The Interplay Between Native Spanish Dialect Exposure and Foreign Accent Perception

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1. Introduction

Previous findings on the effects of experience with native dialects in English and Spanish show that listeners are better at categorizing the dialects spoken in regions where they have lived and dialects spoken by their friends and family (Baker, Eddington and Nay, 2009; Díaz-Campos and Navarro-Galisteo, 2009). Exposure to a variety of dialects either through a varied residential history or geographic proximity also correlates with better overall dialect categorization ability (Clopper and Pisoni, 2004). These previous results demonstrate that experience with dialectal accent can influence listeners' perception of linguistic and talker-specific properties, though whether or not this effect extends to other types of accent perception has not been tested empirically.

The present study investigates the effects of exposure to a variety of native dialects on the perception of foreign accent by native and nonnative listeners of Spanish. Munro (1998, p. 139) defined foreign accent as the "nonpathological speech produced by L2 learners that differs in partially systematic ways from the speech characteristics of native speakers." Foreign accent as it is related to dialect accent, as different but similar ways in which speech can vary phonetically, has not been thoroughly investigated. Examining the effects of exposure to a variety of dialectal accents on foreign accent perception can add to the field's understanding of the role of linguistic experience in human speech perception.

The following paper provides a brief review of some of the relevant previous literature in this area, the methodology employed in the present study to address the research questions, the results, and a discussion of the research findings.

2. Previous literature

Research on foreign accent perception has focused primarily on identifying the talker-specific characteristics that correlate with foreign-accented speech as it is perceived by native judges (Anderson-Hsieh, Johnson and Koehler, 1992; Piper and Cansin, 1988; Southwood and Flege, 1999). Fewer studies have investigated the effects of linguistic experience on judges' perception of foreign accent, and these have focused primarily on native listeners.

In a study of the effects of linguistic experience on native listeners' accent perception, Thompson (1991) found that bilingual listeners and those who had experience with linguistics, study abroad, and frequent contact with foreign accents rated nonnative speech as less accented. Derwing and Munro (1997) also found that native listeners' linguistic experience influenced their perception: those who reported more exposure to a particular foreign accent were better at identifying speakers with that familiar accent. Flege and Fletcher (1992) reported that native listeners who received accent identification training rated the degree of foreign accent in speech differently before and after training. Together, these results show that exposure to foreign accents may influence native listeners' perception of foreign accent.

In addition to foreign accent exposure, dialect experience has also been found to influence perception. Clopper and Pisoni (2004) performed a study of the effects of residential history on native listeners' ability to categorize six regional dialects of American English. Half of the participants had lived in the Midwestern United States their entire lives and half had lived in at least three different dialect regions before the age of 18. The listeners categorized the regional dialects of 66 different

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speakers. Listeners with more varied residential history were both better at categorizing dialects from regions where they had lived and better at general dialect categorization. These findings suggest that native listeners' linguistic experience influences their ability to categorize familiar and even unfamiliar native dialects as well.

Baker, Eddington, and Nay (2009) also found that previous residential history affected native listeners' ability to distinguish regional accents. Their study used the speech of six talkers who had lived exclusively in Utah and six who had lived in Utah for less than two years. Listeners from different regions of the United States listened to the speech of these twelve individuals and were asked to categorize them regionally. The researchers found that listeners who were originally from Utah and the West were more accurate than those from other regions, and listeners who had lived in Utah for less than one year were unable to recognize the Utah accent like the other participants could. As in the findings for foreign accent, native listeners' familiarity and amount of exposure to a particular accent affected their perception.

Díaz-Campos and Navarro-Galisteo (2009) performed a similar study on the effects of linguistic experience and familiarity on dialect perception in Spanish. The researchers played excerpts of Spanish from six dialects to native listeners from Spain and Venezuela, asking participants to categorize the speech into regional dialects. As in Clopper and Pisoni (2004), listeners were better at categorizing Spanish from the regions where they lived, and listeners from Venezuela were better than Spaniards at categorizing talkers from dialects other than their own. The authors speculate that the listeners from Venezuela were better at categorizing other dialects because they had been exposed to more regional dialects as a result of their geographic location. Participants were also better at categorizing dialects spoken by their family and friends, an additional indication that specific exposure influences accent perception.

Nonnative listeners' dialect perception has also been found to be influenced by residential history. Cunningham-Andersson (1996) examined the effects of length of residence and proficiency on 33 nonnative listeners' perception of regional accent in Swedish. Listeners heard pairs of picture descriptions in Swedish and determined whether the two speakers were from the same dialect or different dialects. They also heard 24 short excerpts of speech and were asked to choose which of six possible regional dialects each speaker was from. The findings revealed that native listeners were significantly better than nonnative listeners at identifying dialects, though nonnative listeners' perception improved with proficiency and their identification ability also correlated with length of residence in Sweden. The results suggest that nonnative listeners may not be able to categorize L2 regional dialects as native listeners do, but that their ability improves with experience.

Sullivan and Karst (1996) performed a similar experiment that examined native and nonnative listeners' perception of different global dialects of English. Thirty English speakers from Great Britain and 15 Swedish speakers heard pairs of English sentences. Participants were asked to determine whether the two speakers they heard were from the same English-speaking country or not. The results showed that native listeners were better at dialect discrimination than nonnative listeners, who the authors speculated were more adept at discriminating accents present in the English media of Sweden. These findings suggest that language learners' dialect perception is influenced by exposure to specific regional accents.

According to the previous literature, native and nonnative listeners' perception can vary according to their specific exposure to foreign accents and dialects. In a few cases exposure to a variety of dialects also influenced the perception of specific dialects and accents. The present study aims to add to this line of research by investigating the effects of experience with a variety of Spanish dialects on native and nonnative listeners' perception of foreign accent in Spanish. The goal is to further the field's understanding of the interplay between linguistic experience and perception and to explore the relationship between foreign accent and dialectal accent. The research questions that guided this investigation were:

> (a) Do nonnative listener ratings of degree of foreign accent in Spanish vary according to the number of different native dialects they have been exposed to through travel, residence, friends, or native instructors?

(b) Do native listener ratings of degree of foreign accent in Spanish vary according to the number of different native dialects they have been exposed to through travel, residence, family, and friends?

3. Method

3.1. Talkers

In the present study the read speech of three native and 12 nonnative speakers of Spanish was recorded. The native speakers were originally from Madrid, Alcalá, and Valencia Spain, residing in the United States at the time they were recorded and reporting high English proficiency. The nonnative speakers were all L1 English speakers enrolled in intermediate to advanced-level undergraduate and graduate Spanish classes. In order to encourage listeners to use the full range of the rating scale, the nonnative speakers had varying degrees of foreign accent as determined by the researcher prior to data collection.

Rather than analyzing ratings of all 15 talkers, the listener ratings of only two native and two nonnative speakers were analyzed to control for speaker gender, regional dialect, and foreign accent comparability. The two native speakers were both female and were from the same area of central Spain. The two nonnative speakers were also female, and were rated by listeners as having similarly moderate to heavy accents. The nonnative listeners were also enrolled in the same intermediate-level undergraduate Spanish class, had not studied abroad, reported no present or previous native Spanish instructors, and did not speak Spanish with native speakers outside of class.

3.2. Listeners

Listeners in the present study were 160 nonnative speakers and 26 native speakers of Spanish. The nonnative listeners were all L1 English speakers enrolled in lower-intermediate to advanced Spanish classes at the university level. Most were between 18 and 22 years of age. The 26 native listeners were monolingual Spanish speakers residing in central Spain at the time of data collection. All were between the ages of 17 and 40 and most had completed some college.

3.3. Stimuli and Procedure

The 15 talkers read Spanish sentences that were between seven and eleven syllables in duration. Five of the sentences were used in a 23-item practice exercise to familiarize listeners with the range of accents and the task. The other five sentences were used in the 210-item perception activity. In both the warm-up and the perception task the sentences were presented to listeners in pseudorandom order to avoid same-voice repetitions. Participants were given the option to replay each sentence up to one time before making their rating selection.

The experiment was carried out on the computer using Praat (Boersma and Weenink, 2012). Nonnative participants were seated at individual computer consoles in a university computer lab while native participants completed the study on a personal laptop computer in a quiet space. Both groups were provided with over-the-ear headphones with the volume set to 100%. Listeners used a 9-point rating scale of degree of foreign accent to rate the speech they heard. Because the scale measured degree of accent, lower numbers meant that the accent was *closer to native* and higher numbers meant that it was *less close to native*. Listeners were reminded of this by labels positioned below the rating scale throughout the experiment.

In addition to the warm-up and the perception activity, listeners completed a background questionnaire to gather information about their linguistic experience and a grammatical proficiency test. The experiment in its entirety took listeners approximately 45 minutes to complete.

3.4. Measuring dialect exposure

To quantify their prior experience with native Spanish dialects, nonnative listeners listed the different native dialects they had been exposed to through 1) travel and study abroad, 2) friends and acquaintances, and 3) native Spanish instructors. Native listeners' experience with native dialects

outside of Spain was measured by asking participants to list the different dialects they had been exposed to through 1) travel and residence abroad, and 2) friends and acquaintances. Because only 3 of the 26 native listeners reported any exposure to Spanish dialects through travel and residence, the native listener variables were combined into a single measure of total dialect exposure. This reflected the total number of different dialects native listeners reported exposure to in their background questionnaires.

4. Results

4.1. Nonnative listeners

Nonnative listeners reported exposure to between zero and five dialects through native instructors, zero and four dialects through travel and study abroad, and zero and twelve dialects though friends and acquaintances. The mean foreign accent ratings that were given to native and nonnative speech according to each of these listener characteristics are shown in Tables 1, 2, and 3. Based on the 9-point scale that was used, the higher numbers indicate more foreign accent and the lower numbers indicate less foreign accent.

Table 1. *Nonnative Listener Mean Ratings by Native Instructors' Dialects*

Teachers' dialects	Native speech mean rating	s.d.	Nonnative speech mean rating	s.d.	N
0	1.98	1.3	7.11	1.7	39
1	1.99	1.2	7.52	1.5	56
2	1.65	1.1	7.63	1.5	39
3	1.57	1.1	7.6	1.5	18
4	1.65	1.3	8.15	1.3	4
5	1.25	0.4	7.75	1.3	4

Table 2. *Nonnative Listener Mean Ratings by Travel/Study Abroad Dialects*

Travel dialects	Native speech mean rating	s.d.	Nonnative speech mean rating	s.d.	N
0	2.02	1.3	7.3	1.6	50
1	1.78	1.1	7.41	1.7	71
2	1.72	1.2	7.76	1.4	28
3	1.61	1.3	7.8	1.2	7
4	1.63	0.8	8.28	1.2	4

Table 3. *Nonnative Listener Mean Ratings by Friend/Acquaintance Dialects*

Friend dialects	Native speech mean rating	s.d.	Nonnative speech mean rating	s.d.	N
0	1.81	1.1	7.45	1.7	64
1	1.86	1.3	7.38	1.5	50
2	2.0	1.6	7.49	1.6	25
3	1.83	1.0	7.57	1.5	13
4	1.3	0.6	7.72	1.6	5
5	1.3	0.5	9	0	1
6	1.4	0.5	7.9	0.7	1
12	1.0	0	9	0	1

A mixed model ANOVA was run with mean accent ratings as the dependent variable and native instructors' dialects, travel dialects, and friends' dialects as fixed covariates. The analysis revealed a significant main effect of teachers' dialects for native speech ratings $F(1, 156) = 6.972$, $p<0.05$ and a significant main effect of travel dialects for nonnative speech ratings $F(1, 156) = 4.423$, $p<0.05$. The

lines in figures 1 and 2 show the significant trends in nonnative listeners' ratings of native and nonnative speech according to these significant variables.

Figure 1. *Nonnative Listener Mean Ratings by Native Instructors' Dialects*

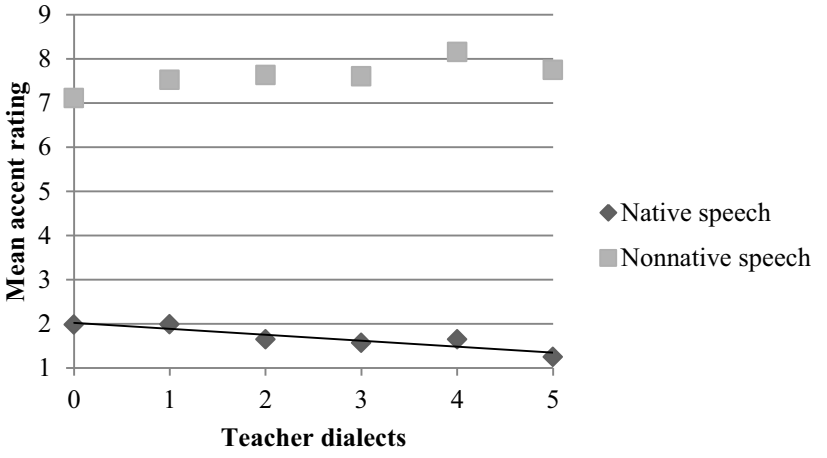
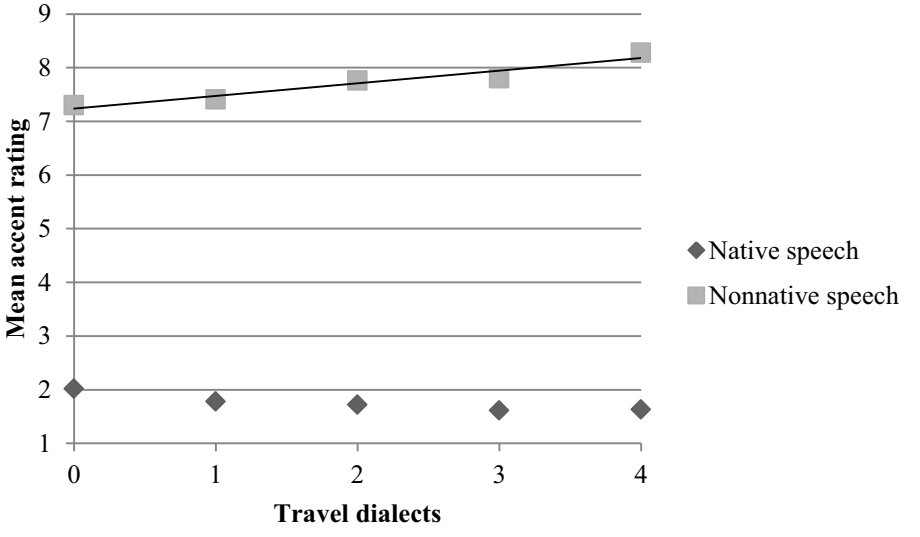


Figure 2. *Nonnative Listener Mean Ratings by Travel/Study Abroad Dialects*



As shown in the figures, language learners exposed to a greater number of different dialects through their instructors rated native speech as less foreign-accented and more native-like. Those exposed to more varied dialects through travel and study abroad rated nonnative speech as more foreign-accented and less native-like. In sum, nonnative listeners who had experience with a wider variety of native dialects seemed to assess native speech as more native-like and nonnative speech as more accented than learners with less varied dialect experience.

4.2. Native listeners

Native listeners reported exposure to between zero and six different native dialects through travel, friends, and acquaintances. One of the native speakers was excluded as an outlier because his

ratings of native speech were more than 2 standard deviations from the rest of the groups' ratings. The mean ratings of the remaining 25 native participants by total dialect exposure are shown in Table 4. Again, the ratings of native and nonnative speech are separated because they represent two different ends of the rating scale.

Table 4. *Native Listener Mean Ratings by Total Dialects*

Total dialects	Native speech mean rating	s.d.	Nonnative speech mean rating	s.d.	N
0	1.82	1.2	6.92	1.4	5
1	1.59	0.9	6.84	1.3	12
2	1.47	0.9	6.23	1.8	3
3	1.43	0.6	7.10	1.7	3
6	1.2	0.4	5.9	2.1	2

A mixed model ANOVA was performed with native listener ratings as the dependent variable and total dialects as a fixed covariate. The statistical analysis revealed a significant main effect of total dialect exposure for listeners' ratings of native speech $F(1, 23) = 5.82$, $p<0.05$, which is shown in figure 3.

Figure 3. *Native Listener Mean Ratings by Total Dialects*

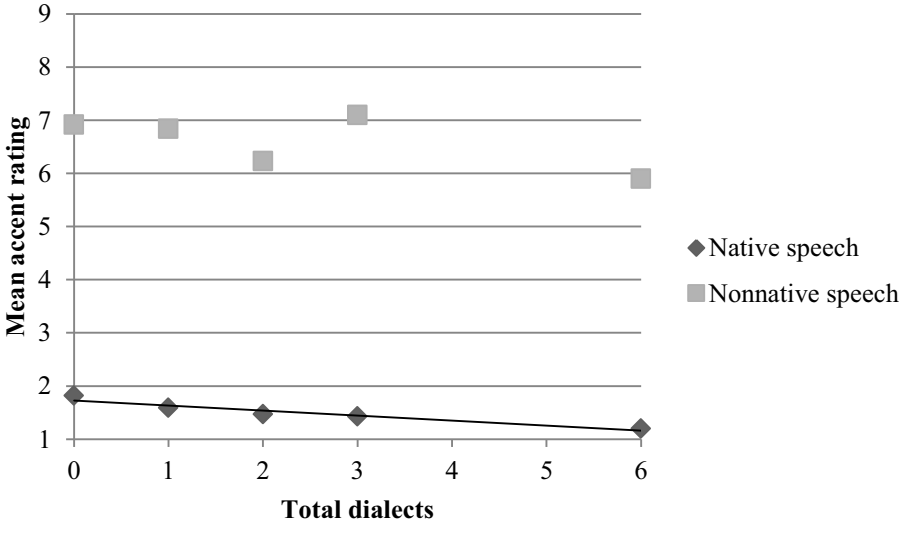


Figure 3 shows that native listeners who reported exposure to more varied native Spanish dialects rated native speech as less foreign-accented than those without this experience. The results suggest that, like the nonnative speakers, native listeners' ratings of speech varied as a result of their breadth of exposure to native dialects.

5. Discussion

The present study examines the relationship between dialect exposure and foreign accent perception by native and nonnative listeners. The findings indicate that linguistic experience with native dialects influences the perception of foreign accent by both native and nonnative listeners. Specifically, those who reported exposure to more varied native dialects rated native speech as less foreign-accented and nonnative speech as more foreign-accented than listeners with less variable experience.

The first research question addressed whether nonnative listeners' ratings of foreign accent varied according to their exposure to native dialects through travel, friends and acquaintances, and native instructors. The statistical analysis revealed that learners who had been exposed to more dialects through their native instructors rated native speech as less foreign-accented. Nonnative listeners who reported exposure to more native dialects through travel and study abroad rated nonnative speech as more foreign-accented.

Previous research has found that exposing language learners to variable input in training affected their L2 perception and production (Bradlow et al., 1997; Lively, Logan, and Pisoni, 1993; Palmeri, Goldinger, and Pisoni, 1993; Nishi and Kewley-Port, 2007). The present findings are further indication of the importance of linguistic experience on learners' perception. Research has shown that nonnative listeners' dialect recognition improves with L2 experience (Cunningham-Andersson, 1996), with exposure to particular dialects (Sullivan and Karst, 1996), and with L2 proficiency (Neufeld, 1980). The present results attest that native dialect exposure, as another source of input and linguistic experience in the L2, also influences learners' perception of foreign accent.

These findings suggest that exposing language learners to different dialects can influence their perception, although the present study was not designed to determine exactly how this process takes place. It may be the case that exposure to native dialects affects nonnative listeners' attention to or knowledge about the sounds associated with a foreign accent, changing or refining their L2 phonetic competence in this way. More varied dialect exposure could lead listeners to develop a clearer idea of what constitutes native speech, in turn affecting their ratings of foreign accent. Another possible account is that additional exposure to variable input may have led more experienced learners to overlook inter-speaker and inter-utterance differences in speech, which could explain their polarized ratings of native and nonnative speech. A final explanation of the findings could be that listeners with more dialect exposure rated speech differently simply because they had been exposed to more native speakers and native speaker input in general.

The second research question addressed whether native listeners' ratings of degree of foreign accent varied according to their exposure to different dialects. Native participants' dialect experience was lumped into a single measure of dialect exposure that reflected the total number of different native dialects they had been exposed to through travel and acquaintances. The statistical analysis revealed a significant main effect of total dialect exposure on native listeners' accent ratings of native speech. As was the case for nonnative listeners, native participants with exposure to a wider variety of dialects rated native speech as less foreign-accented than those without such broad exposure.

This finding reiterates the finding from Evans and Iverson (2007) that young adult native listeners' perception is malleable. In their study of young native speakers of British English the researchers found that experience influenced participants' L1 vowel perception and production as it related to their regional accent. The present study on also found that experience plays a role in shaping the perception of adult native speakers, suggesting that human speech perception is a plastic process that continues to change throughout the lifespan.

Finally, the present study extends findings from Clopper and Pisoni (2004) that dialect experience affects native listeners' perception of talker-specific characteristics. Both dialectal accent and foreign accent represent talker-specific ways that speech can differ. In the present study, exposure to variable dialects might influence foreign accent perception by changing native listeners' concept of native speech or the specific cues that they hear and notice in speech. It is also possible that experienced native listeners were overlooking inter-speaker and inter-utterance differences that listeners with less dialect exposure had focused on.

6. Conclusion

In sum, the findings show that exposure to a variety of native dialects influences listeners' perception and ratings of foreign accent. Native and nonnative listeners who had been exposed to more native dialects rated speech differently on the rating scale, assessing native speech as more native-like and nonnative speech as more foreign-accented. These results confirm the existence of a relationship between foreign accent and dialectal accent, specifically that exposure to dialect can influence foreign accent perception. These findings also suggest that both dialect and foreign accent perception are to some extent plastic and do not exist in a vacuum. These results confirm that linguistic experience

shapes the perception of both native and nonnative speakers, possibly by affecting their attention to sounds in speech, their concept of nativeness, or their phonetic competence.

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