

## Dialect differences and the bilingual vowel space in Peruvian Spanish

Erin O'Rourke

University of Pittsburgh

The analysis of vowel quality has been conducted for a number of varieties of Spanish. The phenomena of final vowel raising, and of diphthong formation from mid vowels in hiatus have been observed for Spanish (see Oliver Rajan 2007 and Garrido 2007 for discussion). A cross-dialectal analysis of vowel quality differences is given by Morrison and Escudero (2007) comparing vowels produced by male and female speakers from Madrid and Lima, although no significant differences were found. Comparing bilingual speakers of Quichua and Spanish, Guion (2003) found that the target-like five-vowel system of Spanish was achieved by early bilinguals, some mid bilinguals, but not by late bilinguals.

In a similar approach, the present study of Peruvian Spanish provides a comparison between monolinguals of two different dialects, Lima and Cuzco, as well as a comparison between early and late Quechua-Spanish bilinguals. The distribution of the vowel space is potentially different between languages in that while Spanish has five vowel phonemes /i, e, a, o, u/, Quechua is described as having three vowel phonemes /i, a, u/ with mid vowels as allophonic variants appearing in the context of uvulars (Cerrón-Palomino 1994). The difference in vowel production and perception is evident in the use of the term “motosidad” to characterize Quechua-accented speech as the mixing the mid and high vowels in Spanish (e.g., *pilu* for *pelo* ‘hair’) (Cerrón-Palomino 1994:45-46).

For the current study, measurements were taken of the five Spanish vowels extracted from read utterances, giving a database of approximately 670 vowels. The F1, F2 and F3 formant values in Hertz were measured at the midpoint of the vowel, converted to the Bark scale and normalized across speakers, as described in Guion (2003). Statistical analysis of variance shows that all speakers demonstrated five distinct vowels in one or more of the formant dimensions. Nonetheless, the Lima group is shown to be significantly different from the Cuzco groups. In addition, differences are observed among the three Cuzco groups, suggesting a subphonemic difference in the “base-of-articulation” of vowels across varieties of the Spanish in Peru, similar to that discussed in Bradlow (1995) for different languages. Last, the perception of vowel mixing or “motosidad” may actually be a lack of ‘backness’ of /e/ in the Cuzco varieties when compared to the /i/ in Lima.

### References

- Bradlow, Ann R. 1995. A Comparative Acoustic Study of English and Spanish Vowels. *Journal of the Acoustic Society of America* 97(3):1916-1924.
- Cerrón-Palomino, Rodolfo. 1994. *Quechumara: Estructuras paralelas de las lenguas quechua y aimara* Vol. 42: Cuadros de investigación. La Paz, Bolivia: Centro de Investigación y Promoción del Campesinado.
- Garrido, Marisol. 2007. Diphthongization of Mid/Low Vowel Sequences in Colombian Spanish. In *Selected Proceedings of the Third Workshop on Spanish Sociolinguistics*, ed. Jonathan Holmquist et al., 30-37. Somerville, MA: Cascadilla Proceedings Project.
- Guion, Susan G. 2003. The Vowel Systems of Quichua-Spanish Bilinguals. *Phonetica* 60:98-128.
- Morrison, Geoffrey Stewart, and Escudero, Paola. 2007. A Cross-Dialect Comparison of Peninsular- and Peruvian-Spanish Vowels. In *Proceedings from the XVI International Congress of Phonetic Sciences*, Saarbrücken, Germany. August 6-10, 2007. 1505-1508.
- Oliver Rajan, Julia. 2007. Mobility and its Effects on Vowel Raising in the Coffee Zone of Puerto Rico. In *Selected Proceedings of the Third Workshop on Spanish Sociolinguistics*, ed. Jonathan Holmquist et al., 44-52. Somerville, MA: Cascadilla Proceedings Project.