s/ weakening regions	Argentina (Cordoba) Chile Dominican Republic Peru (Lima) Puerto Rico Spain (Malaga, Granada)	Argentina Chile Nicaragua Panama Puerto Rico Uruguay Venezuela
/s/ retention regions	Costa Rica (San Ramon) Guatemala Mexico (Guanajuato, Mexico City) Spain (Madrid, Barcelona)	Colombia (Bogota) Ecuador (Quito) Guadalajara, Mexico (Guadalajara) Guatemala Mexico Spain (Madrid, Barcelona)
Non-native Spanish speakers	-	United States
Not clear	Costa Rica Spain	Colombia Costa Rica Ecuador Peru Spain

Table 13 offers insights into the countries and regions where variations in the articulation of the /s/ sound are observed. Specifically, it outlines the regions where participants reported having experiences abroad, categorizing them based on whether these areas are known for weakening or retaining the /s/ sound. The Table also provides information about the teachers' places of origin and their native language status. The “Not clear” entry indicates situations where the country is known, but the city is not specified. In such cases, the country encompasses areas where both /s/ retention and weakening occur.

Given the absence of specificity, accurately categorizing these instances becomes challenging, leading to their classification as “not clear”. Finally, the random effects of Participant and Item were included to be integrated into the statistical analysis.

To address the third research question, “How does a learner's performance when perceiving and grouping said sounds into the same phonetic category impact listening comprehension?”, the predictor variables, along with their levels, and the random effects utilized for the analysis of the listening comprehension activity, are presented in Table 14.

Table 14.

Predictor Variables and Random Effects for the Listening Comprehension Activity

Listening comprehension activity	
Response – Binary: Correct (1) or Incorrect (0)	
Predictor Variables	Variable Levels
Dialect	Dialect_Mex Dialect_Arg Dialect_PR
Speed	Speed_Normal Speed_Slow
/s/ weakening teacher	Teacher_s_weakening Teacher_s_conserving Teacher_notclear Teacher_native
/s/ study abroad	Abroad_s_weakening Abroad_s_conserving Abroad_notclear
Performance of Proficiency Test	
Performance on AX discrimination task	
Random Effects	
Participant	
Item	

Once again in this context, the participants' responses were coded using a binary system, where a value of 1 denoted a correct response and a value of 0 represented an incorrect response. Then, the categorical predictor variable "Dialect" has three levels representing different dialects: Mexican (Mex), Argentinean (Arg), and Puerto Rican

(PR). Additionally, the variable "Speed" was categorized into two levels: Normal and Slow. The final two predictor variables included the performance on the proficiency test and the performance on the AX discrimination task. In terms of random effects, both Participant and Item were incorporated.

3.5 Data Analysis

Initially, the accuracy of correctly decoding /s/ weakening for each individual item was calculated for every participant in order to answer the first research question. This calculation involved dividing the number of correct responses of same or different by the total number of target stimuli presented. These models allowed for the investigation of both main effects and interactions that might influence the participants' responses. The "glmer" function from the "lme4" package (Bates, Maechler, Bolker, and Walker, 2015) in the R programming environment was used to construct these models. Furthermore, to facilitate the convergence of the models, the "optimx" package was utilized as an optimizer. The package ggplot2 (Wickam, 2009) was utilized to generate visual representations of the data. Additionally, the score for the listening comprehension activity was calculated, specifically for the third research question. To address the final research question, a Correlation Analysis was conducted in R when needed using the "cor.test()" function, along with the Kendall's Tau-b correlation coefficient. This analysis aimed to measure the association between the results from the AX discrimination task and the listening comprehension activity, in relation to the language attitudes of the participants.

3.6 Chapter Summary

This chapter provided a detailed account of the methodology employed to address the research questions in the present study. The chapter started with a detailed explanation of the data collection procedure. Then, an overview of the participants, second language learners at the intermediate level was presented. Subsequently, a description of the native Spanish speakers from Argentina, Puerto Rico, and Mexico, who were recruited for the purpose of creating the research instruments, was provided. This was followed by a description of the instruments utilized in the analysis, including the proficiency test, the listening comprehension activity, the AX discrimination task, and the LBQ. The chapter concluded with a description of the data coding method employed, along with the data analyses. The following chapter presents the results obtained after conducting the data analysis.

CHAPTER 4

RESULTS

This chapter presents the results of the data analysis that answer the research questions posed at the end of Chapter 1. To address the first research question, identification accuracies in the AX discrimination task for decoding /s/ weakening and /s/ retention in all conditions (weakened_sibilant, weakened_weakened, and sibilant_sibilant) were calculated. The chapter then examines the effects of previous language exposure to different Spanish language variations on the perceptual decoding of /s/ variants in Spanish. Then, it discusses the findings on how participants' performance in decoding /s/ variants in Spanish impacts listening comprehension. Lastly, the chapter focuses on language attitudes, along with, in some cases, its influence on task accuracy.

4.1 Accuracy in the Perception of /s/ Variants

To address the first research question, “To what extent do L2 Spanish learners perceptually group both the weakened and maintained (sibilant) variants of Spanish /s/ into the same phonetic category?”; decoding accuracy percentages were calculated to assess the perception of each /s/ Spanish variant for each listener (N = 108). The resulting mean accuracy scores, along with the standard deviations, are presented in Table 15 as a quantitative measure of participants' decoding performance.

Table 15.

Accuracy Scores in AX Discrimination Conditions

AX condition	Example	Mean accuracy score (SD)
AXweakened_sibilant	/'ba[h].pe/ or /'ba[0].pe/ vs /'bas.pe/	47% (SD = 5)
AXweakened_weakened	/'lu[h].ti/ or /'lu[0].ti/ vs /'lu[h].ti/ or /'lu[0].ti/	79% (SD = 4)
AXsibilant_sibilant	/'fo[s].ka/ vs /'fo[s].ka/	87% (SD = 3)
AXdistractors	/'tir.co/ vs /'tir.co/ (same) /'gor.fu/ vs /'gor.nu/ (different)	78% (SD = 4)

Table 15 reveals that the participants, as a group, exhibited a high level of accuracy in decoding words with both /s/ sounds produced as sibilants (87% accuracy in the sibilant_sibilant condition), followed by the condition where both /s/ sounds in both words were reduced (79% accuracy in the weakened_weakened condition) and then, the distractors (78% accuracy). However, notably lower identification accuracy was observed in the condition where the /s/ was initially reduced in the first word and then retained in the second (47% accuracy in the weakened_sibilant condition). Then, Table 16 presents the fixed effects obtained from the generalized linear mixed-effects model. Negative estimates indicate that participants were performing worse than the variable's reference level. All that remains in Table 16 are the significant main effects since there were no

significant interactions between the different variables. For each variable (and variable level), the estimate, standard error, z-value, p-value, and significance level are presented.

Table 16.

Fixed Effects in GLMM for AX Discrimination Task Type

Fixed effect	Estimate	Std. Error	z-value	p-value	Significance level
(intercept)	2.5244	0.5866	4.303	0.0000	***
scale (proficiency test)	0.1557	0.1008	1.545	0.1222	
AXweakened_sibilant	-3.0830	0.6708	-4.596	0.0000	***
AXweakened_weakened	-1.1772	0.6781	-1.736	0.0826	.
Teacher_s_weakening	-0.8265	0.3457	-2.391	0.0168	*
Abroad_weakening	-0.7318	0.5910	-1.238	0.2156	
AXweakened_sibilant: teacher_s_weakening	0.4901	0.3537	1.385	0.1659	
AXweakened_weakened: teacher_s_weakening	0.6123	0.3770	1.624	0.1043	
AXweakened_sibilant: abroad_weakening	1.5446	0.6051	2.553	0.0107	*
AXweakened_weakened: abroad_weakening	0.9734	0.6657	1.462	1.462	

“***” = $p < 0.001$, “*” = $p, 0.05$, “.” = $p < 0.1$

The model revealed a significant effect for the type of AX condition, as participants performed worse with the weakened_sibilant condition (estimate = -3.0830; $p < 0.000$). However, when words were both weakened (weakened_weakened condition), the model showed marginal significance (estimate = -1.1772; $p < 0.8$); thus, participants performed worse in that condition than in the others.

Although a clear categorical division between [h] and [0] was not employed in this study due to the difficulty in establishing a clear-cut differentiation between

aspiration and deletion (Gradoville et al., 2022), a distinction was still made to investigate whether the lower accuracy was partially attributed to cases where [h] or [0] were positioned alongside sibilants in the AX discrimination task. It is important to note that during the recording phase, Argentine speakers were instructed to pronounce /s/ with aspiration, whereas Puerto Ricans were guided to exhibit /s/ deletion, as much as possible. It is crucial to recognize that any potential discrepancies could have arisen due to the challenge of implementing these adjustments, given the use of nonce words and the difficulty in intentionally producing unnatural weakening of the /s/ sound. Therefore, every effort was made to achieve the best possible results. With that in mind, an exploration of the weakened_sibilant condition was undertaken to determine whether aspiration or deletion led to fewer or greater difficulties. Table 17 presents a quantitative assessment of participants' decoding performance, categorized by /s/ aspiration and /s/ deletion.

Table 17.

Accuracy Scores for /s/ Aspiration and Deletion in Weakened Sibilants

AX condition	/s/ weakening type	Accuracy means score (SD)
AXweakened_(sibilant)	/s/ aspiration	45% (SD = 0.4)
	/s/ deletion	48% (SD = 0.4)

Table 17 suggests that there was minimal disparity in the identification accuracy percentages when associating words with either /s/ aspiration or /s/ deletion alongside their sibilant counterparts. Both forms of /s/ weakening demonstrated comparable

average accuracy scores, with the accuracy for /s/ deletion slightly surpassing that of aspiration.

4.2 Role of Exposure in the Perception of /s/ Variants

To answer the second research question, “What effect does previous exposure to different Spanish language varieties have on L2 perception of the regional variants of Spanish /s/?”; the generalized linear mixed-effects model also examined the impact of previous language exposure to different Spanish language varieties on the perceptual decoding of /s/ variants in Spanish, as seen at the end of Table 16. The interaction `weakened_sibilant: abroad_weakening` has a significant interaction effect, suggesting that it has an important and statistically significant influence on the decoding of Spanish /s/ by second language learners. With that in mind, the analysis revealed a significant interaction for participants who had experience abroad in an /s/ weakening environment in relation to their decoding of /s/ in the `weakened_sibilant` condition (estimate = 1.5446; $p < 0.01$) when compared to the other groups. Thus, those with experience abroad in an /s/ weakening region did better in the `weakened_sibilant` condition than those without experience abroad. However, no significant interaction was found between having a teacher from an /s/ weakening zone and the AX condition (estimate = 0.4901; $p < 0.16$), (estimate = 0.6123; $p < 0.10$). Thus, having a teacher who produces /s/ weakening had no differential effect on these AX conditions.

Furthermore, Table 18 displays the distribution of participants who had previous language exposure to /s/ weakening, which was determined through either having a teacher from an /s/ weakening region, through experience abroad in an /s/ weakening region, or through a combination of both. The number of participants, the accuracy from

the AX discrimination task, and standard deviations, along with the proficiency score and respective standard deviations, are found in Table 18.

Table 18.

Distribution of Participants According to their Previous Language Exposure

Teacher from an /s/ weakening region	Time abroad in an /s/ weakening region	Number of participants	Score (SD)	Proficiency score (SD)
-	-	73	71% (14)	12.58 (SD = 2.95, range = 5 to 18)
+	-	28	67% (15)	12.89 (SD = 2.34, range = 7 to 18)
-	+	5	78% (09)	14 (SD = 1, range = 13 to 15)
+	+	2	63% (19)	10 (SD = 8.48, range = 4 to 16)

Participants who spent time abroad in an /s/ weakening region (N=5) generally have higher average scores, even though the sample size is quite small. Those with both a teacher from the weakening region and time abroad (N=2) show a wide range of scores and a lower mean proficiency score, despite the small sample size here as well. Specifically, one participant achieved an accuracy score of 50%, while the other participant achieved a higher accuracy score of 78%.

Additionally, to have a better understanding of where and from whom students were exposed to /s/ weakening, the following countries were reported by the participants. Table 19 provides information on the /s/ weakening regions where students had experience abroad (first column) and the /s/ weakening regions reported by the teachers as their origin (second column).

Table 19.

List of /s/ Weakening Regions

/s/ weakening regions students had experience abroad	Teachers from /s/ weakening regions
Argentina (Cordoba)	Argentina
Chile	Chile
Dominican Republic	Nicaragua
Peru (Lima)	Panama
Puerto Rico	Puerto Rico
Spain (Malaga, Granada)	Uruguay
	Venezuela

Table 19 reveals that students reported various locations for their experiences abroad, including Argentina (Cordoba), Chile, the Dominican Republic, Peru (Lima), Puerto Rico, and Spain (Malaga, Granada). In contrast, the teachers' origins were primarily Argentina, Chile, Nicaragua, Panama, Puerto Rico, Uruguay, and Venezuela. Notably, all these regions are recognized for their linguistic variations related to the phenomenon of /s/ weakening.

The boxplot from figure 7 displays the performance comparisons among participants with and without experience in a /s/ weakening region. It reveals that whether or not participants lived in an /s/ weakening region, the impact on performance in both the weakened_ weakened and sibilant_ sibilant conditions was minimal. Interestingly, participants with prior experience in an /s/ weakening region achieved higher scores in the AX discrimination task compared to those without such exposure.

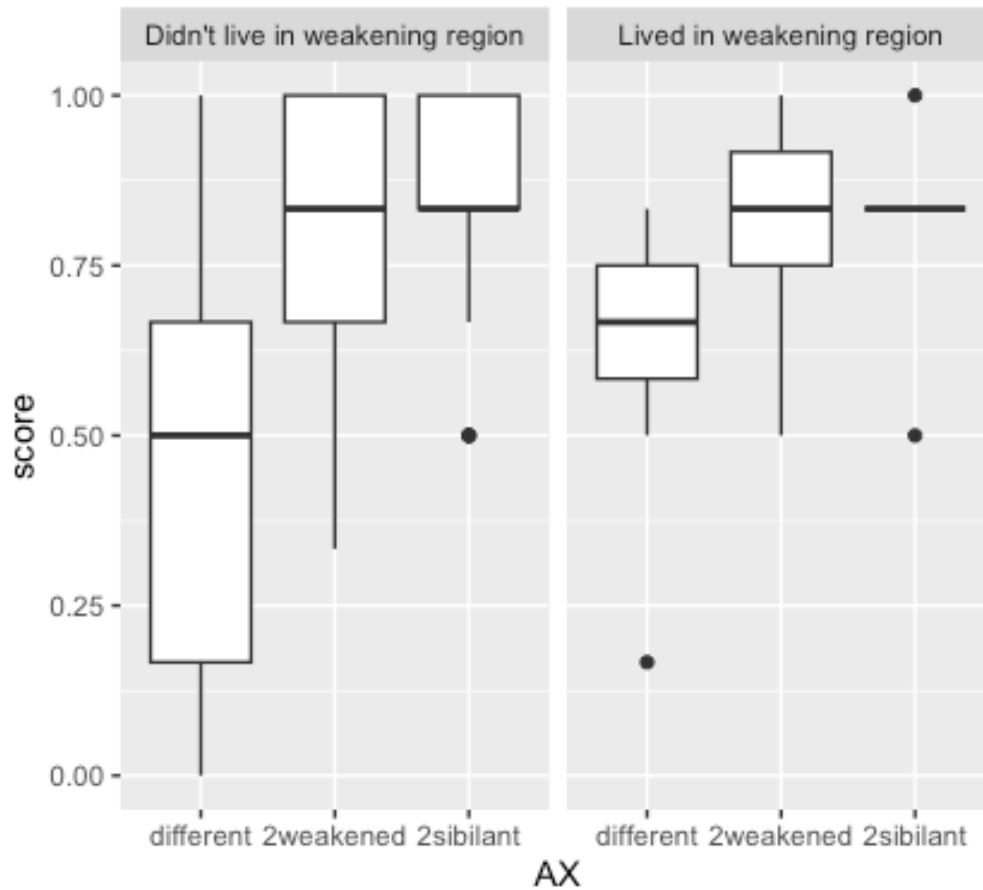


Figure 7. Abroad experience and performance in /s/ weakening regions

4.3 Influence of Perception Accuracy of /s/ Variants on Listening Comprehension

To address the third research question, “How does a learner's performance when perceiving and grouping said sounds into the same phonetic category impact listening comprehension?”; it is important to first take a look at the participants’ performance in relation to the native Spanish speakers reading the passages and the speech rate of each passage in the listening comprehension activity. Table 20 presents the mean scores, along with the standard deviations, of the listening comprehension activity separated by Speaker and Speech rate.

Table 20.

Listening Comprehension Accuracy by Speaker & Speech Rate

Speaker	Speech Rate	Score (SD)
Dialect_Arg	Speed_Normal	43% (49)
Dialect_Arg	Speed_Slow	47% (50)
Dialect_Mex	Speed_Normal	35% (48)
Dialect_Mex	Speed_Slow	30% (46)
Dialect_PR	Speed_Slow	29% (45)
Dialect_PR	Speed_Normal	29% (45)

Table 20 illustrates that participants consistently achieved low scores across all conditions when passages were categorized by Speaker and Speech Rate. Notably, the average score was 31.75% for dialogues delivered by both the Puerto Rican speaker in both speech rates and the Mexican speaker in both speech rates. On the other hand, for the case of the dialogues read by the Argentinean speaker, the average score was slightly higher at 45% for both speech rates. However, they still remain at the lower end, as none of them reached at least 50% accuracy.

Then, the generalized linear-fixed effects model revealed no significant interactions observed between the stimulus speaker variety and participants' prior exposure to /s/ weakening varieties, as seen in Table 21. Nevertheless, it is worth highlighting that individuals that did better on the AX discrimination task tended to achieve higher scores on the listening comprehension activity, as results approach significance (estimate = 1.409934; $p < 0.05$). While the results may not have reached statistical significance, they do reveal a discernible trend in the data. Moreover, Table 21 also indicates that, in

general, regardless of the specific dialect and speed, participants with higher proficiency performed better on the listening comprehension task than those with lower proficiency (estimate = 0.267780; $p < 0.01$).

Table 21.

Fixed Effects in GLMM: AX Task Impact on Listening Comprehension

Fixed effect	Estimate	Std. Error	z-value	p-value	Significance level
(intercept)	-0.991266	1.918833	-0.517	0.6054	
scale(proficiency test)	0.267780	0.104143	2.571	0.0101	*
scoreAX	1.409934	0.729982	1.931	0.0534	.
Dialect_Arg_Speed_Nor: abroad_weakening	-2.12155	1.31397	-1.615	0.10640	
Dialect_PR_Speed_Nor: abroad_weakening	-2.04413	1.90172	-1.075	0.28243	
Dialect_Arg_Speed_Slow: abroad_weakening	-1.43587	1.33844	-1.073	0.28337	
Dialect_Mex_Speed_Slow: abroad_weakening	-0.32788	1.34458	-0.244	0.80735	
Dialect_PR_Speed_Slow: abroad_weakening	-1.08577	1.29339	-0.839	0.40120	
Dialect_Arg_Speed_Nor: teacher_s_weakening	-0.84923	0.76969	-1.103	0.26988	
Dialect_PR_Speed_Nor: teacher_s_weakening	0.47761	0.77480	0.616	0.53761	
Dialect_Arg_Speed_Slow: teacher_s_weakening	-0.32113	0.74488	-0.431	0.66638	
Dialect_Mex_Speed_Slow: teacher_s_weakening	0.64541	0.75959	0.850	0.39551	
Dialect_PR_Speed_Slow: teacher_s_weakening	-1.38728	0.81462	-1.703	0.08857	.

“*” = p, 0.05, “.” = p < 0.1

The scatter plot in figure 8 presents the relationship between scores obtained in the AX discrimination task and the listening comprehension task.

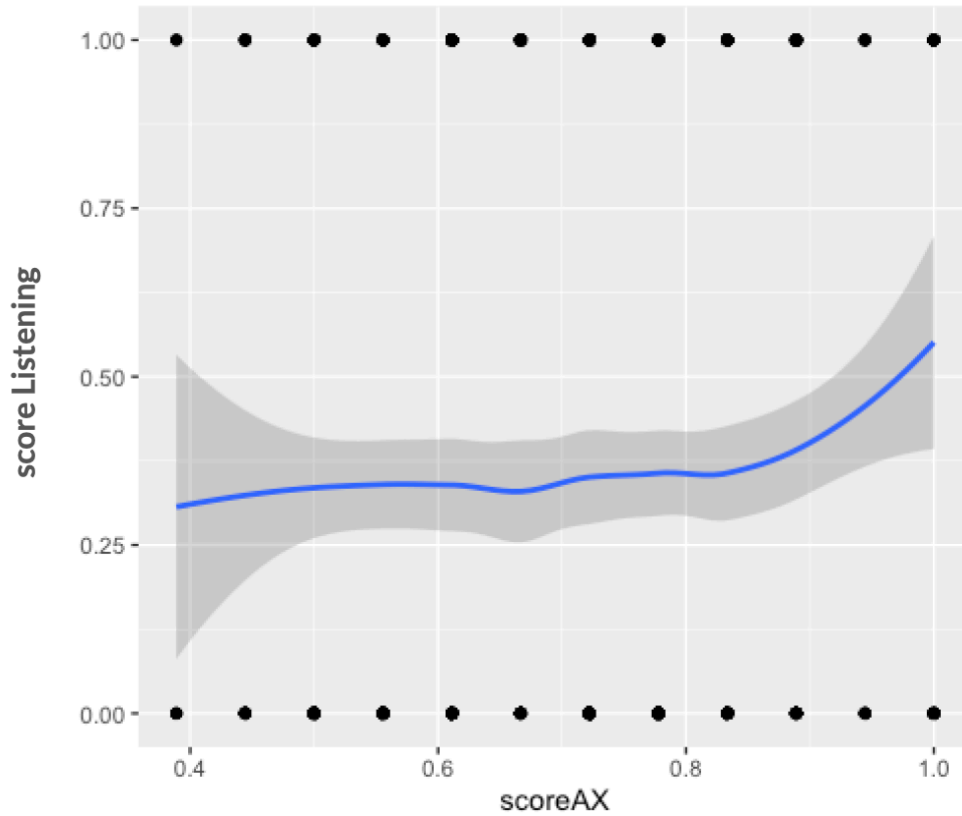


Figure 8. Relationship: AX discrimination and listening comprehension

The scatter plot indicates that participants who performed exceptionally well on the AX discrimination task (scoring above 80%) demonstrated better performance in the listening comprehension activity. Conversely, those who fared poorly on the AX discrimination task exhibited lower performance in the listening comprehension activity. Notably, no significant difference was observed among participants with average performance in the AX discrimination task.

4.4 Role of Language Attitudes in Task Accuracy

In addressing the fourth research question, “To what extent do learners' language attitudes impact their performance categorizing dialectal linguistic cues?”; both quantitative and qualitative analyses were performed on the responses. The second part focuses primarily on students' comments concerning the LBQ.

4.4.1 Quantitative results. Firstly, the responses to the first set of statements concerning attitudes about Spanish in general were analyzed. These responses, ranked on a Likert scale from 0 (strongly disagree) to 6 (strongly agree), were later examined to compare language attitudes with performance in both the AX discrimination task and the listening comprehension activity. First, Table 22 presents the results of the descriptive statistics.

Table 22.

Responses Regarding Statements on Language Attitudes

Statements	Mean (SD)
I feel like myself when I speak English	5.95 (0.25)
I feel like myself when I speak Spanish	3.15 (1.93)
I identify with an English-speaking culture	5.72 (0.85)
I identify with an Spanish-speaking culture	1.08 (1.42)
It is important to me to use (or eventually use) English like a native speaker	5.60 (1.22)
It is important to me to use (or eventually use) Spanish like a native speaker:	5.35 (1.01)
I want others to think I am a native speaker of English	5.39 (1.49)
I want others to think I am a native speaker of Spanish	3.78 (2.04)

The results from Table 22 indicate that participants generally reported feeling a strong sense of authenticity when speaking English ($M = 5.95$, $SD = 0.25$), as compared to when speaking Spanish ($M = 3.15$, $SD = 1.93$). Furthermore, participants expressed a higher identification with English-speaking culture ($M = 5.72$, $SD = 0.85$) than with Spanish-speaking culture ($M = 1.08$, $SD = 1.42$). This makes sense since the students are considered second language speakers of Spanish, and they may not necessarily have a strong connection to Hispanic culture. Notably, participants assigned importance to achieving native-like proficiency in both languages, placing slightly more emphasis on

English ($M = 5.60$, $SD = 1.22$) than on Spanish ($M = 5.35$, $SD = 1.01$). Additionally, participants exhibited a stronger desire for others to perceive them as native English speakers ($M = 5.39$, $SD = 1.49$) compared to their desire to be perceived as native Spanish speakers ($M = 3.78$, $SD = 2.04$).

Subsequently, a correlation analysis was performed on the previously mentioned set of responses to the statements, along with the participants' AX discrimination task scores and the results of the listening comprehension activity, both of which analyzed separately. This analysis was conducted to determine whether a relationship existed between participants' performance and their language attitudes, with each statement examined independently. Table 23 presents Kendall's Tau-b coefficients, including the calculated correlation coefficient and its significance for each statement.

Table 23.

Correlation Analysis: Statements vs. Task Performance

	AX discrimination task			Listening comprehension activity		
	Tau-b Value	p-value	Significance level	Tau-b Value	p-value	Significance level
I feel like myself when I speak English	-0.07631278	0.3531		-0.1484056	0.09005	.
I feel like myself when I speak Spanish	0.2203281	0.002331	*	0.1297942	0.09214	.
I identify with an English-speaking culture	-0.0544157	0.5003		-0.08788414	0.3068	
I identify with an Spanish-speaking culture	0.1801527	0.01777	*	0.07447805	0.3576	
It is important to me to use (or eventually use) English like a native speaker	-0.01958324	0.8074		-0.07662651	0.3705	
It is important to me to use (or eventually use) Spanish like a native speaker:	0.1193705	0.1273		0.01707436	0.8378	
I want others to think I am a native speaker of English	0.1659457	0.0374	*	0.1309488	0.1231	
I want others to think I am a native speaker of Spanish	0.2796689	0.0001289	***	0.07174508	0.3564	

“***” = $p < 0.001$, “*” = $p, 0.05$, “.” = $p < 0.1$

The Tau-b values from the AX discrimination task in Table 23, ranging from -0.01958324 to 0.2796689, reflect the strength and direction of these correlations. When

considering feeling like oneself while speaking English, there is a negligible correlation ($\tau b = -0.07631278$) that is not statistically significant ($p = 0.353$). However, a statistically significant positive correlation is identified between feeling like oneself while speaking Spanish and AX discrimination task scores ($\tau b = 0.2203$, $p = 0.002$). Similarly, a significant positive correlation is observed between identifying with a Spanish-speaking culture and AX discrimination task scores ($\tau b = 0.1801527$, $p = 0.017$). While none of the other statements, such as identifying with an English-speaking culture or the importance of using English or Spanish like a native speaker, show statistically significant correlations, a strong and highly significant correlation (***, $p < 0.000$) is found between the desire to be perceived as a native Spanish speaker and AX discrimination task scores ($\tau b = 0.2796689$).

Conversely, the correlation analysis between the results of the listening comprehension activity and the participants' language attitudes reveals a distinct pattern, displaying Tau-b values ranging from -0.07662651 to 0.1309488. For the statement "I feel like myself when I speak English," the τb value of -0.1484056 and a p-value of 0.090 hint at a possible negative correlation, although it is not statistically significant. Similarly, the statement "I feel like myself when I speak Spanish" shows a τb value of 0.1297942 and a p-value of 0.09214, suggesting a potential positive correlation that does not reach statistical significance. Among the other statements, no statistically significant correlations are observed between participants' responses and their performance in the listening comprehension activity. These results imply that participants' self-identification with languages and cultures, as well as their desires for native-like proficiency, may not significantly influence their performance in the listening comprehension task. This may

be attributed to the limited range of scores in the listening comprehension task, which offers only seven possible values per person (0%, 16.7%, 33.3%, 50.0%, 66.7%, 83.3%, 100%), in contrast to the AX discrimination task, which has wider range of possible values. Consequently, there is less to be able to differentiate participants in the listening comprehension task, which probably impacts the observed correlations. Another reason could be attributed to the complexity of the listening comprehension activity, which involves multiple levels compared to the AX discrimination task. In this case, the primary objective was to comprehend meaning rather than possibly focusing on perceiving lower-level, whether acoustic or phonetic, differences, as well as larger discourse, among other factors.

To analyze the second set of statements, which also pertain to attitudes about Spanish in general, a descriptive statistical analysis was initially performed. The responses range from a stronger affinity (1) to a lesser affinity (-1), as depicted in Table 24.

Table 24.

Responses Regarding Additional Statements on Language Attitudes

Questions	Mean (SD)
I am glad that I had taken Spanish classes	0.98 (0.13)
I love the Spanish language	0.92 (0.26)
I mainly study Spanish to fulfill a language requirement at my university	-0.80 (0.49)
I care a lot about how native-like my Spanish sounds	0.64 (0.56)
I care more about getting my point across than about how I sound while speaking	0.29 (0.74)
I have my own accent when speaking and avoid speaking like other Spanish speakers	-0.5 (0.61)

The provided Table 24 offers insights into participants' sentiments and attitudes towards the Spanish language based on their responses to various statements. Participants express high levels of positivity and attachment when stating that they are glad to have taken Spanish classes (Mean = 0.98, SD = 0.13) and that they love the Spanish language (Mean = 0.92, SD = 0.26). Conversely, a negative score is observed for the statement related to studying Spanish primarily to fulfill a university requirement (Mean = -0.80, SD = 0.49). This implies a strong negative reaction to the idea of studying mainly to fulfill a requirement. Presumably, students are motivated by other reasons, indicating a stronger affinity to Spanish. Participants seem to value sounding native-like in Spanish, as indicated by a positive mean for caring about the native-like sound of their Spanish

(Mean = 0.64, SD = 0.56). They also prioritize effective communication over perfect pronunciation, as reflected in their responses about focusing on conveying their point while speaking (Mean = 0.29, SD = 0.74). It is interesting that some participants express a willingness not to avoid speaking like other Spanish speakers, as indicated by a negative mean score (Mean = -0.5, SD = 0.61) for that statement. Moreover, some participants express a desire for individuality by maintaining their own accent and avoiding sounding like other Spanish speakers (Mean = -0.5, SD = 0.61).

Additionally, a further correlation analysis was conducted on the aforementioned set of responses to the statements. This analysis included the participants' scores in both the AX discrimination task and the results of the listening comprehension activity, each analyzed separately. The purpose of this analysis was to investigate one more time whether a connection existed between participants' performance and their attitudes. Each statement was examined independently to assess its relationship with participants' performance. Table 25 presents Kendall's Tau-b coefficients, including the calculated correlation coefficient and its significance for each statement.

Table 25.

Correlation Analysis: 2nd Set Statements vs. Task Performance

	AX discrimination task			Listening comprehension activity		
	Tau-b Value	p-value	Significance level	Tau-b Value	p-value	Significance level
I am glad that I had taken Spanish classes	0.1317527	0.1101		0.05088685	0.5624	
I love the Spanish language	0.1758576	0.03295	*	0.04610427	0.5997	
I mainly study Spanish to fulfill a language requirement at my university	-0.05610478	0.4896		-0.02351125	0.7858	
I care a lot about how native-like my Spanish sounds	0.1931963	0.01697	*	0.08461561	0.3263	
I care more about getting my point across than about how I sound while speaking	-0.02979732	0.7043		-0.1067578	0.2018	
I have my own accent when speaking and avoid speaking like other Spanish speakers	0.02564722	0.7497		0.06815141	0.4261	

“***” = $p < 0.001$, “*” = $p, 0.05$, “.” = $p < 0.1$

First, the Tau-b correlation analysis showed the interplay between the set of statements related to the participant’s attitudes toward Spanish and their performance in

the AX discrimination task, with values ranging from -0.056 to 0.193. Of particular importance are the statistically significant correlations observed for specific statements. For instance, “I love the Spanish language” yielded a Tau-b value of 0.176 (*, $p = 0.032$), while “I care a lot about how native-like my Spanish sounds” exhibited a Tau-b value of 0.193 (*, $p = 0.016$). Conversely, statements such as “I mainly study Spanish to fulfill a language requirement at my university” ($\tau b = -0.056$, $p = 0.490$) and “I have my own accent when speaking and avoid speaking like other Spanish speakers” ($\tau b = 0.026$, $p = 0.750$) did not manifest statistically significant correlations with task performance. Conversely, the correlation analysis between the results of the listening comprehension activity and the participants' attitudes reveals a distinct pattern, displaying Tau-b values ranging from -0.1067578 to 0.08461561. Despite varied Tau-b values, none of the correlations reached conventional significance levels. Notably, statements such as “I care more about getting my point across than about how I sound while speaking” yielded a negative Tau-b value of -0.1067578, indicating a negative correlation, though it did not reach statistical significance at the 0.05 level ($p = 0.2018$).

4.4.2 Qualitative results. Lastly, when delving into attitudes towards Spanish dialects, the responses to the third set of open-ended questions were analyzed and classified. Addressing the initial question, "Is there a specific dialect or variety of Spanish that you (personally) prefer to imitate when speaking Spanish?"; it's notable that out of the 108 participants, only 32 students firmly asserted that they do not attempt to imitate any particular dialect or variety of Spanish. Their responses spanned from a straightforward "no" to "I don't have any preference." Then, the main themes that emerged from the analysis of participants' attitudes towards Spanish dialects include: 1)

influence of upbringing and exposure; 2) environmental and educational factors; 3) media consumption and immersion; 4) personal attitude and learning focus; and 5) avoidance of certain dialects. Firstly, the theme of "influence of upbringing and exposure" encompasses numerous participants who emphasized how their childhood experiences significantly shaped their accent preferences, even if they did not identify as heritage Spanish speakers. Exposure to Mexican Spanish due to geographical proximity or close interactions with Mexican speakers during their formative years emerged as the primary reason for shaping their accents. For instance:

1. "I grew up around Mexican Spanish so that is the sound I reflex [sic] most. I would like to imitate the Chilean dialect after my study abroad term there."
2. "I usually imitate Mexican dialect when I speak Spanish because, growing up in Arizona, that is mostly the type of Spanish that I have been exposed to throughout my lifetime."
3. "Probably Mexican Spanish because that is what I've grown up hearing and I live close to Mexico".
4. "I unconsciously will always imitate the Mexican accent because of Hilda, the Chihuahua native, who I spent 5th-12th grade with."

Another significant theme is "environmental and educational factors." First, exposure to specific dialects in work environments had an impact on their accents, as evidenced by statements such as:

5. "I usually imitate [sic] Mexican dialect when I speak Spanish because I work in a Mexican restaurant where the cooks speak Spanish, and I try to talk like them."

6. "I work in a Mexican restaurant where the cooks speak Spanish, and I would try to listen to them talk, so I try to talk how they do since I hear them the most."

In this case, several students reported that working in a Mexican restaurant and being surrounded by Mexican speakers influenced their Spanish, and they adopted it as their preferred dialect.

Some participants highlighted the imitation of dialects learned from instructors:

7. "I think I imitate general Castilian speakers from Spain. I wouldn't say I prefer it, I just happen to have learned it from my instructors."
8. "I typically imitate the accent or dialect that my Spanish professors have used, and for a while I really enjoyed listening to the way that Spanish was spoken in Argentina and Spain."
9. "Since I grew up with teachers from Spain, I think I gravitate towards that dialect."
10. "(...) When my teacher in high school did his mission, he was in Mexico so that is the dialect and pronunciation that I was taught."
11. "No but I have primarily been taught Spanish that is used solely in Spain, not other Spanish speaking countries."

Here, participants indicate that in many cases, they speak the dialects they were exposed to by their teachers, and that is the dialect they might know more about, as in the case of Castilian or Mexican Spanish.

Additionally, media consumption from specific Spanish-speaking regions played a role as an influencing factor. For example, "I sometimes like to imitate a Spanish (Spain) dialect due to my peers or media consumption." By watching TV, for instance, in

the target language country, students are naturally exposed to the dialect of that region.

Moreover, immersion experiences also shaped preferences, as some participants shared:

12. “I usually use Mexican vocabulary, but I have picked up some Nicaraguan/ El Salvadorian/ Guatemalan/ Ecuadorean accents through my time as a missionary”
13. “I find myself speaking more like the Castillian, Spain Spanish, only because the time I spent speaking there was very formative to my language learning journey, so even if I am not trying, I typically end up speaking more like them (especially with C's, pronouncing it more like a 'th' sound) because I was immersed there more than anywhere else. All my Spanish teachers in high school learned Spanish as a second language, so they didn't really have an accent”
14. “Castellano, Having lived/studied abroad in Spain, it's where most of the influence on my spoken Spanish comes from.”
15. “Most of my Spanish speaking experience has been in Argentina, so I learned to prefer Argentine Spanish.”
16. “I probably lean more towards a Mexican dialect as I'm from Tucson and that's what I hear most often.”

Participants reported here that traveling abroad to various countries, such as Spain, Argentina, or Mexico, has influenced their accent preferences. This is often because they received more input from these dialects due to prolonged exposure, making it more a matter of exposure than preference.

Furthermore, personal attitude and learning objectives were additional themes. Some participants imitate accents based on their learning goals, while others focus on accurate sentence construction rather than accent emulation. For instance: “I do not really

care - I am more just trying to form sentences correctly and say what I am trying to say.”

In this case, this student seems to be more concerned about forming grammatically correct sentences than about articulating sounds or focusing on the different pronunciations found in a given dialect. Lastly, there was a theme centered around the avoidance of specific dialects, with Spanish from Spain being a notable example:

17. “Not particularly, but I actively avoid some of the ways I know that Spanish spoken in Spain sounds”
18. “Anything but Spanish Spanish”
19. “I prefer Latin and Central American Spanish as opposed to European Spanish”.
20. “Not really, I don't really like to imitate Spanish from Argentina or Spain since it sounds so different than what I'm used to.”
21. “I prefer the countries that don't use vosotros”

Here, it appears that certain participants want to avoid dialects or certain characteristics of certain dialects due to personal reasons. Taking into consideration the previous responses, it can be assumed that students might be more interested in learning about the Mexican dialect, so they tend to reject anything that appears different.

The subsequent open-ended question examined was, “Do you think you were exposed in class to different dialects of Spanish? For instance, did your instructor/s address that there are different ways of referring to the same objects in different Spanish speaking countries? If so, what dialects do you think you have been most exposed to in class?”. Among the respondents, 95 out of 108 participants indicated some level of exposure to various Spanish dialects. However, responses varied widely. Some participants mentioned exposure to, for instance, “Mexican Spanish” without elaborating

on the nature of the exposure. For example, one participant mentioned, “yes, I have been exposed to Americanized and Mexican Spanish the most, closely followed by a mix of South American and Spaniard dialects”. Another participant shared, “Yes, I think my instructors usually addressed different dialects of Spanish in my classes. I believe I've been most exposed to dialects from Spain and Mexico, with some exposure to Colombia and Venezuela as well.” Overall, participants reported being exposed to their instructors' preferred dialects. However, this exposure didn't necessarily entail explicit teachings about dialectal variation. One participant explained, “I feel I was quite exposed to the Argentine Spanish last year because my professor had an Argentinian background.” Another participant noted, “Yes. I have been taught that there are many words used in different contexts throughout. While each professor/ teacher has been from different places, it has allowed me to hear and be exposed to many dialects. For example, the word pen is different in two different countries.” In this case, their comments are not necessarily related to the pronunciation of specific sounds but rather to the dialect as a whole, as well as to certain differences in vocabulary. Following this last idea, a few participants mentioned exposure only to lexical variation, leaving aside aspects like pronunciation. One participant noted, “The different backgrounds of my instructors has exposed me to different dialects, but we have not studied the sounds only different word usage.” Another participant shared, 'Rarely, on occasion we touched on Spain Spanish for a couple of words or vocab that is unique to certain countries but other than that we just learned very general Latin American Spanish”.

A few participants mentioned that their instructors emphasized upcoming encounters with different Spanish dialects. Yet, many participants did not recall such

information. One participant shared, “Yes, many of my professors have pointed out when we're going to listen to something from a region that uses slightly different manners of speech than we've been taught. I know I've heard a lot of Spanish speakers from Spain. Other countries have come up, but I can't recall any that stick out in my mind as frequent occurrences”.

Then, certain participants noted instances where their instructors' biases influenced their exposure to regional variation: '(...) I also had the Spanish teachers in high school that would tell us not to worry about vosotros and would often treat European Spanish as an anomaly that was not useful and would only serve to confuse us. Because of this, I have been exposed most to Latin and Central American dialects, which is probably why I favor them the most.”

Participants also reported instances of exposure to dialectal variation through class projects or activities. “Yes I do kind of. It is mainly me researching for projects different cultures in different places etc.”, one participant stated. Another mentioned, “Exposed to accents and a few other dialects through videos from different countries as well as short discussions about different dialects.” On the other hand, some participants expressed frustration, believing that dialectal variation was not a significant focus in their classes. “No, not really. My experience is that Spanish classes in the US are sanitized at best and that if certain accent features are covered, they are invariably Mexican rather than any other country. I've never been taught about voseo in any of my classes, which is a disservice really.”

Then, when explicitly asked about pronunciation, “Please describe any differences in pronunciation that you are aware of in different Spanish-speaking countries

(dialectal pronunciations),” as stated before, responses were divided based on whether participants showed knowledge of /s/ weakening or whether their answer did not contain evidence of knowledge of /s/ weakening. After reviewing the participants' responses, only nine individuals out of 108 showed explicit knowledge of /s/ weakening, whereas the remaining 99 either lacked evidence of familiarity with /s/ weakening in their responses or did not provide sufficient detail to establish that they were specifically addressing /s/ weakening. This is common, given the fact that language learners at lower levels tend to not have explicit metalinguistic knowledge of Spanish /s/ weakening. Examples from the latter category include:

1. “In Puerto Rico, they can tend to drop a bit of the end of a word.”
2. “(...) I know that Caribbean Spanish speaking countries tend to cut off the ends of words or slur them due to their fast tones of voice.”

As a result, participants who provided such answers were not included in the group classified as having an understanding of /s/ weakening.

In terms of the nine individuals who demonstrated knowledge of /s/ weakening, these were their responses:

1. “(...)the 's' sound is very subtle and is hard to hear sometimes - but is very pretty to listen to”
2. “There are many variables in Spanish, though some of the most salient are those in pronouns (tu, vos, vosotros, ustedes), seseo/ceceo, s-aspiration, and l/r alterations.”
3. “(...) In Puerto Rico (I think it's in Puerto Rico?), speakers omit the 's' at the end of some words ('matematica' versus 'matematicas').

4. “(...) Some Spanish dialects don't pronounce the s sound at all and have it silent.”
5. “I know that in Spain they skip the 's' sound in words (or something similar)”
6. “(...) Aspiracion de la S”
7. “(...) Some dialects do not emphasize the letter 'S' (Puerto Rico possibly?)”
8. “(...) in Argentina and Uruguay the S sounds are less pronounced than they would be in Mexican Spanish”
9. “Chileans like to be very informal and slur their words. They cut off the s at the end or d in 'ado' very often. (...)”

Furthermore, Table 26 delineates participants' performance in the AX discrimination task by categorizing them based on whether they demonstrated knowledge of /s/ weakening or if their answers lacked evidence of such knowledge.

Table 26.

AX Discrimination Task Accuracy by Conditions

AX condition	Participants who showed knowledge of /s/ weakening (N=9)	Participants who did not show knowledge of /s/ weakening (N=99)
	Score (SD)	Score (SD)
AXweakened_sibilant	50 % (50)	47% (50)
AXweakened_weakened	78 % (42)	78% (41)
AXsibilant_sibilant	81% (39)	88% (33)
AXdistractors	77 % (42)	79% (40)

In this case, the mean accuracy scores on the AX discrimination task for the nine participants demonstrating knowledge of /s/ weakening generally align more closely with the scores of the remaining participants. Notably, this subgroup of nine participants surpassed the others only in the weakened_sibilant condition (50% vs. 47%). Although the difference between groups is minimal, it could suggest that the exposure of these nine participants has possibly enhanced their performance in this specific condition overall.

In the context of the listening comprehension activity, participants with knowledge of /s/ weakening generally display comparable or, in some cases, higher comprehension rates than their counterparts across various conditions, as seen in Table 27. However, these differences were not statistically significant for any specific combinations of speakers and speech rates.

Table 27.

Listening Comprehension Accuracy by Conditions

Listening comprehension activity		Participants who showed knowledge of /s/ weakening (N=9)	Participants who did not show knowledge of /s/ weakening (N=99)
Speaker	Speech Rate		
Dialect_Arg	Speed_Normal	44% (52)	43 % (49)
Dialect_Arg	Speed_Slow	44% (52)	48% (50)
Dialect_Mex	Speed_Normal	22% (44)	36 % (48)
Dialect_Mex	Speed_Slow	33% (50)	30% (46)
Dialect_PR	Speed_Normal	33% (50)	29% (45)
Dialect_PR	Speed_Slow	44% (52)	28% (45)

For instance, in the Dialect_Arg with Speed_Normal condition, participants with knowledge of /s/ weakening scored 44%, while those without scored 43%. This trend is consistent across multiple conditions, indicating a potential positive influence of /s/ weakening knowledge on listening comprehension, especially in certain speech rate and dialect combinations. However, it is worth noting once again that the differences between groups are very small.

Lastly, when asked, “Did you notice any 'funny' sounds or dialectal pronunciations of the made-up and real Spanish words in the experiment? If yes, what did you notice?” responses were analyzed to classify them and determine if students noticed /s/ weakening in general. After reviewing each participant's responses, 12 individuals reported recognizing to some extent the different pronunciations of /s/, while the

remaining 96 participants did not mention /s/ weakening. This does not necessarily imply that they did not recognize the feature; rather, they simply did not discuss it in their responses. The responses from the 12 individuals are as follows:

1. “I notice different ways of pronouncing vowel sounds and sounds like 'g', 'j', 'c', and 's', sounds.”
2. “Some speakers tend to slur 's' sounds, or pronounce them more as 'f.’”
3. “I noticed a lot of the softer 's' sounds and the Spanish theta sounds In one of the earlier auditory exercises, there was someone speaking with an Argentinian 'll' (me llamo...)”
4. “I noticed some s-aspiration.”
5. “I mainly noticed very stark differences in pronunciation, like an 'r' sound instead of an 'f' or 'l' sound. Sometimes it sounded like the speakers were omitting the 's' at the end of words.”
6. “Yes, there were slurs of S sounds and unique V and B sounds”
7. “I noticed differences in how the s and t's were pronounced.”
8. “I heard sheismo and S-aspiration in some of the words.”
9. “One of the accents had less emphasis on the letter 'S’”
10. “Some of it was hard to hear but I could definitely hear when they didn't pronounce the 's' sound in some words.”
11. “Yes, some people had a lisp. Also, there were some key letters that were different for most dialects such as V,B,S, and C”
12. “the s and g sounds tended to be different”

Next, accuracy responses were calculated and compared for the AX discrimination task and the listening comprehension activity among participants who reported identifying instances of /s/ weakening and those who did not, as shown in Table 28. The second group, with no evidence of /s/ weakening in their responses, achieved slightly lower scores than the other group. While there are variations in scores between the two groups across different conditions, the differences do not appear to be substantial. Some participants may be aware of the presence of /s/ aspiration, but they struggle when it comes to identifying the distinct tokens.

Table 28.

AX Discrimination Task Accuracy by 2nd Conditions

AX condition	Evidence of knowledge of /s/ weakening (N=12)	No evidence of knowledge of /s/ weakening (N=96)
	Score (SD)	Score (SD)
AXweakened_sibilant	50% (50)	49% (49)
AXweakened_weakened	79% (40)	77% (41)
AXsibilant_sibilant	90% (29)	86% (41)
AXdistractors	75% (43)	79% (40)

Moreover, concerning the listening comprehension activity, the results based on the speaker and speech rate are reported in Table 29. Participants who reported recognizing /s/ weakening generally scored higher than those who did not in several conditions, particularly for Dialect_Arg at Speed_Normal (75% vs. 39%) and Dialect_PR at Speed_Normal (58% vs. 26%). However, in other conditions, such as Dialect_Mex at Speed_Normal (25% vs. 36%) and Dialect_Mex at Speed_Slow (33% vs. 30%), the

differences are less pronounced. However, these differences were not statistically significant for any specific combinations of speakers and speech rates. Nevertheless, participants recognizing /s/ weakening demonstrate a strong connection between awareness and comprehension of weakened speech samples.

Table 29.

Listening Comprehension Accuracy by 2nd Conditions

Listening comprehension activity		Evidence of knowledge of /s/ weakening (N=12)	No evidence of knowledge of /s/ weakening (N=96)
Speaker	Speech Rate		
Dialect_Arg	Speed_Normal	75% (45)	39% (49)
Dialect_Arg	Speed_Slow	33% (49)	49% (50)
Dialect_Mex	Speed_Normal	25% (45)	36% (48)
Dialect_Mex	Speed_Slow	33% (49)	30% (46)
Dialect_PR	Speed_Normal	58% (51)	26% (41)
Dialect_PR	Speed_Slow	50% (52)	27% (44)

4.5 Chapter Summary

The results of the study provide valuable insights into the perceptual decoding of /s/ variants in L2 Spanish learners and how various factors influence their performance. In terms of decoding accuracy, participants exhibited higher accuracy when decoding words with both /s/ sounds produced as sibilants (87% accuracy), followed by the condition where both /s/ sounds in both words were reduced (79% accuracy). Lower identification accuracy was observed in the condition where the /s/ was initially reduced in the first word and then retained in the second (47% accuracy). The study also explored

the role of exposure to different Spanish language varieties on the perceptual decoding of /s/ variants. The analysis revealed a significant interaction for participants who had experience abroad in an /s/ weakening environment in relation to their decoding of /s/ in the weakened_sibilant condition. That is, participants with study abroad experience in an /s/ weakening region demonstrated an assimilation of both the weakened and sibilant forms into the same phonemic category. They perceived both reduced /s/ and sibilant /s/ as equivalent, accepting the reduced phone as a legitimate variant of Spanish /s/.

Furthermore, the study examined the impact of decoding accuracy on listening comprehension. The results indicate that the accuracy of the AX discrimination task predicts the participants' listening comprehension performance. Participants who performed well in the AX discrimination task also demonstrated better performance in the listening comprehension activity.

Additionally, the study investigated the influence of participants' language attitudes on their decoding performance. The initial set of statements on language attitudes revealed several interesting findings. For instance, participants generally reported feeling a strong sense of authenticity when speaking English compared to speaking Spanish, with higher identification with English-speaking culture than Spanish-speaking culture. A correlation analysis was then conducted to examine the relationship between participants' language attitudes and their performance on the tasks. While some correlations were observed, particularly between feeling like oneself when speaking Spanish and recognizing /s/ weakening in the AX discrimination task, the relationships were only variably significant. The second set of statements on language attitudes revealed participants' positive sentiments toward the Spanish language and their

preferences for sounding native-like. However, some participants expressed a desire for individuality in their accents. Responses indicated that exposure to various dialects occurred in class but was often influenced by instructors' preferences, and explicit teachings on dialectal variation were not common. A subsequent correlation analysis was undertaken to investigate the connection between participants' attitudes and their task performance. Although certain correlations were identified, notably between expressing affection for the Spanish language and placing significant importance on the nativeness of their Spanish pronunciation, the significance of these relationships varied.

When examining participants' awareness of /s/ weakening in different Spanish dialects, only a small group of participants (9 out of 108) reported recognizing /s/ weakening in the task. These individuals generally performed slightly better in both the AX discrimination task and the listening comprehension activity compared to those who did not recognize /s/ weakening, although the differences were small, but not statistically significant. Lastly, out of the participants, only 12 individuals recognized /s/ weakening in the tasks, but this recognition did not necessarily translate into better performance than the rest.

CHAPTER 5

DISCUSSION AND CONCLUSION

The primary objective of this dissertation investigates the perception of dialectal variation in Spanish and its impact on the comprehension of longer utterances by second language learners. To explore this aspect, the present study focused on the distinctive dialectal characteristic of /s/ weakening, a feature recognized as a prominent identifier of regional variation in Spanish, at least by native Spanish speakers. Participants, enrolled in an intermediate level of Spanish, engaged in a series of tasks that encompassed a language proficiency assessment to validate their enrollment level and to capture potential variations within the same expected Spanish proficiency level. A listening comprehension exercise gauged their overall comprehension of diverse instances of regional variation in spoken language. Furthermore, an AX discrimination task was used to evaluate participants' perception of the different realizations of /s/ in word-internal positions. A comprehensive language background questionnaire was also administered to elicit demographic data, details about participants' prior exposure to Spanish and other languages, information about dialectal pronunciation, and their language attitudes. The results derived from these tasks, which were presented in Chapter 4, are now discussed in connection with the research questions formulated for this study. Following the discussion of the findings, an overview is provided on limitations and potential future research studies. Finally, the pedagogical implications are addressed, encompassing explicit pronunciation instruction, with a detailed examination of pronunciation training, and an exploration of the role of language curricula and instructors in shaping the learning experience.

5.1 Discussion

The first research question of this study looked at the extent to which L2 Spanish learners were capable of perceptually decoding the phenomenon of /s/ weakening. The findings from the AX discrimination task shed light on the participants' ability to navigate this particular phonological challenge. Specifically, the study highlights that, collectively, English-speaking learners of Spanish displayed greater accuracy in decoding words that were pronounced with the same variant of /s/, whether it was reduced or maintained. However, the dynamics shifted when participants were presented with words that exhibited different variants in the pronunciation of /s/, that is, when weakening of /s/ was contrasted with the full retention of the sibilant sound. Notably, in such cases, participants' accuracy rates witnessed a significant decline. This dip in performance underlines the challenges posed by dialectal variation, specifically when learners are confronted with words that are seemingly identical in form but vary phonetically due to, in this case, /s/ weakening. Thus, it appears that participants relied on low-level phonetic information, specifically, the categorization of different phonetic variants into the same phonological category—when making judgments of sameness or difference. This reliance on low-level phonetic details aligns with expectations for this type of task. This aligns with the previously explained concept that /s/ weakening, especially in the case of word- and syllable-final /s/, can present challenges for English speakers, as word- and syllable-final /s/ weakening does not occur in coda positions in English. Additionally, no /h/ sounds of any kind occur in coda positions in most varieties of English. As a result, English-speaking learners of Spanish need to acquire these linguistic features (Schmidt, 2011; Agostinelli-Fucile, 2017). Previous research with similar findings, conducted by

scholars such as Schmidt (2018; 2023) and Escalante (2018), also underscored the challenge of acquiring dialectal lenited [h], where learners were not very accurate at recognizing it even after a study abroad experience in an /s/ weakening area.

Moreover, as previously stated, this study did not employ a strict categorical division between [h] and [0] due to the challenges in distinguishing between aspiration and deletion (Gradoville et al., 2022). However, an attempt was made to investigate whether lower accuracy in the AX discrimination task was influenced by the presence of [h] or [0] alongside sibilants. The quantitative assessment of participants' decoding performance revealed that there was minimal disparity in accuracy percentages when associating words with either /s/ aspiration or /s/ deletion alongside their sibilant counterparts. Both forms of /s/ weakening demonstrated comparable average accuracy scores, with the accuracy for /s/ deletion slightly surpassing that of aspiration. It can be assumed then that the presence of either /s/ aspiration or /s/ deletion did not necessarily impact the accuracy of participants in the AX discrimination task, with both forms of weakening showing similar performance levels. With that in mind, students might not be perceiving aspiration or deletion as /s/. However, it is worth mentioning that Schmidt (2018) found that low-level learners often 'ignored' syllable-final, word-internal aspiration [h], as they do not detect that anything is there at all. The future studies section (5.2) of this dissertation will delve more into this topic.

The second research question investigated the influence of previous exposure to various Spanish language varieties, specifically, those where /s/ weakening occurs, on the perceptual decoding of /s/ variants in Spanish. This question aimed to determine whether intermediate-level L2 learners of Spanish have developed perceptions of sociophonetic

variation similar to those of native Spanish speakers, following their exposure to specific Spanish varieties in different contexts. In this case, the results facilitated the separation of students into those who reported experience with /s/ weakening varieties through time abroad and/or having a teacher from an /s/ weakening location. Firstly, results indicated that individuals who had exposure to /s/ weakening in an abroad environment had significantly higher accuracy in decoding Spanish /s/ variants in the AX discrimination task. In other words, the linguistic environment outside of one's home region had a substantial influence on how these sounds are perceived. This aligns with previous research, such as Del Saz (2019) and Escalante (2018), which found that learners studying abroad in an /s/ weakening area improved their ability to identify the dialectal variant word-final [h] after the experience. That study also emphasized the importance of prolonged exposure to the feature, similar to the current study, where accuracy percentages increased, but it was clear that more time would be required. In summary, results emphasize the substantial impact of previous language exposure on individuals' ability to perceive /s/ variants in Spanish. Whether through exposure abroad or having teachers from specific regions, the linguistic environment significantly shapes how individuals decode these sounds. Proficiency in Spanish also seems to play a potential role in this process, with higher proficiency correlating with better scores in the task.

To address the third research question, which focuses on the impact of learners' ability to categorize regional phonetic variants on their listening comprehension, the participants' performance in relation to native Spanish speakers' reading passages and the speech rate of each passage in the listening comprehension activity was examined. Results from the mean accuracy scores indicate a general challenge in listening

comprehension, regardless of the specific dialect or speech rate. Participants encountered difficulties in understanding the spoken passages, as their accuracy scores were consistently low regardless of the specific dialect or speech rate, which suggests the complexity of comprehending natural speech in a foreign language context. However, this could also be attributed to the difficulty of the passage itself in terms of sentence structure, vocabulary, and grammar, rather than solely to the pronunciation of certain words. Refer to the future studies section, 5.2, to read more about ways to mitigate this issue. Regardless of the reason, the results align with the literature stating that L2 phonetics training in listening comprehension tend to primarily focus on learners' abilities to distinguish L2 sounds within words and phrases, while overlooking the assessment of learners' overall listening comprehension proficiency (Rasmussen & Zampini, 2010). Consequently, students may lack the necessary training to decode some variants when they occur in longer speech. On the bright side, although no statistically significant interactions were found between Spanish language varieties and participants' prior exposure to /s/ weakening varieties, an observable trend emerged regarding the relationship between tasks. In that case, the results were analyzed to understand how participants' success in the AX discrimination task related to their listening comprehension performance. Participants who performed well in the AX discrimination task, which assessed their ability to categorize, or assimilate different variants of /s/ to the same phonetic category, tended to exhibit better listening comprehension skills. Although this trend did not reach statistical significance, it suggests a potential connection between phonological awareness and listening comprehension in language learning. Learners who have acquired subtle phonetic distinctions may have an advantage in comprehending

spoken language, even in the presence of dialectal variation. This insight allows for the introduction of potential benefits of incorporating phonological training of dialectal variants into language instruction programs to enhance listening comprehension skills (refer to Section 5.3 for a detailed account of this topic).

The results related to the fourth research question were analyzed quantitatively and qualitatively, revealing distinct language attitudes and identity characteristics among the study participants. When it comes to authenticity and cultural identification, they generally reported feeling a strong sense of authenticity when speaking English, their native language. Moreover, they expressed a more significant identification with English-speaking culture compared to Spanish-speaking culture. A notable aspect of participants' attitudes was their desire for native-like proficiency. Interestingly, they emphasized the importance of achieving native-like proficiency in both English and Spanish. This suggests a desire for fluency and social integration in both linguistic communities, reflecting their commitment to mastering the Spanish language. Furthermore, the participants' desire to be perceived as native Spanish speakers was less pronounced compared to their desire to be perceived as native English speakers. This suggests that their primary focus or motivation may lie elsewhere, such as effective communication in Spanish rather than achieving native-like pronunciation.

Furthermore, the correlation analysis between language attitudes and language performance yielded several noteworthy findings. While the relationships were complex, certain patterns emerged: A statistically significant positive correlation was identified between feeling like oneself when speaking Spanish and performance in the AX discrimination task. Similarly, participants who identified with a Spanish-speaking

culture performed better on the same task. These results suggest that a stronger connection with the Spanish language and culture may positively impact specific language processing skills, as reflected in the AX discrimination task. Then, the desire to use English or Spanish like a native speaker did not show statistically significant correlations with the AX discrimination task scores. This suggests that the pursuit of native-like proficiency may not directly influence certain aspects of language perception and discrimination, as previously stated. Strikingly, a strong and highly significant correlation was found between the desire to be perceived as a native Spanish speaker and performance in the AX discrimination task. This suggests that participants aspiring to be perceived as native Spanish speakers may demonstrate enhanced performance in specific language discrimination tasks, potentially attributable to their heightened attention to linguistic nuances and their determination to succeed in the language acquisition process.

In contrast, the correlation analysis between language attitudes and the listening comprehension activity did not reveal statistically significant relationships. This implies that participants' self-identification with languages and cultures, as well as their desires for native-like proficiency, may not significantly influence their overall performance in listening comprehension tasks, which require broader language processing skills. Once again, doubt arises as to whether the listening comprehension material was too advanced for the students to understand. This doubt may also stem from regional dialect variations or a lack of fully developed global understanding by the listeners.

The study also explored participants' sentiments and attitudes towards the Spanish language using a set of additional statements. The findings indicated that participants held positive attitudes toward Spanish, such as being glad to have taken Spanish classes

and loving the language. However, some participants expressed that the main reason for taking Spanish was simply to fulfill a university requirement. It is important to mention that participants simultaneously prioritized effective communication over perfect pronunciation, reflecting a pragmatic approach to language use. This is of extreme importance because the primary objective in any language class should be to help students convey a message and engage in conversations without solely testing them on their pronunciation. While it is evident that some sounds can impede comprehension, the primary goal should be to work on those sounds needed to increase comprehensibility and intelligibility. While doing that, developing their perception skills is fundamental, as learners not only need to understand and maintain conversations but also engage effectively with interlocutors from diverse locations. Some participants also expressed a desire for individuality by maintaining their own accent and avoiding sounding like other Spanish speakers. This does not necessarily imply that instructors should not aim to make learners sound like native speakers or require them to produce linguistic phenomena characterized by variation; rather, the emphasis should be on ensuring their ability to understand such variations. A statistically significant positive correlation was identified only among two statements and the AX discrimination task, particularly in the expression of fondness for the Spanish language and attaching significant importance to the nativeness of their Spanish pronunciation. Thus, the participants who expressed a greater affinity for the language and demonstrated a higher willingness to work on their pronunciation skills performed better in this task. Furthermore, it appears that the participants' strong inclination toward native-like production is influencing a more native-like perception.

In conclusion, these findings suggest that while attitudes play a role in language learning and use, their impact may vary across different language tasks. Factors like cultural identification and the desire to be perceived as a native speaker appear to relate to specific language processing skills, as observed in the AX discrimination task. However, these factors may not have a significant impact on overall listening comprehension abilities. Understanding these nuanced relationships can contribute to more effective language teaching and learning strategies tailored to individual learner language attitudes.

Additionally, in the qualitative analysis of attitudes toward Spanish dialects, several themes emerged from participants' responses: 1) influence of upbringing and exposure; 2) environmental and educational factors; 3) media consumption and immersion; 4) personal attitude and learning focus; and 5) avoidance of certain dialects. These themes shed light on how individuals develop preferences for specific dialects and varieties of Spanish and how their language exposure and learning environments contribute to these attitudes. The first prominent theme is the influence of upbringing and exposure. Many participants emphasized how their childhood experiences significantly shaped their accent preferences. Exposure to Mexican Spanish due to geographical proximity (e.g. response 3: “Probably Mexican Spanish because that is what I've grown up hearing and I live close to Mexico”) or close interactions with Mexican speakers during their formative years (e.g. response 4: “I unconsciously will always imitate the Mexican accent because of Hilda, the Chihuahua native, who I spent 5th-12th grade with”) emerged as a primary reason for shaping their accents. This is particularly relevant in the context of this study, which was conducted in the Southwest United States, an area

characterized by a significant Mexican influence. Thus, Spanish learners may be more inclined to learn the pronunciation of the people they are in close contact with, such as the Mexican community, especially since the main goal is to be understood. Being able to articulate sounds in the same way could feel like a significant accomplishment.

The second theme is environmental and educational factors. Exposure to specific dialects in work environments had an impact on participants' accents (e.g., response 5 “I usually imitate [sic] Mexican dialect when I speak Spanish because I work in a Mexican restaurant where the cooks speak Spanish, and I try to talk like them.”). In this case, once again, if Spanish language learners want to fit into a community or be able to communicate with a certain group of people, they will want to adapt their dialect and, in turn, become more adept at their job. Some other participants highlighted the imitation of dialects learned from instructors, indicating the role of teachers in shaping students' pronunciation preferences (e.g., response 7: “I think I imitate general Castilian speakers from Spain. I wouldn't say I prefer it; I just happen to have learned it from my instructors.”). This theme underscores the importance of both workplace and educational contexts in influencing language attitudes. In the case of teachers, it is important to note the significant role they play in shaping their students' language preferences, and their input could potentially influence what learners come to know about a language that exhibits considerable geographic variation. For further details on what teachers can do, consult Section 5.3.1.2.

Moreover, the third theme is the influence of media consumption from specific Spanish-speaking regions (e.g., “I sometimes like to imitate a Spanish (Spain) dialect due to my peers or media consumption.”) Participants mentioned that exposure to Spanish-

language media from particular regions influenced their accent preferences. Thus, it can be assumed to be of great importance to encourage language learners, for instance, to read or watch the news to gain exposure to diverse accents in a more naturalistic environment. Furthermore, immersion experiences, such as study abroad programs, had a significant impact on participants' language attitudes, shedding light on the influence of real-world experiences and their willingness to spend time abroad on shaping their language skills (e.g., response 14: “Castellano, Having lived/studied abroad in Spain, it's where most of the influence on my spoken Spanish comes from.”). Language learners who study or travel abroad could potentially increase their opportunities to encounter speakers of the target language in various places and on different occasions, thereby increasing their chances of picking up the linguistic variations present in their speech. The more learners travel to different countries, the more they will be exposed to various dialects.

Participants' personal attitudes and learning objectives emerged as the fourth theme (e.g., “I do not really care - I am more just trying to form sentences correctly and say what I am trying to say.”) Thus, some individuals prioritize accurate sentence construction over accent emulation. This theme suggests that individual motivations and priorities play a significant role in accent preferences. Some language learners might not be interested in improving their pronunciation skills, let alone developing perception skills to better understand variation, as their primary objective is to convey a message with proper grammar. It is essential to note that this does not imply whether the learners are right or wrong in their approach; instead, it highlights their distinct priorities.

Instructors should strive to motivate students to focus not only on one or two language skills but to strike a balance between all of them.

Lastly, the fifth theme centers around the avoidance of specific dialects. Spanish from Spain was a notable example of a dialect that some participants preferred to avoid (e.g., response 19: “I prefer Latin and Central American Spanish as opposed to European Spanish.”) This theme highlights that individuals may actively choose not to imitate certain dialects based on their linguistic preferences. This is an intriguing topic, considering that Spain has been reported as the preferred destination for studying abroad in the Open Doors report; however, it appears that this preference might not hold in places with a strong influence of the Mexican Spanish variety.

In addition, and regarding the question about previous exposure to different dialects in the classroom, the responses varied. While some participants reported exposure to various Spanish dialects in their classes, others felt that their instructors' biases influenced their exposure to regional variation. The main takeaway is related to the perception among language learners that they are exposed to dialectal variation simply by having teachers from different language backgrounds (e.g., one response mentioned, "I feel I was quite exposed to Argentine Spanish last year because my professor had an Argentinean background"). While this perception is valid, there is limited evidence to confirm that learners are consistently exposed to each dialect or that teachers actively use their respective dialects in the classroom. Although teachers may mention their countries of origin, they may not necessarily incorporate their dialects into their teaching. For further insights on this topic, refer to Section 5.2 on Limitations and Future Directions. Moreover, when teachers show negative attitudes towards certain varieties (e.g., "...that

would tell us not to worry about vosotros and would often treat European Spanish as an anomaly that was not useful and would only serve to confuse us."), language learners might follow their advice or accept their biases, potentially limiting their exposure to the full spectrum of Spanish dialects and missing out on valuable linguistic and cultural insights. This holds extreme importance, as it is evident that instructors play a significant role in their learners' language learning journey. Instructors who neglect to address linguistic variation in the classroom or who denigrate certain language varieties hinder not only their students' language acquisition but also their own professional field.

Furthermore, when asked about differences in pronunciation in different Spanish-speaking countries, only a small group of participants, 9 out of 108, demonstrated explicit knowledge of /s/ weakening. This indicates that the phenomenon of /s/ weakening may not be widely recognized among learners, even though it is a prominent feature in some Spanish dialects. Moreover, it is worth acknowledging that just because participants did not name /s/ weakening, it does not necessarily mean they do not know about it. Then, when comparing the performance of participants who demonstrated knowledge of /s/ weakening with those who did not in both the AX discrimination task and the listening comprehension activity, the results showed mixed patterns. In some conditions, in particular those with a reduced variant, participants who recognized /s/ weakening performed better, while in others, the differences were less pronounced. These findings suggest that awareness of /s/ weakening may have a variable impact on specific language tasks, depending on the context and linguistic features involved. Moreover, learners may perform better at the word level than at the sentence level, given the established fact that

they often face greater challenges in understanding variations embedded within longer utterances, as demonstrated in the current study.

Lastly, the analysis of responses regarding the recognition of "funny" sounds or dialectal pronunciations of Spanish words in the experiment has unveiled several noteworthy findings. Only 12 individuals reported varying degrees of recognition of different pronunciations of /s/ weakening in the study tasks. However, once again, the absence of explicit mention should not be interpreted as a lack of awareness. Instead, it suggests that some participants did not delve into a discussion of this specific phonological feature in their responses. The participants who did recognize /s/ weakening provided a diverse range of observations. Their responses included mentions of differences in the pronunciation of vowel sounds, such as the case of the /s/. Additionally, some participants noted the omission of 's' sounds at the end of words. Then, an examination of the relationship between participants' recognition of /s/ weakening and their accuracy in the AX discrimination task and listening comprehension activities was conducted. The key takeaway is that participants who are aware of the presence of /s/ weakening in the Spanish language might not necessarily outperform those who are not. This suggests that while participants may possess a degree of awareness regarding the presence of /s/ aspiration, they may encounter challenges in identifying specific instances.

In terms of the implications for usage-based exemplar models, the findings of this dissertation align with these models in several significant ways. Firstly, as previously stated, usage-based exemplar models emphasize that language learning is influenced by individual experiences (Bybee, 2001, 2006), such as exposure to linguistic variation. This

study demonstrates the impact of learners' exposure to specific Spanish language varieties, such as those encountered during study abroad experiences, on their ability to decode /s/ weakening. Thus, learners' language knowledge is shaped by their unique linguistic experiences. Secondly, exemplar models postulate that language learners are sensitive to variations in input and store specific usage events of language in memory (Johnson, 1997). In this study, learners' abilities to decode variations in the pronunciation of /s/ in Spanish are examined, demonstrating the extent of their ability to distinguish consistent patterns but also revealing challenges when confronted with dialectal variation. This reflects the idea that learners store exemplars of language forms and utilize them to recognize patterns and variations. In this context, learners who are more attuned to phonetic variation in speech may be better equipped to comprehend spoken language, even when exposed to dialectal variation. This observation aligns with usage-based theory, which explains that language learners develop categories and form generalizations based on their exposure to linguistic data. Lastly, the study illustrates the impact of exposure to specific dialects and language varieties on learners' language attitudes and pronunciation preferences. This corresponds with the notion in usage-based exemplar models that linguistic exposure plays a crucial role in shaping language knowledge and attitudes.

5.2 Limitations and Future Directions

This study is the first to investigate the impact of prior language experience on the listening comprehension abilities of dialectal speech by second language learners. Its design aims to encourage future research not to rely solely on word-level or short phrase-level assessments to understand awareness of regional varieties. Instead, it emphasizes

the importance of examining comprehension in more natural environments and assessing the overall understanding of spoken language. While the study provides valuable findings and implications for SLA and Sociophonetics, there are limitations that will be discussed in this section, along with suggestions for future studies.

First, this study exclusively centered on second language learners of Spanish, omitting considering heritage Spanish speakers. Leeman (2018) highlights the significance of nurturing dialect awareness within heritage language classrooms as a means of acknowledging and legitimizing language diversity. Consequently, it becomes imperative to extend the analysis to encompass the performance of heritage language speakers and explore how they engage with dialectal variations in Spanish. This need is primarily driven by the fact that heritage language speakers often bring a unique perspective to the study of dialectal variations in Spanish. They have typically been exposed to Spanish from an early age within their families and communities, a factor that may contribute to the development of distinctive language attitudes, preferences, and competencies when compared to non-heritage speakers. Moreover, each group of heritage speakers is primarily exposed to the language variety of their own speech community (Fairclough, 2016). Consequently, they might have limited exposure to other dialects beyond their immediate social circle or community. Then, when heritage language speakers study Spanish in a classroom context, one of the primary goals of heritage language education is often to attain proficiency in the prestige variety of the language, as the standard language is considered the *lingua franca* among educated communities (Valdés and Geoffrion-Vinci, 1998, as cited in Carreira, 2000). Consequently, heritage language speakers may have limited exposure to linguistic variation even within the

classroom setting, which can result in minimal knowledge of different Spanish-speaking dialects (Valdes, 2001). This limited exposure to dialectal variations may significantly impact their linguistic competencies and perceptions of linguistic diversity. Thus, it would be interesting to gain a better understanding of their knowledge of variation and their willingness to interact with speakers of different Spanish dialects. Furthermore, another important aspect in analyzing the performance of heritage language speakers is the inclusion of diverse groups. These groups could encompass one composed solely of heritage speakers from a Mexican community, another composed of individuals from a Caribbean community, and a third consisting of heritage speakers from both Mexican and Caribbean backgrounds. Within the mixed community, it could be intriguing to examine their social networks.

Second, although it was previously established that a distinction between aspiration and deletion was neither recommended nor adopted by the researcher in the current study, such a distinction could be explored in future research. This exploration could offer a deeper understanding of whether students perceive the aspiration of /s/ differently from its deletion.

Third, the results from the listening comprehension activity yielded low scores, raising the question of whether the right proficiency level had been selected for the task, given the apparent proficiency level of these participants. As mentioned earlier, the choice of the DELE B1 level was based on the researcher's judgment of the participants' assumed proficiency level. However, it is important to distinguish between the theoretical language proficiency level students could have at their enrolled level and their actual proficiency in practice. For future studies, it is advisable to assess proficiency-related

instruments within the institution, recognizing that conducting such studies across different institutions may require varying proficiency level instruments for courses with the same nominal level.

Additionally, this study included participants from a university in the Southwest United States, who are typically more exposed to the Mexican variety. Consequently, they have less exposure to individuals who exhibit /s/ weakening. As previously mentioned, syllable-final /s/ is rarely deleted or aspirated in Mexico's inland regions (Lipski, 1998), with some exceptions. Thus, exposure to this phenomenon in real-life contexts might be limited or even non-existent. As demonstrated by this study, only 38% of the participants reported prior exposure to varieties where /s/ weakening is present, regardless of the context. In light of these findings, it is essential to consider future research conducted in areas where students are more exposed to /s/ weakening varieties. For instance, examining the case of Florida, where the majority of the Hispanic population hails from either Puerto Rico (1,135,447 individuals) or Cuba (1,520,611), could provide valuable insights since both dialects exhibit /s/ weakening (Lipski, 1994; America's Great Migrations Project, 2022). Similarly, locations like New York, with the majority of Spanish speakers originating from Puerto Rico (1,115,474) and the Dominican Republic (877,639), and New Jersey, which also has a significant number of speakers from Puerto Rico (471,327) and the Dominican Republic (307,338), offer relevant contexts for study. It is assumed that in these locations, Spanish language learners would experience greater exposure to /s/ weakening outside of the language classroom and an increased likelihood of encountering, for instance, Puerto Rican or Dominican teachers living and working in those states. Consequently, students could be

more likely to encounter these dialects in both real-life scenarios and the classroom. Furthermore, it would be intriguing to include another state where the majority of the Hispanic population retains the /s/ sound, such as in Texas (9,568,742), Illinois (1,756,385), or California (12,754,856), where individuals of Mexican heritage predominate (America's Great Migrations Project, 2022). By incorporating such diverse linguistic scenarios, future research could provide a comprehensive understanding of the impact of the variation of /s/ within different Hispanic communities on L2 student listening comprehension.

Another issue linked to the previous suggestion involves recording the classrooms of teachers who exhibit /s/ weakening in their speech, followed by private interviews. This approach would offer a significant opportunity to establish a corpus of teacher talk, contributing to a deeper understanding of their linguistic choices. For instance, one interesting avenue of study could involve examining whether students are receiving inauthentic input from their teachers who are presumed to exhibit /s/ reduction. This study would be particularly compelling if it is assumed that the country of origin and the prevalence of /s/ weakening may influence the degree to which these teachers accommodate their speech patterns. It can be also assumed that, on occasion, due to the importance of teacher talk or personal preferences, language educators might modify their speech patterns in the classroom. Furthermore, in the context of teacher talk, it often exhibits slower speech rates, and /s/ reduction is less common in slow speech. This raises the question of whether Spanish teachers who naturally employ /s/ reduction decrease it to a greater degree than expected, given the issue of speaking rate. Moreover, and in some cases, it is a common practice for teachers to opt for instructing the so-called

standard dialect or “neutral” Spanish (Artega and Llorente, 2009), leading to alterations in their pronunciation. However, existing research has also pointed out the significance of teaching local language varieties (Gutiérrez & Fairclough, 2006). Hence, it would be highly intriguing to understand the practices of instructors both within and outside the classroom to better assess whether students could potentially be exposed to a specific linguistic variety as a result of their instructors' linguistic preferences.

Furthermore, in the assessment of language attitudes, this study has solely relied on a LBQ to extract responses concerning participants' reflections and convictions regarding various Spanish dialects. However, the potential insights from such queries are often limited, and there are instances when participants do not faithfully convey their sentiments on specific subjects, such as the diverse pronunciations encountered in the Spanish-speaking world. Frequently, participants articulate a preference for one dialect over another due to prior exposure; nonetheless, a more thorough exploration of their beliefs could be achieved by integrating a matched-guise technique. This technique, which was previously explained as part of various research articles, is a widely employed method to evaluate language attitudes and aims at uncovering participants' subconscious attitudes and biases towards specific language varieties or groups of individuals. This approach involves presenting participants with audio recordings of the same message articulated by different speakers representing varying language varieties, while maintaining uniformity in other aspects of the presentation like content, intonation, and delivery. Subsequently, participants are prompted to rate the speakers across multiple dimensions, encompassing intelligence, friendliness, social status, and competence (Lambert et al., 1960; Díaz-Campos, 2014). Furthermore, participants can be asked to

differentiate between dialects and explicitly identify the origin of certain speakers based on their oral delivery (Schmidt, 2022). Employing this methodology could serve as a valuable instrument for delving into participants' language attitudes, thereby offering a more profound understanding of their linguistic preferences. Moreover, this could substantially influence the manner in which study abroad programs are presented, as students may harbor genuine or subconscious beliefs about specific societies and language communities that could shape their perceptions.

Finally, an additional advantageous step would involve interviewing the participants themselves. Employing interviews could prove invaluable in this scenario, enabling the possibility of establishing positive rapport with participants and thereby fostering a sense of ease that in turn can yield more profound insights. This impact becomes notably pronounced when delving into sensitive topics such as personal language preferences. By creating a connection through rapport-building, the inclusion of follow-up questions emerges as a valuable tool to delve further into supplementary information, complemented by the opportunity to interpret nonverbal cues, including body language.

This study has demonstrated that having experience abroad in an /s/ weakening zone improved the perception of weakened /s/ variants, especially when contrasted with domestic environments (see also Freed, Segalowitz, & Dewey, 2004). As discussed earlier, the concept of studying abroad is widely recognized as a "highly effective educational approach" for increasing language immersion and exposure to the potential variation found in the host country. Consequently, it offers learners numerous opportunities for engagement, not only in terms of passive language listening but also

active interaction with locals. This interaction can lead to a diverse range of outcomes, including heightened sensitivity to dialectal variation, improved language comprehension, and an enhanced understanding of language diversity (Kuh, 2008; George, 2022). Nonetheless, empirical studies examining individual learner factors that contribute to improving foreign language proficiency during periods of study abroad, including identifying the optimal stage for engaging in target language study within such settings, are notably scarce.

Furthermore, the current study did not elicit comprehensive information regarding the study abroad experiences of individuals who indicated that they had participated in such programs. For future research, it would be advisable to elicit a comprehensive account of their experiences, either through questions in the LBQ or during individual interviews. This approach would facilitate a more profound comprehension of the degree to which students were immersed in the culture, as well as the methods through which they encountered and adapted to dialectal variation.

Moreover, it is advisable not only to assess what students have learned after a study abroad experience but also at multiple stages, including before departure, during the experience, immediately upon return, and subsequently in a delayed context. The primary objective is to gain a better understanding of whether the understating of /s/ weakening improves and if those improvements endure beyond the study abroad period.

Lastly, this dissertation did not include the explicit teaching of pronunciation, especially with emphasis on dialectal variations. Thus, the following section provides information regarding this topic.

5.3 Pedagogical Implications

The upcoming section will delve into the significance of explicit pronunciation instruction and its implications for second language learners, particularly focusing on the acquisition of dialectal features and regional variations in speech. Additionally, it will discuss the limitations of solely depending on language exposure during study abroad experiences, and it will propose that explicitly teaching linguistic components can result in substantial advancements in language proficiency. Furthermore, the section will shed light on the important roles played by instructors and language curricula in cultivating an understanding of dialectal diversity. It will examine the challenges educators encounter when incorporating regional variation into language education and suggest approaches to seamlessly integrate diverse linguistic input within classroom settings. Additionally, it will underscore the significance of exposing learners to a wide array of accents and communication styles, while also nurturing their awareness of the diverse sociolinguistic aspects prevalent in the language.

5.3.1 Explicit pronunciation instruction. It is important to recognize that not all students have the opportunity to study abroad (only 12.0%, or 13 out of 108, participants in the current study, at the given proficiency level, have not yet decided or had the opportunity to study abroad), and even for those who do, it is not guaranteed that they will be consistently exposed to the target language or establish social connections within the new community (Kennedy Terry, 2017). For instance, this dissertation's findings indicate that students who studied abroad showed slightly higher accuracy scores in the AX discrimination task (78% vs. 73%) compared to those who did not, although these improvements were not substantially different. For this reason, research has indicated that

explicitly teaching regional variation in second language classrooms conducted at home can also lead to improvements when decoding, for instance, dialectal variants (Knouse & Hodges Abreu, 2022). Hence, students do not necessarily need to travel abroad to learn about linguistic variation.

The majority of evidence regarding the teachability of L2 perception comes from experiments involving participants who receive intensive exposure to the second language (Kissling, 2014). Previous studies have explored the acquisition of both segmental and suprasegmental features. Having explicit knowledge of L2 phonetics can assist students in paying closer attention to L2 speech and moving away from relying solely on their automatic processing routines from their first language (Guion-Anderson, 2013). However, it is important to consider that L2 learners may not implicitly acquire native-like phonetic categories solely through extensive and consistent exposure to the L2, making explicit instruction necessary for developing L2 perceptual skills (Archila-Suerte et al., 2011). Lord (2010) suggests that previous findings have shown promise in demonstrating that learners do acquire phonological patterns after receiving explicit training, such as voiceless consonants with different voice onset times in the L2 (e.g., Magloire & Green, 1999) or new vowel systems (McAllister et al., 2002). However, according to Polka (1992), certain target phonemes may require more consistent, intensive, and repeated training to improve learners' perceptual skills, as evidenced in this dissertation where students could not fully decode /s/ weakening despite reporting previous language experience with different /s/ weakening dialects. Hence, participants in this study would significantly benefit from explicit instruction on /s/ weakening, followed by input from the relevant varieties. It appears that while some participants are aware of

its existence, they encounter difficulties in categorizing it, both at the word and sentence levels. It is also important, as suggested by Rasmussen and Zampini (2010), that in order to enhance the comprehension of /s/ weakening, language learners receive extensive and prolonged instruction. For instance, a six-week period may not be sufficient; therefore, at least a semester or more is advisable, as further research is needed in this area.

5.3.1.1 Pronunciation training. In the context of study abroad programs, a three-week program may help improve students' comprehension of dialectal variation (Schmidt, 2009). However, it is crucial to consider the unique characteristics of each learner group and their individual experiences. Agostinelli-Fucile (2017) emphasizes that explicit instruction on phonological features raises learners' awareness, although in some cases, it might take longer for them to correctly apply that knowledge. Therefore, research has demonstrated the benefits of teaching pronunciation to second language learners (Arteaga, 2000). The ultimate goal of L2 instruction is to equip students with the necessary skills to effectively engage with native Spanish speakers beyond the confines of the language classroom (Agostinelli-Fucile, 2017). Consequently, devoting time and effort towards pronunciation instruction is fundamental, as it has the potential to increase learners' comprehensibility and intelligibility.

When addressing the teaching of variable structures in the second language classroom, Knouse and Abreu (2022) offer recommendations based on the following steps. Firstly, careful consideration must be given to the selection of target forms for language instruction. Geeslin and Long (2014) expound upon the substantial role of language instructors in shaping language attitudes, as their choices are perceived as "correct" or exemplary language models. Therefore, instructors should aim to represent

diverse speech communities when designing classroom materials. It is essential to incorporate multiple sources and include speakers of different genders engaged in both formal and informal communicative contexts. Moreover, instructors should not overlook the importance of providing speaker-specific information to facilitate understanding of variable speech. Conducting a needs analysis to determine with whom they will most likely interact in the L2 is also advisable (Knouse & Abreu, 2022). This approach enables instructors to better represent language varieties in the classroom, ultimately enhancing students' communicative competence.

Geeslin and Long (2014) propose a checklist or rubric for evaluating the accurate representation of linguistic diversity in the classroom, applicable to the assessment of entire textbooks or lesson plans. The checklist encompasses inquiries such as: "Did the input in the classroom include examples produced by males and females? Speakers of several age groups? Speakers from more than one region? Speakers in casual, intimate contexts? Speakers in formal contexts? A speaker from a local community? A speaker from our study abroad target?" (p. 263). Subsequently, classroom activities should be tailored to align with learners' goals. Geeslin and Long (2014) suggest that materials need to be adapted to suit various learning contexts. Subsequently, learners should be encouraged to engage with the provided input in diverse ways. For instance, if language instructors opt to incorporate a song from a particular speech community, they must ascertain how to connect the song to the existing classroom objectives. By incorporating singers from different speech communities, learners are exposed not only to input but also to contrasting input, which, if necessary, can facilitate the development of an understanding of how language varies across different speech communities.

Lastly, it is imperative that instructors establish reasonable expectations for their students after selecting the type of input. Consideration should be given to learners' language proficiency and the level of difficulty of the classroom activities in order to avoid causing frustration among students. At lower proficiency levels, it may be more effective to incorporate geographically diverse input that showcases variations in the sound system or vocabulary. Conversely, at intermediate or advanced levels, students can be exposed to socially variable input, including formal and informal speech produced by individuals of different genders and age groups. Hence, the exposure to variable structures should start well before learners reach higher proficiency levels, with careful attention paid to not overwhelming those who are at the initial stages of the learning process (Knouse & Abreu, 2022). It is important to note that the primary objective of teaching regional variation is not for learners to reproduce the variable features themselves. However, through practice, learners can enhance their awareness of dialectal differences. This heightened dialect awareness equips them to successfully communicate with a wide range of native speakers beyond the confines of the classroom (Agostinelli-Fucile, 2017).

5.3.1.2 *The language curricula and the role of the instructors.* In general, second language learners often demonstrate a limited level of sociolinguistic competence. This can be attributed to the lack of instructional materials available to instructors, as well as the absence of information regarding language variation in the curricula (Schoonmaker-Gates, 2017; Knouse & Hodges Abreu, 2022; Schmidt, 2022), particularly at lower proficiency levels (Schmidt, 2022). Traditionally, language curricula and pedagogical grammars have followed a prescriptivist approach, avoiding the inclusion of

stigmatized forms and focusing solely on widely accepted structures (Shin & Hudgens Henderson, 2017). Research consistently suggests that speakers of standard dialects are often evaluated more favorably in terms of social status (Preston, 2002; Walker et al., 2014). Moreover, Chambers (2009) posits that a particular dialect can be perceived as the standard or regarded as more prestigious due to its association with the economic, political, military, or spiritual practices of the dominant society. For instance, surveys of Spanish textbooks have revealed inconsistencies in explaining different morphosyntactic forms, such as the use of *voseo* (the use of *vos* instead of *tú* or *usted* for *you*) (LeLoup and Schmidt-Rinehart, 2018).

The teaching of regional variation in the language classroom is sometimes neglected for several reasons. First, instructors may lack sufficient knowledge on the topic or feel uncomfortable teaching forms that are not included in the textbook. Some language instructors may also believe that the existing material is already extensive enough, making it challenging to incorporate additional information (Schmidt-Rinehart & Leloup, 2018; Schoonmaker-Gates, 2020). Additionally, evidence suggests that the forms chosen by L2 instructors tend to be more closely aligned with the standard variety, diverging from the input that students encounter outside of the classroom (Mougeon et al., 2004; Schoonmaker-Gates, 2020). Nevertheless, it is crucial for instructors to introduce a range of accents and registers in the classroom, rather than presenting a monolithic view of deviations and language (Smakman, 2022).

However, language instructors generally recognize the value of incorporating dialectal variation into the L2 classroom (Arteaga & Llorente, 2009; Gutiérrez & Fairclough, 2006). Consequently, Schmidt (2022) emphasizes the need to update current

pedagogical materials at all proficiency levels, particularly at the introductory level. It is crucial to teach learners about dialectal variation by providing them with examples of regional and social linguistic structures, not only from Spain but also from Latin American and Caribbean varieties. Additionally, it is advantageous for learners to enroll in language courses taught by instructors with diverse dialectal backgrounds. In such cases, instructors should use their own language varieties without modifying them to conform to a *non-existent* "standard." Furthermore, learners should be exposed to or provided with opportunities to communicate with speakers from different Spanish-speaking communities. The author also emphasizes the importance of training instructors on the fundamentals of language variation to prevent the dissemination of myths and language ideologies regarding nonstandard varieties (Ortiz Jiménez, 2013; Schmidt, 2022).

5.4 Concluding Remarks

The current study has contributed to the field of second language acquisition in several significant ways. Firstly, it has highlighted that intermediate-level second language learners of Spanish demonstrated strong performance when encountering consistent phonetic patterns but encountered challenges when decoding instances of /s/ weakening and full /s/ retention, underscoring the difficulties posed by dialectal variations, particularly for English-speaking learners. Furthermore, this study has demonstrated the influence of exposure to /s/ weakening in an abroad environment on participants' ability to decode Spanish /s/ variants, with an evident interaction effect among those with such experiences. However, it is important to note that, despite the higher levels of accuracy observed, the percentages remained relatively low. This

suggests that studying abroad alone may not be sufficient, that students may not engage in the necessary activities while abroad to enhance their perception abilities, or they might not receive sufficient exposure to the dialect (e.g. Agostinelli-Fucile, 2017). Moreover, this could be attributed to a task effect, as listeners may rely more on the acoustic level, including subtle acoustic differences, and less on the phonological level. This may be particularly noticeable in tasks like AX discrimination.

Secondly, when exposed to variation, students require training with longer utterances, as they may be proficient in recognizing words in isolation but face greater challenges in longer texts, even at the intermediate level. The analysis of listening comprehension scores has consistently revealed low performance across various conditions, with no instance surpassing the 50% mark. However, the low scores in the listening comprehension activity indicate a need for more practice or a reevaluation of the presumed proficiency level the learners might have had.

Lastly, it is worth emphasizing that responses from the language background questionnaire have uncovered students' positive attitudes towards and eagerness to learn about dialects, indicating a valuable willingness to engage with linguistic diversity. However, it becomes apparent that this enthusiasm might not translate into tangible exposure to dialects during their learning experiences. While they may assume exposure due to having teachers from different dialectal backgrounds, this perception does not necessarily align with a comprehensive understanding of dialectal variations and their real-world implications. This suggests an opportunity to bridge the gap between students' interest in dialects and their actual exposure to and comprehension of these linguistic nuances, potentially through targeted curriculum enhancements or experiential learning

opportunities that provide more direct and meaningful encounters with dialectal variations.

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APPENDIX A
LANGUAGE PROFICIENCY TEST

Instructions:

Select the correct choice from the possible answers given. *Do the best you can.*

1. Los muchachos no _____ esquiar.
 - a. saben
 - b. conocen
 - c. tienen
 - d. aprenden

2. Cuando yo _____ joven, fui a Chile.
 - a. fue
 - b. soy
 - c. era
 - d. fui

3. Juan me dijo _____ su hermana iba a visitar España el año que viene.
 - a. que
 - b. cual
 - c. quien
 - d. donde

4. Cuando necesito dinero, _____ pido a mi padre diez o quince dólares.
 - a. le
 - b. lo
 - c. les
 - d. los

5. _____ un examen el viernes.
 - a. ha
 - b. es
 - c. está
 - d. hay

6. -¿Cuándo es tu cumpleaños?
-Es _____ tres de abril.
 - a. a
 - b. en
 - c. el

- d. nothing changes
7. ¿Conoces a alguien que _____ bien?
- a. cante
 - b. cantes
 - c. cantas
 - d. cantar
8. Si no estuviéramos en clase, _____ en la playa.
- a. estamos
 - b. estaremos
 - c. habríamos
 - d. estaríamos
9. Yo necesitaba que alguien _____ a mis hijas a la escuela.
- a. iba a buscar
 - b. fue a buscar
 - c. fuera a buscar
 - d. iría a buscar
10. - ¿Debo decirte la verdad?
- Sí, ¡_____ la verdad!
- a. dime
 - b. me dice
 - c. me dices
 - d. me digas
11. - Anoche hablé con Ricardo.
- ¿Y qué dijo?
- Que _____ hoy.
- a. él te llame
 - b. te llamo
 - c. te haya llamado
 - d. te llamaría
12. Cuando regresé a casa para apagar las luces, mi esposa ya las _____.
- a. apagó
 - b. está apagado
 - c. había apagado
 - d. ha apagado

13. Paco es _____ alto _____ Juanita.
a. tan, de
b. tan, que
c. más, de
d. más, que
14. El edificio es alto pero la montaña es más alta.
-El edificio es _____ la montaña.
a. alto como
b. más alto que
c. tan alto como
d. menos alto que
15. Cuando la vi, _____ triste.
a. estás
b. estaban
c. estaba
d. estuviera
16. Voy a buscar _____ mi abrigo.
a. a
b. por
c. para
d. nothing changes
17. Enrique compró unas rosas y _____ las dio a sus padres.
a. me
b. le
c. se
d. les
18. ¡Cuidado! ¡No _____ caigas!
a. se
b. te
c. tú
d. ti

APPENDIX B

LISTENING COMPREHENSION ACTIVITY

Text	Mexican Script	Argentine Script	Puerto Rican Script
1	<p>Hola, Cristina, soy Ana. Probablemente has estado buscando por toda tu casa tu agenda. La tengo yo, la olvidaste ayer en el restaurante. Me la llevé sin querer entre mis cuadernos. Esta tarde tengo una cita cerca de tu oficina, así que, si te parece bien, paso por allí y te la doy. Llámame para decirme si vas a estar.</p> <p>Ana a Cristina?</p> <p>a. Para devolverle su agenda b. Para proponerle salir a comer c. Para recordarle que tienen una cita</p>	<p>Hola, Cristina, soy Ana. Seguro que has estado buscando por toda la casa tu agenda. La tengo yo, te la olvidaste ayer en el restaurante. Me la llevé sin querer entre mis cuadernos. Esta tarde tengo una reunión cerca de tu oficina, así que, si te parece bien, voy y te la doy. Llámame para decirme si vas a estar.</p> <p>Ana a Cristina?</p> <p>a. Para devolverle su agenda b. Para proponerle salir a comer c. Para recordarle que tienen una cita</p>	<p>Hola, Cristina, soy Ana. Seguro que has estado buscando por toda la casa tu agenda. La tengo yo, la olvidaste ayer en el restaurante. Me la llevé sin querer entre mis cuadernos. Esta tarde tengo una cita cerca de tu oficina, así que, si te parece bien, me paso por allí y te la doy. Llámame para decirme si vas a estar.</p> <p>Ana a Cristina?</p> <p>a. Para devolverle su agenda b. Para proponerle salir a comer c. Para recordarle que tienen una cita</p>
2	<p>Hola, Maria. Mañana tengo una reunión con el director general y en el informe que me enviaste no aparecen los gastos de marketing y publicidad. En cuanto puedas, me mandas por correo electrónico esta información, es urgente. Gracias.</p> <p>Pregunta: ¿Qué tiene que hacer Maria?</p>	<p>Hola, Maria. Mañana tengo una reunión con el director general y en el informe que me enviaste no aparecen los gastos de marketing y publicidad. En cuanto puedas, mandáme por correo electrónico esta información, estoy apurada. Gracias.</p> <p>Pregunta: ¿Qué tiene que hacer Maria?</p>	<p>Hola, Maria. Mañana tengo una reunión con el director general y en el informe que me enviaste no aparecen los gastos de marketing y publicidad. En cuanto puedas, me mandas por correo electrónico esta información, me corre mucha prisa. Gracias.</p> <p>Pregunta: ¿Qué tiene que hacer Maria?</p>

	<p>a. Ir a una reunión</p> <p>b. Elaborar un informe</p> <p>c. Enviar unos datos</p>	<p>a. Ir a una reunión</p> <p>b. Elaborar un informe</p> <p>c. Enviar unos datos</p>	<p>a. Ir a una reunión</p> <p>b. Elaborar un informe</p> <p>c. Enviar unos datos</p>
3	<p>Buenos días, este mensaje es para Claudia Ríos. La llamamos de la empresa llamada Conecta. Vimos su currículum y nos gustaría hacerle una entrevista de trabajo. Si le parece bien, podría ser el viernes de la semana que viene, por la mañana. Por favor, llámenos pronto para decidir una hora.</p> <p>Pregunta: ¿Para qué llama la mujer a Claudia Ríos?</p> <p>a. Para que le envíe el currículum</p> <p>b. Para decidir un horario</p> <p>c. Para cancelar una entrevista</p>	<p>Buenos días, este mensaje es para Claudia Ríos. La llamamos de la empresa llamada Conecta. Vimos su currículum y nos gustaría hacerle una entrevista de trabajo. Si le viene bien, podría ser el viernes de la semana que viene, en horario de mañana. Por favor, llámenos pronto para decidir una hora.</p> <p>Pregunta: ¿Para qué llama la mujer a Claudia Ríos?</p> <p>a. Para que le envíe el currículum</p> <p>b. Para decidir un horario</p> <p>c. Para cancelar una entrevista</p>	<p>Buenos días, este mensaje es para Claudia Ríos. La llamamos de la empresa llamada Conecta. Vimos su currículum y nos gustaría hacerle una entrevista de trabajo. Si le viene bien, podría ser el viernes de la semana que viene, en horario de mañana. Por favor, llámenos pronto para decidir una hora.</p> <p>Pregunta: ¿Para qué llama la mujer a Claudia Ríos?</p> <p>a. Para que le envíe el currículum</p> <p>b. Para decidir un horario</p> <p>c. Para cancelar una entrevista</p>
4	<p>Carla, soy Julia. Tengo un problema y necesito que me ayudes porque no funciona mi laptop. ¿Podrías hacer algo? Es que el viernes tengo que entregar un trabajo de Biología y todavía no lo he terminado. Si te parece bien, te lo llevo a tu casa esta tarde y, de</p>	<p>Carla, soy Julia. Tengo un problema y necesito que me ayudes porque no me funciona mi laptop. ¿Podrías hacer algo? Es que el viernes tengo que entregar un trabajo de Biología y todavía no lo terminé. Si te va bien, te la llevo a tu casa esta tarde y, de</p>	<p>Carla, soy Julia. Tengo un problema y necesito que me ayudes porque no me funciona mi laptop. ¿Podrías hacer algo? Es que el viernes tengo que entregar un trabajo de Biología y todavía no lo he terminado. Si te va bien, te lo llevo a tu casa esta</p>

	<p>paso, te doy el DVD que me prestaste.</p> <p>Pregunta: ¿Qué le pide Julia a Carla?</p> <p>a. Que le arregle la computadora</p> <p>b. Que la ayude a hacer un trabajo de clase</p> <p>c. Que le preste una película</p>	<p>paso, te doy el DVD que me dejaste.</p> <p>Pregunta: ¿Qué le pide Julia a Carla?</p> <p>a. Que le arregle la computadora</p> <p>b. Que la ayude a hacer un trabajo de clase</p> <p>c. Que le preste una película</p>	<p>tarde y, de paso, te doy el DVD que me dejaste.</p> <p>Pregunta: ¿Qué le pide Julia a Carla?</p> <p>a. Que le arregle la computadora</p> <p>b. Que la ayude a hacer un trabajo de clase</p> <p>c. Que le preste una película</p>
5	<p>Hola, Marta. Me acaba de llamar Ana y me dijo que nos dieron el préstamo para comprar la casa. ¡Por fin! Otra cosa, cuando salgas de la oficina, busca el pastel que encargué ayer. Te recuerdo que ya lo pagué. Un beso.</p> <p>Pregunta: ¿Adónde tiene que ir Marta?</p> <p>a. Al banco</p> <p>b. A su oficina</p> <p>c. A la pastelería</p>	<p>Hola, Marta. Me acaba de llamar Ana y me dijo que nos dieron la plata para comprar la casa. ¡Por fin! Otra cosa, cuando salgas de la oficina, buscá la torta que encargué ayer. Te recuerdo que ya la pagué. Un beso.</p> <p>Pregunta: ¿Adónde tiene que ir Marta?</p> <p>a. Al banco</p> <p>b. A su oficina</p> <p>c. A la pastelería</p>	<p>Hola, Marta. Me acaba de llamar Ana y me dijo que nos dieron el dinero para comprar la casa. ¡Por fin! Otra cosa, cuando salgas de la oficina, busca el bizcocho que encargué ayer. Te recuerdo que ya lo pagué. Un beso.</p> <p>Pregunta: ¿Adónde tiene que ir Marta?</p> <p>a. Al banco</p> <p>b. A su oficina</p> <p>c. A la pastelería</p>
6	<p>Hola Camila, soy Lucía. Te llamo por lo del viaje. A ver... la agencia que me recomendó Elena me gustó, pero el viaje a París que nos ofrecían me pareció caro. Mira los vuelos en esa página web de ofertas de última hora. Por cierto, Elena me dijo que pasaras por</p>	<p>Hola Camila, soy Lucía. Te llamo por lo del viaje. A ver... la agencia que me recomendó Elena me gustó, pero el viaje a París que nos ofrecían me pareció caro. Mirá los vuelos en esa página web de ofertas de última hora. Por cierto, Elena me dijo que pasaras por</p>	<p>Hola Camila, soy Lucía. Te llamo por lo del viaje. A ver... la agencia que me recomendó Elena me gustó, pero el viaje a París que nos ofrecían me pareció caro. Mira los vuelos en esa página web de ofertas de última hora. Por cierto, Elena me dijo que pasaras por</p>

<p>su casa a buscar la guía de París. Llámame luego.</p> <p>Pregunta: ¿Qué quiere Lucía que haga Camila?</p> <p>a. Que vaya a la agencia de viajes</p> <p>b. Que busque los billetes de avión por internet</p> <p>c. Que hable con Elena del viaje</p>	<p>su casa a buscar la guía de París. Llámame luego.</p> <p>Pregunta: ¿Qué quiere Lucía que haga Camila?</p> <p>a. Que vaya a la agencia de viajes</p> <p>b. Que busque los billetes de avión por internet</p> <p>c. Que hable con Elena del viaje</p>	<p>su casa a buscar la guía de París. Llámame luego.</p> <p>Pregunta: ¿Qué quiere Lucía que haga Camila?</p> <p>a. Que vaya a la agencia de viajes</p> <p>b. Que busque los billetes de avión por internet</p> <p>c. Que hable con Elena del viaje</p>
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English Translation

1	<p>Hello, Cristina, it's Ana. I'm sure you've been searching for your planner all over the house. I have it; you left it at the restaurant yesterday. I accidentally took it with my notebooks. This afternoon, I have a meeting near your office, so if it's okay with you, I'll come and give it to you. Call me to let me know if you'll be there.</p> <p>Question: Why does Ana call Cristina?</p> <p>a. To return her planner</p> <p>b. To suggest going out to eat</p> <p>c. To remind her she has an appointment</p>
2	<p>Hello, Maria. Tomorrow, I have a meeting with the CEO, and the report you sent me does not include the marketing and advertising expenses. Whenever you can, please send me this information by email; I'm in a hurry. Thank you.</p> <p>Question: What does Maria have to do?</p> <p>a. Go to a meeting</p> <p>b. Prepare a report</p> <p>c. Send some data</p>
3	<p>Good morning, this message is for Claudia Ríos. We are calling from a company called Conecta. We have seen your CV, and we would like to schedule a job interview with you. If it suits you, it could be on Friday of next week, in the morning hours. Please call us soon to arrange a time.</p> <p>Question: Why is the woman calling Claudia Ríos?</p> <p>a. To request her CV</p> <p>b. To decide on a time</p>

	c. To cancel an interview
4	<p>Carla, it's Julia. I have a problem and I need your help because my laptop is not working. Could you do something? You see, I have to submit a Biology assignment on Friday, and I haven't finished it yet. If it's okay with you, I'll bring it to your house this afternoon, and I'll also give you back the DVD you lent me.</p> <p>Question: What does Julia ask Carla for?</p> <p>a. To fix her computer b. To help her with a school assignment c. To lend her a movie</p>
5	<p>Hello, Marta. Ana just called me and told me that they approved the money for buying the house. Finally! Also, when you leave the office, please pick up the cake I ordered yesterday. Just a reminder that I've already paid for it. Kisses.</p> <p>Question: Where does Marta have to go?</p> <p>a. To the bank b. To her office c. To the bakery</p>
6	<p>Hello Camila, it's Lucia. I'm calling you about the trip. Let's see... I liked the agency Elena recommended, but the trip to Paris they offered seemed expensive to me. Check the flights on that last-minute deals website. By the way, Elena told me to stop by her house to pick up the Paris guide. Call me later.</p> <p>Question: What does Lucía want Camila to do?</p> <p>a. To go to the travel agency b. To look for plane tickets online c. To talk to Elena about the trip</p>

APPENDIX C

QUANTIFICATION OF THE VARIABLES USED IN ALL VERSIONS

First audio:

			Mexican Script	Argentine Script	Puerto Rican Script
Morphosyntax	Voseo (vs. tuteo)		0% (0/1)	100% (1/1)	0% (0/1)
Lexicon (e.g. pastel vs biscocho)			3	3	3
Pronunciation	Syllable- and word- final /s/ weakening	Normal	0% (0/11)	18% (2/11)	67% (7/11)
		Slow	0% (0/11)	18% (2/11)	36% (4/11)
	Intervocalic /d/ elision	Normal	0% (0/8)	0% (0/8)	0% (0/8)
		Slow	0% (1/8)	0% (1/8)	12.5% (1/8)
	Sheísmo (vs yeísmo)	Normal	0% (0/5)	100% (4/4)	0% (0/5)
		Slow	0% (0/5)	100% (4/4)	0% (0/5)
	Lateralization of /r/	Normal	0% (0/10)	0% (0/10)	0% (0/10)
		Slow	0% (6/10)	0% (6/10)	100% (6/10)

Second audio:

			Mexican Script	Argentine Script	Puerto Rican Script
Morphosyntax	Voseo (vs. tuteo)		0% (0/1)	100% (1/1)	0% (0/1)
Lexicon			1	1	1
Pronunciation	Syllable- and word- final /s/ weakening	Normal	0% (0/7)	57% (4/7)	100% (7/7)
		Slow	0% (0/7)	23% (2/7)	100% (7/7)
	Intervocalic /d/ elision	Normal	0% (0/2)	0% (0/2)	50% (1/2)
		Slow	0% (0/2)	0% (0/2)	0% (0/2)
	Sheísmo (vs yeísmo)	Normal	0% (0/0)	0% (0/0)	0% (0/0)
		Slow	0% (0/0)	0% (0/0)	0% (0/0)
	Lateralization of /r/	Normal	0% (0/5)	0% (0/5)	0% (0/5)
		Slow	0% (0/5)	0% (0/5)	80% (4/5)

Third audio:

			Mexican Script	Argentine Script	Puerto Rican Script
Morphosyntax	Voseo (vs. tuteo)		0% (0/1)	100% (1/1)	0% (0/1)
Lexicon			2	2	2
Pronunciation	Syllable- and word- final /s/ weakening	Normal	0% (0/12)	67% (8/12)	100% (12/12)
		Slow	0% (0/12)	25% (3/12)	100% (12/12)
	Intervocalic /d/ elision	Normal	0% (0/6)	0% (0/6)	0% (0/6)
		Slow	0% (0/6)	0% (0/6)	0% (0/6)
	Sheísmo (vs yeísmo)	Normal	0% (0/3)	100% (3/3)	0% (0/3)
		Slow	0% (0/3)	100% (3/3)	0% (0/3)
	Lateralization of /r/	Normal	0% (0/6)	0% (0/6)	50% (3/6)
		Slow	0% (0/6)	0% (0/6)	20% (1/6)

Fourth audio:

			Mexican Script	Argentine Script	Puerto Rican Script
Morphosyntax	Voseo (vs. tuteo)		0% (0/0)	0% (0/0)	0% (0/0)
	Verb tense		1	1	1
Lexicon			2	2	2
Pronunciation	Syllable- and word- final /s/ weakening	Normal	0% (0/6)	33 % (2/6)	100 % (6/6)
		Slow	0% (0/6)	33 % (2/6)	100 % (6/6)
	Intervocalic /d/ elision	Normal	(0/6)	(0/6)	(0/6)
		Slow	(0/6)	(0/6)	(0/6)
	Sheísmo (vs yeísmo)	Normal	0% (0/2)	100% (2/2)	0% (0/2)
		Slow	0% (0/2)	100% (2/2)	0% (0/2)
	Lateralization of /r/	Normal	0% (0/7)	0% (0/7)	43% (3/7)
		Slow	0% (0/7)	0% (0/7)	0% (0/7)

Fifth audio:

			Mexican Script	Argentine Script	Puerto Rican Script
Morphosyntax	Voseo (vs. tuteo)		0% (0/1)	100% (1/1)	0% (0/1)
Lexicon			2	2	2
Pronunciation	Syllable- and word- final /s/ weakening	Normal	0% (0/5)	67% (2/3)	100% (4/4)
		Slow	0% (0/5)	67% (2/3)	100% (4/4)
	Intervocalic /d/ elision	Normal	0% (0/3)	0% (0/3)	0% (0/3)
		Slow	0% (0/3)	0% (0/3)	0% (0/3)
	Sheísmo (vs yeísmo)	Normal	0% (0/3)	100% (3/3)	0% (0/3)
		Slow	0% (0/3)	100% (3/3)	0% (0/3)
	Lateralization of /r/	Normal	0% (0/7)	0% (0/7)	0% (0/7)
		Slow	0% (0/7)	0% (0/7)	100% (7/7)

Sixth audio:

			Mexican Script	Argentine Script	Puerto Rican Script
Morphosyntax	Voseo (vs. tuteo)		0% (0/2)	100% (2/2)	0% (0/2)
Lexicon			0	0	0
Pronunciation	Syllable- and word- final /s/ weakening	Normal	100% (0/9)	22% (2/9)	100% (9/9)
		Slow	100% (0/9)	56% (5/9)	100% (9/9)
	Intervocalic /d/ elision	Normal	0% (0/3)	0% (0/3)	0% (0/3)
		Slow	0% (0/3)	0% (0/3)	0% (0/3)
	Sheísmo (vs yeísmo)	Normal	0% (0/2)	100% (2/2)	0% (0/2)
		Slow	0% (0/2)	100% (2/2)	0% (0/2)
	Lateralization of /t/	Normal	0% (0/5)	0% (0/5)	0% (0/5)
		Slow	0% (0/5)	0% (0/5)	80% (4/5)

APPENDIX D

TARGET STIMULI FOR THE AX DISCRIMINATION TASK

Target Stimuli for Weakened vs Sibilant

#		Dialect	A: weakened	X: sibilant	Answer
1	/sp/	Argentina	ba[h]pe ba[0]pe	ba[s]pe	Same
2	/sp/	Puerto Rico	ti[h]pa ti[0]pa	ti[s]pa	Same
3	/st/	Argentina	pa[h]te pa[0]te	pa[s]te	Same
4	/st/	Puerto Rico	pi[h]te pi[0]te	pi[s]te	Same
5	/sk/	Argentina	re[h]ka re[0]ka	re[s]ka	Same
6	/sk/	Puerto Rico	cha[h]qui cha[0]qui	cha[s]qui	Same

Target Stimuli for Weakened vs Weakened

#		Dialect	A: weakened	X: weakened	Answer
7	/sp/	Arg	ti[h]po ti[0]po	ti[h]po ti[0]po	Same
8	/sp/	PR	di[h]po di[0]po	di[h]po di[0]po	Same
9	/st/	Arg	lu[h]ti lu[0]ti	lu[h]ti lu[0]ti	Same
10	/st/	PR	ba[h]ti ba[0]ti	ba[h]ti ba[0]ti	Same
11	/sk/	Arg	po[h]ku po[0]ku	po[h]ku po[0]ku	Same
12	/sk/	PR	re[h]ku re[0]ku	re[h]ku re[0]ku	Same

Target Stimuli for Sibilant vs Sibilant

#		Dialect	A: sibilant	X: sibilant	Answer
13	/sp/	Arg	ga[s]pa	ga[s]pa	Same
14	/sp/	PR	so[s]po	so[s]po	Same
15	/st/	Arg	ni[s]te	ni[s]te	Same
16	/st/	PR	bi[s]tu	bi[s]tu	Same
17	/sk/	Arg	fo[s]ka	fo[s]ka	Same
18	/sk/	PR	ni[s]que	ni[s]que	Same

APPENDIX E

DISTRACTOR STIMULI FOR THE AX DISCRIMINATION TASK

Distractor Stimuli: same

#	Dialect		A	X	Answer
1	Arg	Coda 1st syllable	ti[r]co	ti[r]co	Same
2	PR	Coda 1st syllable	di[l]po	di[l]po	Same
3	Arg	Coda 1st syllable	re[r]co	re[r]co	Same
4	PR	1st consonant	[f]onto	[f]onto	Same
5	Arg	1st consonant	[n]oro	[n]oro	Same
6	Arg	2nd syllable initial consonant	bon[k]a	bon[k]a	Same
7	PR	2nd syllable initial consonant	ri[l]o	ri[l]o	Same
8	Arg	Vowels	l[a]sa	l[a]sa	Same
9	PR	Vowels	rad[e]	rad[e]	Same

Distractor Stimuli: different

#	Dialect		A	X	Answer
1	Arg	Coda 1st syllable	de[r]sa	de[l]sa	Different
2	PR	Coda 1st syllable	ca[p]to	ca[b]to	Different
3	Arg	Coda 1st syllable	ru[f]la	ru[n]la	Different
4	PR	Coda 1st syllable	fi[n]bo	fi[l]bo	Different
5	Arg	Coda 1st syllable	po[l]ti	po[m]ti	Different
6	PR	Coda 1st syllable	be[r]la	be[m]la	Different
7	PR	1st consonant	[k]ufla	[l]ufla	Different
8	Arg	1st consonant	[s]era	[l]era	Different
9	PR	1st consonant	[b]ilta	[t]ilta	Different
10	Arg	1st consonant	[m]efo	[f]efo	Different
11	PR	1st consonant	[m]ilde	[p]ilde	Different

12	Arg	1st consonant	[t]igo	[f]igo	Different
13	PR	1st consonant	[n]iblo	[k]iblo	Different
14	Arg	2nd syllable initial consonant	se[s]i	se[s]i	Different
15	PR	2nd syllable initial consonant	chu[l]e	chu[d]e	Different
16	Arg	2nd syllable initial consonant	gor[f]u	gor[n]u	Different
17	PR	2nd syllable initial consonant	co[b]i	co[m]i	Different
18	Arg	2nd syllable initial consonant	nuk[l]i	nuk[t]i	Different
18	PR	2nd syllable initial consonant	la[p]i	la[r]i	Different
20	Arg	2nd syllable initial consonant	si[p]re	si[t]re	Different
21	Arg	Vowels	cils[e]	cils[a]	Different
22	PR	Vowels	r[i]fo	r[a]fo	Different
23	Arg	Vowels	ch[i]lo	ch[e]la	Different
24	PR	Vowels	f[i]rlo	f[a]rlo	Different
25	Arg	Vowels	p[a]fo	p[e]fo	Different
26	PR	Vowels	c[i]rto	c[e]rto	Different
27	Arg	Vowels	d[u]fa	d[e]fa	Different

APPENDIX F
LANGUAGE BACKGROUND QUESTIONNAIRE

Instructions:

Please answer the following questions concerning your language history, use, attitudes, and proficiency. This is NOT a test, so there are no right or wrong answers. Please answer every question and give your answers sincerely.

- Date: _____
- Age: _____
- Gender: _____
- Current place of residence city/state/country: _____
- Where did you grow up? In how many states have you lived and for how long?

- Do you have any reading or hearing difficulties that you are aware of?

- Native language: _____
- Languages spoken at home: _____
- Native language and city of origin of your parents/legal guardians: _____
- Do you know any other languages (apart from Spanish and English). If so, what is your proficiency level in each language? Beginner, Intermediate, or Advanced?:

- Spanish courses currently taking?: SPA 313 - SPA 314 - SPA 412
- Do you have any study abroad experience? If so, where and for how long?

- Have you ever lived abroad? If so, where and for how long? _____
- Is Spanish your major? _____
- Is Spanish your minor? _____

In this section, I would like you to answer some factual questions about your language history by choosing the appropriate box. (Likert Scale: since birth to 20+ or as long as I can remember to not yet) Languages: English and Spanish

- At what age did you start learning the following languages? _____

- At what age did you start to feel comfortable using the following languages?
- How many years of classes (grammar, history, math, etc.) have you had in the following languages (primary school through university)? _____
- How many years have you spent in a country/region where the following languages are spoken? _____
- How many years have you spent in a family where the following languages are spoken? _____
- How many years have you spent in a work environment where the following languages are spoken? _____

Write your answer next to each question

Number of years of Spanish classes prior to college? Origin of Spanish teacher(s):

- Elementary and middle school: _____
- High school: _____
- Community college (if applicable): _____

Spanish classes during college? Origin of Spanish teacher(s)

- _____

In this section, I would like you to answer some questions about your language use by choosing the appropriate box.

In an average week, what percentage of the time do you use the following languages with friends? (Likert scale from 0% to 100% for “English”, “Spanish”, and “other languages”)

- In an average week, what percentage of the time do you use the following languages with friends? _____
- In an average week, what percentage of the time do you use the following languages with your family? _____
- In an average week, what percentage of the time do you use the following languages at school/work? _____
- When you talk to yourself, how often do you talk to yourself in the following languages? _____
- When you count, how often do you count in the following languages?

In this section, I would like you to rate your language proficiency by giving marks from 0 to 6.

- How well do you speak English: _____
- How well do you speak Spanish: _____
- How well do you understand English: _____
- How well do you understand Spanish: _____
- How well do you read English: _____
- How well do you read Spanish: _____
- How well do you write English: _____
- How well do you write Spanish: _____

In this section, I would like you to respond to statements about language attitudes by giving marks from 0-6.

- I feel like myself when I speak English: _____
- I feel like myself when I speak Spanish: _____
- I identify with an English-speaking culture: _____
- I identify with a Spanish-speaking culture: _____
- It is important to me to use (or eventually use) English like a native speaker.:

- It is important to me to use (or eventually use) Spanish like a native speaker:

- I want others to think I am a native speaker of English: _____ I want
others to think I am a native speaker of Spanish: _____

Please mark whether you agree or disagree with the following statements. Please answer honestly. (Agree, Neutral, or Disagree)

- I am glad that I had taken Spanish classes _____
- I love the Spanish language _____
- I mainly study Spanish to fulfill a language requirement at my university

- I care a lot about how native-like my Spanish sounds _____
- I care more about getting my point across than about how I sound while speaking _____
- I have my own accent when speaking and avoid speaking like other Spanish speakers _____

Answer the following questions as completely as possible. Your insights will be greatly appreciated.

- Is there a specific dialect or variety of Spanish that you (personally) prefer to imitate when speaking Spanish? _____
- Has your dialect preference changed over time? If so, why do you think it did so? _____
- Do you think there is a variety of Spanish that is better than others? Yes? No? Why? _____
- Do you think it is important to learn about different Spanish dialects? Why or why not? _____
- Do you think you were exposed in class to different dialects of Spanish? For instance, did your instructor/s address that there are different ways of referring to the same objects in different Spanish speaking countries? If so, what dialects do you think you have been most exposed to in class? _____
- Please describe any differences in pronunciation that you are aware of in different Spanish-speaking countries (dialectal pronunciations). _____
- Did you notice any ‘funny’ sounds or dialectal pronunciations of the made-up and real Spanish words in the experiment? If yes, what did you notice? _____

APPENDIX G
IRB APPROVAL



EXEMPTION GRANTED

Michael Gradoville
CLAS-H: International Letters and Cultures, School of (SILC)
-
Michael.Gradoville@asu.edu

Dear [Michael Gradoville](#):

On 8/23/2022 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Measuring sociophonetic competence: The impact of regional phonetic variation on L2 listening comprehension
Investigator:	Michael Gradoville
IRB ID:	STUDY00016351
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none">• Consent form.pdf, Category: Consent Form;• Emails to the instructors.pdf, Category: Recruitment Materials;• Instruments , Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);• Protocol_Fernandez.docx, Category: IRB Protocol;

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 8/23/2022.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

If any changes are made to the study, the IRB must be notified at research.integrity@asu.edu to determine if additional reviews/approvals are required.

Changes may include but not limited to revisions to data collection, survey and/or interview questions, and vulnerable populations, etc.

REMINDER - Effective January 12, 2022, in-person interactions with human subjects require adherence to all current policies for ASU faculty, staff, students and visitors. Up-to-date information regarding ASU's COVID-19 Management Strategy can be found [here](#). IRB approval is related to the research activity involving human subjects, all other protocols related to COVID-19 management including face coverings, health checks, facility access, etc. are governed by current ASU policy.

Sincerely,

IRB Administrator

cc: Sofia Fernandez
Michael Gradoville
Sofia Fernandez