Domestic vs. Foreign Immersion Experiences: Listening Comprehension of Multiple Dialects in Spanish

Nathan Thomas Adams
Brigham Young University

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Domestic vs. Foreign Immersion Experiences: Listening Comprehension of

Multiple Dialects in Spanish

Nathan Thomas Adams

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Master of Arts

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ABSTRACT

Domestic vs. Foreign Immersion Experiences: Listening Comprehension of Multiple Dialects in Spanish

Nathan Thomas Adams
Department of Spanish and Portuguese, BYU
Master of Arts

Study abroad has been shown to improve students’ linguistic and cultural competence, but students who gain their fluency abroad may struggle to adapt to the plethora of regional dialects they encounter in their studies and interactions after they’ve returned from their study abroad. The researchers of this study posited that learning Spanish in a domestic immersion context may improve a student’s flexibility or tolerance for dialectal variation in regard to listening comprehension. Using a detailed survey and multi-dialectal listening assessment, the researchers examined the degree to which Spanish language learners, in this case 183 missionaries, were exposed to a variety of dialects, whether this exposure varied depending on region of study, and whether it affected their ability to comprehend a variety of accents.

Significantly higher levels of variation were found in Spain, the U.S., and Canada, possibly due to the higher levels of Hispanic immigration to these regions. A comparison of Spain, the region with the highest average test score, and Mexico, the region with the lowest average test score, showed high practical significance ($d=.8$), suggesting that high levels of linguistic variation in the region of study may improve listening comprehension of multiple dialects. Pearson correlations between exposure to variation and listening test score were also positive. The researchers believe this is grounds for increased support of immersion programs both domestic and abroad, especially to areas such as Spain with high levels of linguistic diversity.

Keywords: study abroad, immersion programs, listening comprehension, second language learning, Spanish
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I’d first like to thank my parents for their constant support no matter what path I’ve chosen throughout the years. I’m also very grateful to my committee for their infinite patience through this very long process, and especially Dr. Cox for the hours of work and passion he’s put into this project alongside me. I give special thanks to my good friend and colleague, Rachel Eaton, for providing the competitive yet supportive spirit I needed that propelled us through this degree together, and for essentially being a fourth committee member on this project. I’d like to mention a few friends and loved ones as well, especially Brendon, Evan, Mariana, and Taylor, for being there for me in times of need. Last but not least, I’m grateful for Arthur always keeping me up and active no matter how tough the going got.
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Introduction

University professors sometimes notice that when students learn most of their Spanish abroad, there can be a disconnect between their speaking and listening ability when trying to understand accents or dialects other than those of the country they studied in. Some university language programs require foreign immersion experiences of their students, but these experiences abroad may not adequately prepare them for the wide variety of dialects they may hear in their subsequent scholarly and professional language pursuits. Extensive research on the second-language (L2) learning gains that result from international study indicates that such “real-world” experiences significantly improve L2 students’ linguistic and cultural competence (e.g. Di Silvio, Diao, & Donovan, 2016; Freed, 1995; Freed, Segalowitz, & Dewey, 2004; Linck, Kroll, & Sunderman, 2009; Sunderman, & Kroll, 2009; Tokowicz, Michael, & Kroll, 2004). However, many of these studies report language gains using oral proficiency interviews (OPIs). These interviews underrepresent the listening construct, as the interviewer only speaks one variety of the language, likely not even the one the student learned on their study abroad. In order to be prepared for the interactions they’re likely to have in today’s globalized society, students should ideally be able to comprehend a wide range of language varieties.

Considering the rapidly increasing population of Hispanics in the United States, stateside intensive Spanish language programs may be a viable alternative to foreign immersion experiences that not only improves language learning in one dialect, but many. Such an immersion experience would also be more practical and accessible to a larger number of students, and learning within native Spanish-speaking communities in the United States has been shown to produce emotional and civic benefits in addition to linguistic benefits (Tijunelis, Satterfield, & Benki, 2013).
Many organizations provide opportunities to learn languages in this way, notably religious mission trips. The Church of Jesus Christ of Latter-Day Saints has been participating in language immersion experiences, domestic and foreign, for decades, as it sends thousands of young men and women to areas of the world where foreign languages are spoken. This includes areas in the United States with prominent foreign language communities, most commonly Spanish-speaking communities. Here these missionaries learn the local language during a period of 18-24 months while proselyting full-time with assigned companions in their congregations. Missionary companions live and work together 24/7 and could either both be language learners, both native speakers, or a native speaker with a language learner. The periods of time during which a language learner lives and works with a native speaker are comparable to the host family experience of many study abroad programs. Neither host families nor missionary companions are usually trained in language instruction but provide valuable authentic input for the language learner. Additionally, these missionaries may be “transferred” to different areas within the same state or country periodically throughout the duration of their missions. The Latter-Day Saint missionary experience has received substantial academic attention (Hansen, 2012), but such a unique and vast population of immersion-style language learners merits much more in-depth study, especially the comparison of stateside and foreign language immersion experiences. Such a comparison could provide valuable insight into the advantages and disadvantages of domestic missionary service and immersion.

A key difference between stateside and foreign immersion experiences is the significant diversity of the U.S. Hispanic population. Nearly 40% of Hispanics in the U.S. are from countries other than Mexico (U.S. Census Bureau, 2018). Compared to the amount of diversity of national origin in foreign Spanish-speaking countries, these numbers are considerable. It
follows, then, that an L2 learner of Spanish might encounter a wide variety of regional dialects if their immersion experience took place in the United States, whereas foreign immersion may only entail significant exposure to a few. How might a domestic immersion experience affect an L2 learner’s ability to understand a wide range of regional varieties of a language differently than a foreign immersion experience? And how might that experience change based on their companions?
Review of Literature

Second-language acquisition (SLA) researchers, psychometricians and pedagogues alike have investigated for decades the benefits of different types of language immersion experiences as well as the relationship between accent and listening comprehension. However, comparisons between domestic and foreign immersion experiences are rare, especially outside of the realm of English as a second language (ESL) research. The following review will provide background for this study and place it within the context of the relevant research on language immersion and listening comprehension.

Domestic and Foreign Language Immersion

Many studies have been done researching the benefits and effects of study abroad programs on SLA (e.g. Di Silvio, Diao, & Donovan, 2016; Freed, 1995; Linck, Kroll, & Sunderman, 2009; Sunderman, & Kroll, 2009; Tokowicz, Michael, & Kroll, 2004). Nearly as many have researched the effects of immersion programs within students’ home countries (e.g. Breiner-Sanders, Richter, & Chi, 1999; Liskin-Gasparro, 1998; McKee, 1983), and some compare study abroad contexts with the traditional classroom (e.g. Freed, 1995; DeKeyser, 1991; Huebner, 1995; Lafford, 1995; Lapkin, Hart, & Swain, 1995). Several studies focused on Spanish L2 learners have found advantages for study abroad students over traditional classroom learners in oral proficiency (e.g. Segalowitz & Freed, 2004), pronunciation (e.g. Diaz-Campos, 2006; Stevens, 2001), lexical development (e.g. Collentine, 2004), and discourse abilities (e.g. Lafford, 1995, 2004), but listening comprehension has rarely been addressed, let alone comprehension of multiple dialects.

The present study examines a comparison between two learning contexts that appears to be under-studied: domestic and foreign immersion. There have been relatively few controlled
studies comparing the effects of domestic and foreign immersion experiences, most of which examine immersion classrooms or summer immersion programs where the bulk of students’ target language use is with each other, rather than native speakers. Freed, Segalowitz, and Dewey (2004) compare the “oral fluency gains” of French students in three different learning contexts: a traditional classroom, a summer immersion program in the U.S., and a study abroad, and Dewey (2004) compares the development of Japanese reading comprehension in domestic and foreign immersion programs. However, listening was not investigated. So, while some comparisons have been drawn between domestic and foreign immersion programs, one has yet to be made concerning Spanish listening comprehension.

**Listening Comprehension**

Winke et al. (2020) concluded that language program directors need more research on acquisition of skills other than speaking, and that listening proficiency in Spanish tends to be deficient compared to oral skills. The authors call for more research in order to help determine if the listening skill is under-calibrated in proficiency scales and in order to better understand the growth pattern of the listening skill. A comparison of Latter-Day Saint mission experiences at home and abroad, coupled with a listening assessment, may provide some insight into these issues.

Other studies have examined listening comprehension more specifically in relation to linguistic variation. Many focus on accent, or phonological variation (e.g. Adank & McQueen, 2007; Barrows, 2016; Derwing & Munro, 2009; Eisenstein & Berkowitz, 1981; Floccia, Girard, & Konopczynski, 2006; Munro & Derwing, 1995; Ockey & French, 2014), but dialect, of course, also encompasses variation in lexicon, speed, pragmatic norms, and so on. These characteristics of speech are more difficult to assess and are therefore usually excluded from listening
assessments. Most of the aforementioned studies dealing with linguistic variation and the
development of L2 comprehension are done in the context of English as a second language (ESL), while Spanish listening comprehension has received comparatively less scrutiny. Unlike those studies, the present study examines the effect of different learning contexts and experiences on the interplay between L2 comprehension and phonological variation.

**Research Questions**

To examine this effect, students at Brigham Young University (BYU) who had served Spanish-speaking missions for the Church of Jesus Christ of Latter-Day Saints, both domestically and abroad, took a multi-dialectal listening test and a survey that allowed the researchers to identify which region of the Spanish-speaking world each student served in and quantify the linguistic variation exposure received there. Given these test scores and survey data, this study will answer the following research questions:

1. To what extent does mission region affect a missionary’s exposure to different varieties of Spanish from a) members of the community, and b) native Spanish-speaking missionary companions?
2. What is the effect of mission region on Spanish students’ test scores on a listening assessment that uses a variety of regional accents?
3. What is the relationship between the students’ test scores on a listening assessment that uses a variety of regional accents and the language variety exposure missionaries receive from both a) members of the community and b) the missionary companions they are assigned to work with?
Methods

In order to answer the three research questions, BYU students who had served as Spanish-speaking missionaries for the Church of Jesus Christ of Latter-Day Saints were tested and surveyed, providing data for the independent variable of mission region, and the dependent variables of exposure to linguistic variation from community members and fellow missionaries, and listening test score. This section will describe the participants, instruments, procedures, and data analysis involved.

Participants

The participants consisted of 183 BYU students who had recently returned from Spanish-speaking missions for the Church of Jesus Christ of Latter-Day Saints. These returned missionaries typically range in age from 20-25 years old. Male missionaries are asked to serve 24 months while female missionaries serve for 18 months. Upon completing their first Spanish class after returning from their missionary service, either SPAN 206 or 321, 782 of these students took the 2019 Winter semester’s departmental challenge exam to receive credit for a number of lower-level Spanish classes. The department does not allow heritage nor native speakers to take this exam, so participants were exclusively non-native L2 language learners. To qualify for this study’s survey after the listening test, participants were required to have served at least 15 months in the same mission. Of the 246 students that chose to take the survey, 183 met the criteria and completed it in its entirety. Their mission regions and gender can be seen in Figure 1. While 124 were male, 59 were female. The ID numbers of six of these students did not match any test results and therefore their data could not be used for research questions 2 and 3.
Figure 1

Number of Participants of Each Gender and Mission Region

![Bar chart showing number of participants by gender and mission region]

Instruments

**Listening Assessment.** The first instrument was part of an existing challenge exam to which the department was adding a listening portion with Superior-level items, according to the American Council on the Teaching of Foreign Languages (ACTFL) proficiency scale. Thus, the listening assessment was used out of convenience as it would have high face validity to the students. Unfortunately, since the items were being pilot-tested and quite difficult for the student population, it was unknown to what extent the test would provide reliable data. This assessment included the comprehension of multiple accents and was used to answer the second and third research questions. Students were allowed to listen to each recording once and respond to a multiple-choice question testing listening comprehension. Students were given instructions (see Figure 2) and an explanation of the layout of the questions (see Figure 3) within the testing
platform before beginning. An example question from a demo test on the same platform can be seen in Figure 4.

**Figure 2**

*Test Instructions*

Before the Test:
- Give all electronic devices to the proctor for the duration of the test.

During the test DO NOT:
- Talk with anyone
- Use a phone or other electronic devices such as a smart watch, camera, etc.
- Use web pages or other unapproved materials
- Let anyone look at your computer screen
- Consult outside resources such as dictionaries or translation tools

During the test:
- Do your best
- Look only at your own computer screen
- Report any suspicious activity

After the test, DO NOT:
- Discuss the test contents with anyone including instructors, classmates, superiors, friends, or family members

I understand that if I violate the terms of this agreement, my test score will be invalid and I may be subject to administrative action.

**Figure 3**

*Question Layout*
Students were given two hours to complete the exam, of which the listening portion was just a section. All questions and answer options were written in English and were all Advanced- and Superior-level difficulty. Audio samples were recorded by native speakers from Mexico (4 items), Argentina (2), Colombia (2), Spain (1), and Peru (1). These test items were developed by faculty in the Department of Spanish and Portuguese for the department’s challenge exam.

To validate the exam as a measurement instrument, the results from all 782 examinees were used to conduct a Rasch analysis to calculate the reliability and evaluate the usefulness of the instrument. One advantage of the Rasch analysis is that items and examinees are placed on the same scale so examinee ability and item difficulty can be easily compared. The examinee test scores in logit values (range -3.75 to 3.75) underwent a linear transformation with the standardized scores centered at 50. The examinee mean score was 49.99 (N =782, SD = 8.6). Note that very few students did very well or very poorly on the test—they were all grouped around the mean (see Figure 5).
For the 10 listening items on test (see Figure 6), the item mean difficulty was 50.00 (N =10, SD = 8.07) with the items having a similar difficulty level to the examinees’ ability level. There were no items that were extremely difficult or extremely easy.
For high stakes testing, the reliability should be greater than 0.80. For this test, the reliability was much lower. These results yielded a person separation reliability of 0.22. Thus, around 4% of variation in test scores can be attributed to differences in listening ability and the other 96% is measurement error. This low reliability can be attributable to the homogeneity of skill level in the sample population, the lack of prior testing on the items, and the brevity of the test.

**Variation Exposure Survey.** The second instrument used was a survey developed by the researchers in order to ascertain where the participants served their missions and quantify their exposure to linguistic variation from community members and missionary companions, variables necessary for the three research questions. The survey was piloted by ten volunteers and workshopped using the feedback received. The complete survey as viewed by participants may
be seen in Appendix A. It inquired about interactions with native speakers in the community and with the native-speaking missionary companions participants lived with. These were measured separately not only for the sake of managing cognitive load while taking the survey, but also because living with someone 24/7 is a very different, more intense and continuous kind of exposure than the discreet, momentary interactions they reported with members of the community.

Every six weeks, missionaries have the possibility of being “transferred” to a new area within their mission. Since each area likely had different demographics, the survey asked the students to report by area. This also helped reduce the cognitive load and excessive effort that would have been required to report on every single transfer, which for some participants would have been 19 transfers total. In order to quantify the exposure to linguistic variation each student received from members of the community, the survey asked students to specify which accents they heard daily, weekly, and monthly in each of their specific areas and the number of 6-week “transfers” they spent in each of those areas (see Figure 7).
Figure 7

Survey Question on Variation Exposure from Community

Not including your companion, how regularly did you interact with people speaking the following accents in Area #1?

<table>
<thead>
<tr>
<th>Items</th>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexican</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cuban</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominican</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puerto Rican</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costa Rican</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salvador</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guatemalan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honduran</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaraguan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panamanian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peninsular (Spain)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Argentine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolivian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chilean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equadorian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paraguayan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peruvian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uruguayan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venezuelan</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The students selected dialects, defined in the survey as nationalities for the sake of concision and comprehensibility, from a list based on the 20 countries (or territory, in the case of Puerto Rico) that have Spanish as an official language and to which missionaries are assigned. Students chose only the accents they heard in each area and categorized them as being heard daily, weekly, or monthly. The question was designed this way so that students could more accurately and uniformly self-report, rather than being asked the overwhelming question, “How many times did you hear each accent?” which may have been difficult to conceptualize and put a precise number to.

In order to calculate an overall exposure level from native Spanish-speaking missionary
companions, they were asked how many native missionary companions of each nationality they had, along with the number of transfers they were with each one.

The survey yielded data for the following variables: mission region, total transfers on their mission, average number of varieties interacted with per day, and level of exposure to varieties from native-speaking missionary companions.

**Procedures**

First, the listening test was administered electronically in BYU’s Humanities Testing Lab at multiple times during the last week of the semester. The week after the last test was proctored, a roughly 10-minute Qualtrics survey was emailed out to all students who took the challenge exam. There was no compensation offered to the participants, who completed the survey over the span of about six weeks.

**Data Analysis**

To answer the research questions, the dependent variables of community exposure and native companion exposure were operationalized and listening test scores were calculated. For research question 1, a one-way ANOVA was run with the independent variable being mission region and the dependent variables being community exposure and companion exposure. This would find the effect of region on exposure to linguistic variation. For question 2, another ANOVA was run with the dependent variable of listening test score to find the effect of region on listening comprehension. For question 3, the strength of the relationship between test score and the two exposure variables was analyzed using a Pearson correlation.

**Operationalization of the Community Member Variable.** The survey provided the necessary data to calculate the students’ exposure to variation from community members, operationalized for this study as the average number of accents interacted with daily. The
students selected the accents they heard in each of their areas and ranked the frequency with which they heard them as daily, weekly, or monthly.

In order to convert the number of accents heard weekly and monthly into daily values, they were divided by seven and thirty, respectively. That sum of daily values was subsequently multiplied by the number of transfers spent in the area, to account for and properly weight the duration of the exposures reported. An area in which a missionary spends five transfers, for example, clearly amounts to a higher level of exposure than an area in which a missionary only spends two transfers.

Two hypothetical missionary examples can illustrate how data were tabulated. Missionary #1 was called to serve in the jungles of Central America and may have only been exposed to one variety of Spanish daily, but upon travelling for monthly meetings to other regions of the country may have heard two others. They were in this area for two transfers. Missionary #2, however, served in an area in Texas for three transfers, and may have heard four varieties daily, three weekly, and two monthly. Missionary #1 would have had an average number of daily exposures of 1.07, adding the one variety they heard daily to the two they heard monthly, weighted as \( \frac{2}{30} \) of a daily interaction, or two interactions per every 30 days, then multiplied by two transfers, equaling 2.14 total for the area. Missionary #2 would have 4 daily interactions, plus three weekly (\( \frac{3}{7} \) or three per 7-day week), plus two monthly (\( \frac{2}{30} \)), yielding a total number of daily interactions with different accents of 4.5, multiplied by three transfers, equaling 13.5 for that area (see Table 1).
Table 1

Example Calculation of Two Missionaries’ Average Daily Exposures for One Area

<table>
<thead>
<tr>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Avg. Daily Exposures</th>
<th>No. Transfers</th>
<th>Area Total Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missionary #1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1.07</td>
<td>2</td>
</tr>
<tr>
<td>Missionary #2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4.5</td>
<td>3</td>
</tr>
</tbody>
</table>

Adding all the daily averages for each of the student’s areas, weighted by duration, and then divided by total number of transfers in the missionary’s entire mission, produced a daily average number of interactions with different accents for the entire duration of their mission. This number effectively quantified students’ overall exposure to varieties of Spanish from community members and will be used to describe what level of linguistic variation missionaries encounter in different regions of the world.

Operationalization of the Mission Companion Variable. An overall level of exposure to linguistic variation from native-speaking missionary companions was also calculated by having each student list each of their native-speaking missionary companions, including how long they were with them and what variety of Spanish they spoke. By multiplying the proportion of their entire mission spent with native-speaking missionary companions by the proportion of varieties they spoke out of the 20 possible, the students that spent the longest with native-speaking missionary companions of the highest number of varieties received the highest scores. For example, if Student #1 had only one native-speaking missionary companion for three of the twelve transfers of their mission, they would have a missionary companion exposure score of .0125, whereas Student 2, who also served for a total of twelve transfers, but had three native missionary companions, each from different countries, and for only one transfer each, would
have a score of .0375, even though the two students spent the same amount of time living with native speakers (see Table 2).

**Table 2**

*Example Calculation of Two Students’ Exposure to Variation from Missionary Companions*

<table>
<thead>
<tr>
<th></th>
<th>Proportion of mission with native companion</th>
<th>No. accents spoken by companions out of 20</th>
<th>Total companion score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student #1</td>
<td>0.25 (3 of 12 transfers)</td>
<td>1</td>
<td>0.0125</td>
</tr>
<tr>
<td>Student #2</td>
<td>0.25 (3 of 12 transfers)</td>
<td>3</td>
<td>0.0375</td>
</tr>
</tbody>
</table>

These calculations made it possible to quantify exposure levels from community and missionary companions, which will be used to test the null hypothesis that those exposure levels will not vary by region (RQ1) or test score (RQ3), and the students’ test scores and mission region will be used to test the null hypothesis that mission region does not affect multidialectal listening comprehension (RQ2).
Results

The results of the multi-dialectal listening test and survey allowed researchers to investigate the effect of the independent variable, mission region (USA/Canada, Mexico, Central America, South America, or Spain), on the amount of exposure to linguistic variation missionaries received from those in their community and the native Spanish-speaking missionaries they lived with. The effect of mission region on test score was also analyzed, as well as the relationship between said test score and exposure levels reported in the survey.

Exposure to Linguistic Variation by Mission Region

Community Members. Missionaries who served in Spain received the highest level of exposure to variation from their communities, with a daily average of 4.5 varieties, while those in Mexico received the lowest level of variation, with an average of 1.53. Figure 8 shows that high exposure scores from community members were more frequent in Spain and the U.S./Canada.

Figure 8

*Average Variation Exposure from Community by Region*
A one-way between subjects ANOVA showed that the effect of mission region on language exposure was significant, $F(4, 53.1) = 11.12, p < 0.001$. Post hoc analysis using the Tukey HSD test indicated that the average exposure to linguistic variation was significantly higher in Spain ($M = 4.5$, $SD = 2.13$) and the U.S./Canada ($M = 2.96$, $SD = 1.59$) than in Mexico ($M = 1.53$, $SD = .78$), Central America ($M = 1.77$, $SD = .78$), and South America ($M = 1.96$, $SD = .99$) (see Figure 9). These data suggest that missionaries are significantly more likely to receive more exposure to a higher number of varieties of Spanish while serving their communities in Spain, the U.S., and Canada. This may be due in part to the high level of immigration to these countries from Latin America and the wide variety of nationalities of these immigrants.

Figure 9

Post Hoc Analysis of Average Exposure from Community by Region
**Native Spanish-Speaking Missionary Companions.** Contrary to community exposure levels, levels of exposure from companions were highest in Mexico, Central America, and South America, with much lower levels in Spain and the U.S./Canada. Figure 10 shows that higher levels of exposure from native missionary companions were more common in Mexico, Central America, and South America. Missionaries in Central America, on average, spent the most time with native missionary companions from the widest variety of Spanish-speaking countries.

**Figure 10**

*Average Exposure to Variation from Missionary Companions by Region*

Another one-way ANOVA was used, this time showing the effect of mission region on language exposure from native Spanish-speaking missionary companions, which was again significant, $F(4, 63.1) = 44.1, p < 0.001$. Post hoc analysis indicated that the average exposure to variation from companions was significantly lower in Spain ($M = 1.17, SD = 1.06$) and the
U.S./Canada ($M = 1.74$, $SD = 2.17$) than in Mexico ($M = 11.1$, $SD = 6.68$), Central America ($M = 11.61$, $SD = 9.06$), and South America ($M = 10.35$, $SD = 6.72$) (see Figure 11).

**Figure 11**

*Post Hoc Analysis of Variation Exposure from Native Missionary Companions by Region*

This suggests that missionaries spend less time with native-speaking companions of fewer varieties of Spanish in Spain, the U.S., and Canada than in the other three regions. This is not necessarily indicative of a lack of diversity in the native Spanish-speaking missionaries sent to these regions, but rather that there are fewer native speakers sent to these regions in the first place. This is likely because missionaries are most often sent to their same country of residence, and there are not as many native Spanish-speaking church members in the U.S. and Canada as there are in Latin America, and there are fewer church members in Spain in general.

Missionaries who served in the U.S. and Canada region reported an average of 1.6 native
missionary companions and Spain reported 1.4, while Latin America reported an average of 5.2
native missionary companions. Therefore, an L2 missionary is significantly less likely to have
prolonged exposure to native Spanish-speaking missionaries in the U.S., Canada, and Spain.

### Listening Test Score by Mission Region

Students who served missions in Spain had the highest average listening test score, while those who served in Mexico had the lowest (see Table 3 and Figure 12). It should be noted that
Spain’s mean test score had a very high standard deviation and standard error, possibly due to the small sample size and extreme linguistic differences between regions of Spain. South America’s standard deviation was nearly as high, possibly attributable to it being the largest region geographically.

### Table 3

*Descriptive Statistics of Listening Test by Mission Region*

<table>
<thead>
<tr>
<th>Mission Region</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>14</td>
<td>52.7</td>
<td>11.09</td>
<td>2.96</td>
</tr>
<tr>
<td>Central America</td>
<td>26</td>
<td>50.3</td>
<td>7.36</td>
<td>1.44</td>
</tr>
<tr>
<td>South America</td>
<td>69</td>
<td>49.3</td>
<td>11.02</td>
<td>1.33</td>
</tr>
<tr>
<td>US/Canada</td>
<td>47</td>
<td>47.6</td>
<td>8.73</td>
<td>1.27</td>
</tr>
<tr>
<td>Mexico</td>
<td>21</td>
<td>45.2</td>
<td>7.54</td>
<td>1.64</td>
</tr>
</tbody>
</table>
An analysis of variance did not demonstrate a significant effect of mission region on listening test score, $F(4, 54.6) = 2.01, p = .105$. However, this is likely due to the low reliability of the listening test, and Cohen’s effect size value between Spain and Mexico, for instance, suggested a high practical significance ($d = .8$). Therefore, it is possible that serving in a region with high levels of linguistic variation may lead to higher performance on a multi-dialectal listening exam. Future research with a more reliable instrument would be necessary in order for results to be conclusive.

**Correlation Between Listening Test Score and Exposure to Linguistic Variation**

Results of the Pearson correlation indicated that there was a positive, but not significant, association between students’ listening test scores and the exposure to linguistic variation they
received, both in the community, \( r(176) = .08, p = .288 \), and with their native missionary companions, \( r(176) = .033, p = .66 \) (see Figures 13 and 14). The low reliability of the listening test is most likely what is lowering the significance of the correlation, but the data suggest that exposure to linguistic variation may improve listening test scores.

**Figure 13**

*Positive Correlation Between Test Score and Exposure from Community*
In summary, while research questions 2 and 3 did not yield any statistically significant results, the variation exposure survey produced several highly significant answers to research question 1. Missionaries are more likely to encounter a wider range of varieties of Spanish in the U.S., Canada, and Spain, while variation is much lower in Mexico, Central America, and South America. However, missionaries in those latter three regions experience much more immersive language learning experiences with those they live with throughout their missions.
Discussion

The purpose of this study was to determine if missionaries in certain Spanish-speaking regions had higher exposure to linguistic variation than in others, and whether this exposure or their mission region significantly influenced their listening comprehension of multiple varieties of Spanish. The researchers observed that exposure to linguistic variation from community members was significantly higher in the U.S., Canada, and Spain, and more frequent exposure to more varieties of Spanish had a positive correlation with performance on a multi-dialectal listening test.

Implications

Language Immersion. The results of this study suggest that if a student’s immersion experience takes place in a region of relatively little diversity or linguistic variation, or if a student’s social network during their experience is particularly isolated or limited, their listening comprehension after the experience may be lower on assessments that use multiple dialects. On the other hand, students who live with native speakers of a variety of dialects, or who interact often with a linguistically diverse community, are likely to score higher on such an assessment.

While initially the researchers expected results to significantly favor only domestic immersion experiences in the U.S. and Canada, the most advantageous region for developing multi-dialectal listening comprehension seems to have been Spain, followed by the U.S. and Canada. The Spain mission region may have demonstrated this effect due to its high immigrant population, as eight different Latin American countries have from 10,000 to 80,000 citizens immigrating to Spain each year (Instituto Nacional de Estadística, 2019). While the U.S. has great diversity in its Hispanic immigration, the fact stands that language learners there are still only interacting with Spanish-speakers for a fraction of their time. In Spain, learners are likely to
be communicating almost exclusively with native Spanish-speakers. So, while the U.S. exhibits
great linguistic variety, Spain has both variety and number of speakers making it an
advantageous place to study Spanish. These findings may be an incentive for schools and
universities to implement more domestic immersion learning opportunities.

Another possible explanation for the increased exposure to linguistic variation by Latter-
Day Saint missionaries in Spain is that their congregations are heavily Latin American, both due
to higher baptism rates among Latin American immigrants, and due to Latin American church
members that were already baptized and immigrate to Spain. Students who lived in Spain could
also possibly have higher multi-dialectal comprehension abilities due to the prevalence of many
autonomous communities in Spain with their own dialects or languages. Within only Spain, a
missionary may encounter Catalan, Galician, Leonese, Aragonese, Basque, and Asturian, and
thus become more experienced and comfortable with phonological variation. There is typically
more variation in a language’s motherland than its colonies. Such speculation, however, requires
further study.

**Listening Comprehension.** While the present study cannot quantify or prove the
increase in listening item difficulty due to phonological variation, it does reveal a possible
improvement in listening comprehension of multiple dialects of Spanish due to the linguistic
diversity of the area in which a student learns. Spanish students who learn most of their Spanish
abroad often struggle to understand unfamiliar accents, but students who learn in more diverse
communities may not experience the same cognitive shock, having already heard a wide variety
of accents. In order to help all students navigate linguistic variation and listening comprehension,
professors may consider using authentic materials that include a wide range of accents in their
listening activities.
Furthermore, test developers should consider more heavily the inclusion of multiple accents in listening assessments and thereby minimize differential item functioning (DIF) in which groups of test-takers of equal ability on a construct have different chances of answering an item correctly. A student who studied abroad in Argentina and a student who studied in Colombia, for example, would have different probabilities of performing well on a listening test with a disproportionately large number of items recorded by Colombians, by no fault of the students’ skill level, thus threatening the validity of the assessment. Harding (2011) analyzed the DIF of L2-accented items on ESL listening assessments and drew similar conclusions. He argued that only accents that would be most prominent in the target context should be used in testing materials, and that using several speakers across a range of tasks would balance the impact of DIF on a listening test. The researchers of the present study would propose similar solutions in developing listening tests in Spanish.

**Limitations**

There are several limitations to this study that should be considered while discussing its results and implications. First, the low reliability of the listening test did not allow for any statistically significant conclusions as to the effect of region on multi-dialectal listening comprehension, nor the correlation between listening comprehension and exposure to linguistic variation. The validity of the survey is also limited due to the method of self-reporting and therefore possible inaccuracy of the participants’ judgments.

There are also several linguistic variables that may interfere with construct validity of the survey. For example, many of the interactions the students reported may have actually been with indigenous L2 speakers of Spanish, as some missionaries serve indigenous communities. This is further complicated by the fact that some missionaries, especially in Central America, are
assigned to speak Spanish, but end up spending most of their time communicating in a local indigenous language, such as K’iche’ or Kaqchikel.

Future Research

This study should serve as a springboard for future research studies that both replicate its methods and investigate further the relationships between linguistic variation, listening comprehension, and immersion experiences. Further research is needed in order to fully answer the research questions posed here, and diverse studies on accent and listening in Spanish are needed to match the quantity of literature on the topic done in the field of ESL.

This study could be conducted again in such a way that eliminates some of its limitations by using an assessment instrument with higher reliability. This could be achieved by analyzing item discrimination statistics and making the needed adjustments to the test items, increasing the number of items, and testing a more heterogeneous sample population. The validity of the survey data could also be improved by conducting a more longitudinal study in which language learners report their variety exposure several times during their immersion experience, rather than months or even years after they have returned, as was the case for the subjects in this study. Self-reporting would likely be much more accurate if these changes were made. Changes to the survey itself that elicit more information from the participant such as what indigenous languages were common in their areas may even be beneficial.

A listening comprehension test in which every item is recorded in a variety of accents may also help better isolate the variable of accent and produce more insightful data as to how accent variety is actually affecting the test-taker’s comprehension. Similar studies have been done in English (Barrows, 2016), but such research has yet to be reproduced with Spanish-language learners. In fact, ethnographic studies on Spanish-speaking missionaries in general is
still severely under-represented in the literature.

Conclusion

This study examined (1) the effect of immersion experience location on learners’ exposure to linguistic variation, (2) the effect of this location on their scores from a multi-dialectal listening test, and (3) the correlation between exposure to linguistic variation during their immersion experience and their listening test score. The U.S., Canada, and Spain were found to expose students to significantly more dialectal variation than other regions. The latter two research questions had no statistically significant results, but results suggested that studying in regions with high levels of linguistic variation may lead to higher performance on multi-dialectal listening exams.
References


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Tokowicz, N., Michael, E. B., & Kroll J. (2004). The roles of study-abroad experience and working-memory capacity in the types of errors made during translation. *Bilingualism:


Appendix A

Full Qualtrics Survey

Consent to be a Research Subject

Introduction
This research study is being conducted by Dr. Gregory Thompson and Nathan Adams at Brigham Young University to determine the effect of exposure to different Spanish accents while serving as a Latter-Day Saint missionary on listening abilities. You were invited to participate because you took the Spanish challenge exam designed in part for Spanish-speaking returned missionaries. In order to participate, you must have served at least 18 months in the same mission, called Spanish-speaking.

Procedures
If you agree to participate in this research study, the following will occur:

- you will complete a 10-15 minute survey answering questions about the accents you interacted with on your mission
- your survey answers will be compared to your score on the listening section of the challenge exam
- provided your consent, the researchers may contact you later to clarify some of your survey answers
- not including the time you already spent on the challenge exam, total time commitment will be 10-15 minutes

Risks/Discomforts
The only risk of participating in this study is losing 10-15 minutes of your personal time. However, if any trauma was experienced on your mission, you may experience discomfort as you recall your areas, companions and the people you spoke to, but the researchers have strived to keep the survey as concise and straightforward as possible, and it does not request reflection on any specific experiences.

Benefits
There will be no direct benefits to you. It is hoped, however, that through your participation researchers may learn about Latter-Day Saint missions and their language-learning benefits. The BYU Department of Spanish and Portuguese may also modify their curriculum depending on the results of the study.

Confidentiality
The research data will be kept on a password-protected computer and only the researchers will have access to the data. Your BYU ID will be used to link your survey results to your challenge exam results, but before analysis of the data, all individual results will be anonymized and any reference to individuals in related publications or presentations will be completely anonymous.

Compensation
There will be no compensation provided by the researchers.

Participation
Participation in this research study is voluntary. You have the right to withdraw at any time or refuse to participate entirely without jeopardy to your class status, grade, or standing with the university. Participation will in no way affect your score on the Challenge Exam.
Questions about the Research
If you have questions regarding this study, you may contact Nathan Adams at ntadams92@gmail.com for further information.

Questions about Your Rights as Research Participants
If you have questions regarding your rights as a research participant contact IRB Administrator at (801) 422-1481; A-265 ASB, Brigham Young University, Provo, UT 84602; irb@byu.edu.

Statement of Consent
I have read, understood, and received a copy of the above consent and desire of my own free will to participate in this study.

Yes  No

What mission did you spend the majority of your missionary service in?

Area  
Country/State  
Mission

Excluding the MTC, approximately how many months were you in that mission?

This first section will ask you about the different areas you served in and the accents you were exposed to there. We will ask for the names of those areas only so that you can keep better track of which areas you are answering questions about.

How many different areas did you serve in during your mission?

What was the name of area # 1?
How many transfers did you serve in **Area 1**?

Not including your companion, how regularly did you interact with people speaking the following accents in **Area 1**?

<table>
<thead>
<tr>
<th>Items</th>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexican</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cuban</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominican</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puerto Rican</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costa Rican</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salvadoran</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guatemalan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honduran</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaraguan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panamanian</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Peninsular (Spain)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Argentine</td>
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<td>Bolivian</td>
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<td>Chilean</td>
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<td>Colombian</td>
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<td>Ecuadorian</td>
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<td>Paraguayan</td>
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<td>Peruvian</td>
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<td>Uruguayan</td>
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<tr>
<td>Venezuelan</td>
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</tr>
</tbody>
</table>
This second section will ask you about the different native Spanish-speaking companions you served with and the accents they used. We will ask for your companion's name to help you remember who you are referring to when answering the other questions. We will not keep that personal information. If they grew up in the US, but are the children of parents who spoke one of the varieties listed, please choose that variety.

How many different native Spanish-speaking companions did you serve with?

What's the name of companion #1?

How many transfers did you serve with Companion 1?

Which variety did Companion 1 speak?

- Argentine
- Bolivian
- Chilean
- Colombian
- Costa Rican
- Dominican
- Ecuadorian
<table>
<thead>
<tr>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salvadoran</td>
</tr>
<tr>
<td>Guatemalan</td>
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<td>Mexican</td>
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<td>Paraguayan</td>
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<tr>
<td>Peruvian</td>
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<td>Puerto Rican</td>
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<tr>
<td>Peninsular (Spain)</td>
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<tr>
<td>Uruguayan</td>
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<tr>
<td>Venezuelan</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

**Notes (optional):**

---
The following information will be used to link your survey results to your score on the listening portion of the challenge exam, after which your personal data will be anonymized.

What is your 9 digit BYU ID number? (Please include leading zeros but NO dashes: eg: 012345678)

Choose one of the following:

- Male
- Female
- Other
- Prefer not to answer

If we have follow-up questions about your experience and exposure to different varieties of Spanish, would you be willing to allow us to contact you?

- Yes
- No