Phonetic characterization and sociolinguistic stratification of the vowel allophones of the Spanish of Concepción (Chile)

Preliminary Results: Female Informants

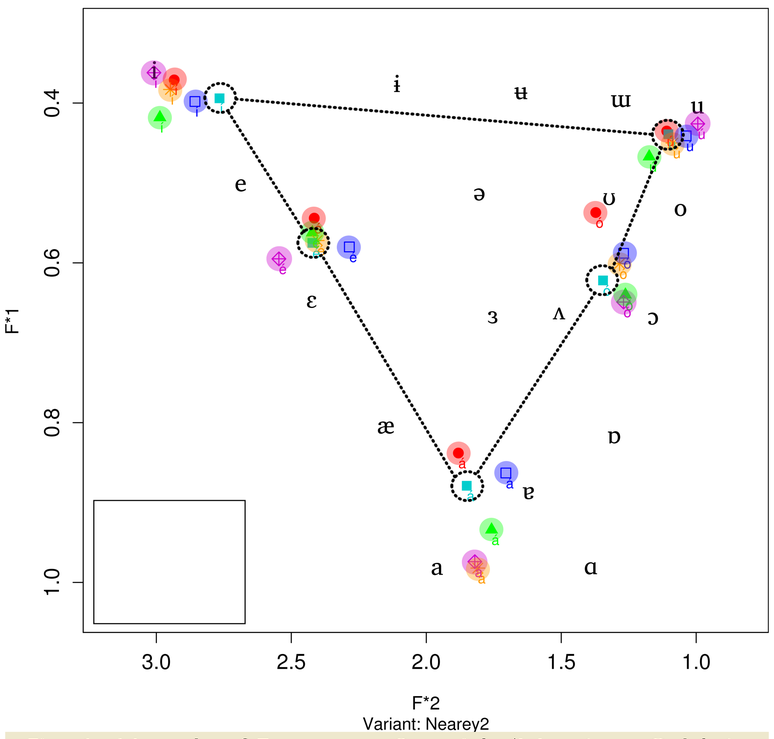


Fig. 1 - Vowels of European Spanish (Martínez Celdrán 1998) compared with those of Chilean Spanish

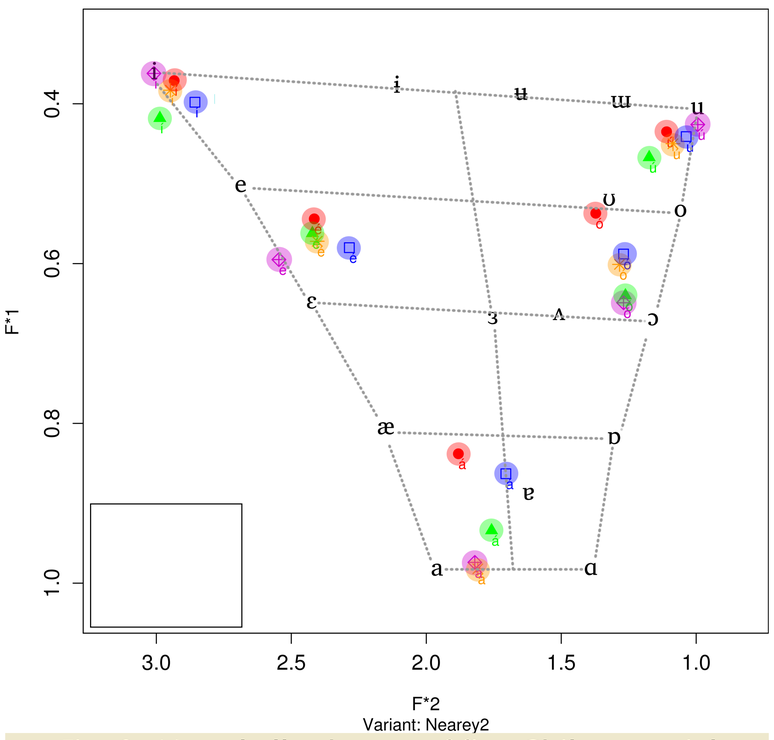


Fig. 2 - Vowel allophones of five Chilean social classes

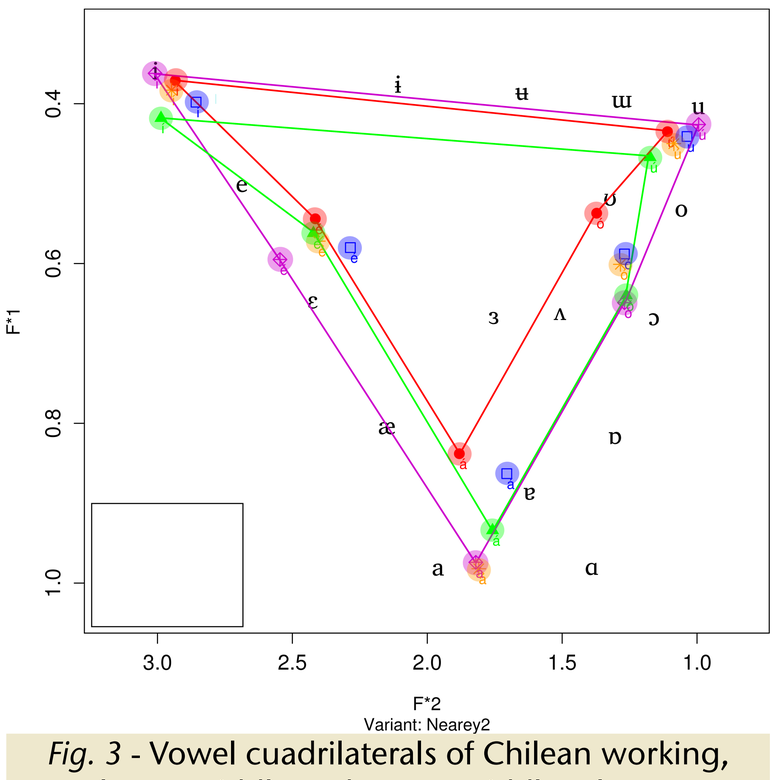


Fig. 3 - Vowel cuadrilaterals of Chilean working, lower middle and upper middles classes

Projection

The next phase in the investigation is to expand the population studied to include male speakers, in order to determine how the variable *sex* relates to the vowel allophones of Chilean Spanish.

We hypothesize that male and female speakers show different patterns of vowel allophony, but that the general tendency toward social stratification holds between the two populations.

Spanish: Five vowel phonemes with just one allophone each?

Innumerable studies have shown that the vowel system of the various dialects of Spanish consists of five phonemes, / i e a o u /, with a single allophone each: [i e a o u], respectively. The present study, however, indicates that each of the vowel phonemes in Chilean Spanish possesses **multiple allophones**.

Furthermore, it indicates that these vowel allophones are **socially stratified**, with the independent variable *occupational status* showing the strongest correlation with the production of a given allophone.

Fig. 1 shows the vowels reported for European Spanish by Martínez Celdrán (1998) and those of the five social classes of Chilean Spanish speakers studied here, with Lindblom's (1986) quasi-cardinal vowels, as modified by Iivonen (1994), provided as a point of reference.

The investigation

As part of an ongoing study of the vowels of Spanish speakers in Concepción, Chile, **25 female native speakers** of between 16 and 25 years of age read a series of words in a carrier phrase. They were recorded at 44.1 kHz / 24 bits using a Studio Projects C-1 large condenser microphone, a Studio Projects VTB-1 pre-amplifier, and an M-Audio FastTrack Pro audio interface.

The formant values of **1820 stressed vowel tokens** found in non-nasal, non-liquid and non-approximant phonetic environments were measured using Praat. These values were normalized using the Nearey 2 formula as implemented in NORM (Thomas & Kendall). Speakers were then stratified using information they provided in response to a 20-item socio-demographic questionnaire. Fig. 2 shows the group means of the vowel allophones of the five social classes studied.

Results: Multiple vowel allophones, socially stratified

The results clearly indicate that all of the vowels of Chilean Spanish have multiple allophones. It is notable that many of these allophones are separated by as much distance in phonetic space as the phonemes of other languages. The variation in the allophones of /a/ and /o/ is especially extreme in this regard, as can be seen in detail in Figs. 4a-4e.

This allophonic variation is neither random nor assimilatory, but rather **correlates with speakers' social class**. Fig. 3 shows the vowel quadrilaterals of three of the five social classes studied (working, lower middle and upper middle), and highlights some of these differences.

New vowel allophones: A linguistic innovation with a social function

The existence of multiple vowel allophones can only represent a **linguistic innovation** vis-a-vis the traditional one-allophone-per-phoneme system which Chilean Spanish inherited from Spain. At present, we can only speculate about the motivations and origins of this language change, but it seems fairly certain that the profound social and economic inequities of Chilean society have played a role in its genesis.

It is well-known that ordinary speakers of Chilean Spanish have an uncanny ability to determine the social class of their interlocutors after hearing them speak only briefly. Until now, explanations of this ability have pointed to the probable use of consonant-based linguistic stereotypes such as the [t̪ˢ] and [ʃ] allophones of /t͡ʃ/ and the [ɹ̝] allophone of /r/. However, these variables are highly salient to speakers, and many make a concerted effort to avoid producing them, as doing so tends to provoke disdain or outright discrimination. Furthermore, the author's observations of the same population studied for this investigation indicate that the prestige form of /t͡ʃ/ is being adopted by young working and lower middle class speakers, thus reducing its power to indicate social class.

The multiple vowel allophones detected by this study offer a likely **explanation of speaker's ability to quickly identify each other's social class based only on brief speech samples**. They are below the level of conscious perception, making them difficult to intentionally manipulate; they vary systematically between speakers of different social classes, thus allowing them to be (unconsciously) associated with different groups of speakers; and they are sufficiently distinct, as shown by their wide distribution in phonetic space, so as to allow this association to be precise.

IMPORTANT NOTE

These are preliminary findings based on a large but incomplete sample of the population being studied. Also note that these results are based on the analysis of vowels in controlled speech (using elicitation materials, as is common in non-sociolinguistic studies) rather than spontaneous speech (which is standard in sociolinguistics). Further analyses will be performed.

Therefore, I ask that you not cite this poster directly, but rather contact me first to get the most up-to-date information possible.

In order to prevent premature conclusions from being drawn, the legends identifying the various speaker groups have been removed from the vowel charts.

Fig. 4a. Allophones of /i/

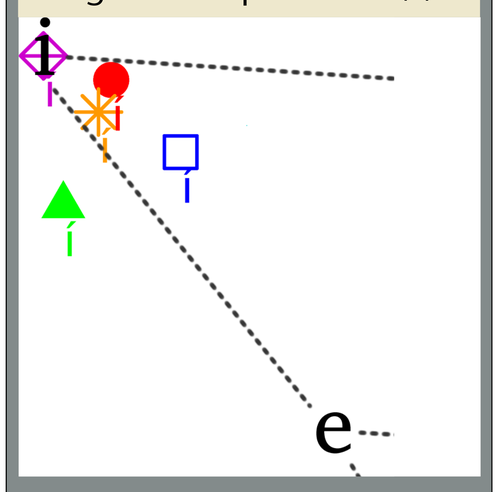


Fig. 4b. Allophones of /e/

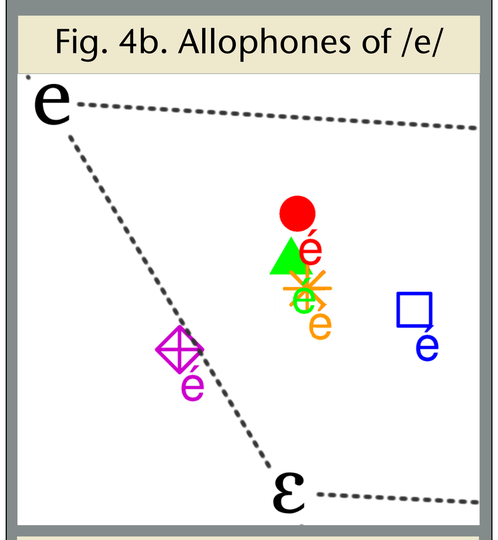


Fig. 4c. Allophones of /a/

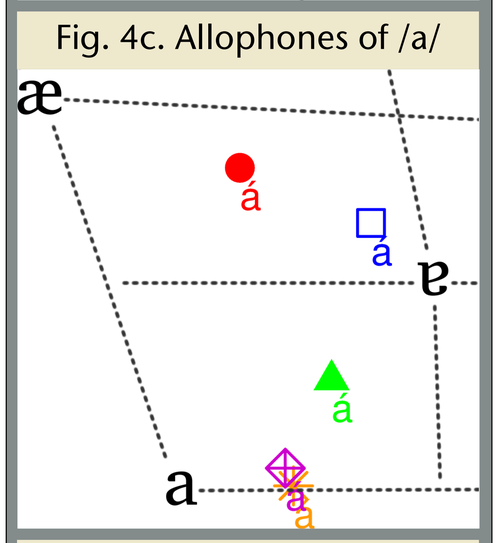


Fig. 4d. Allophones of /o/

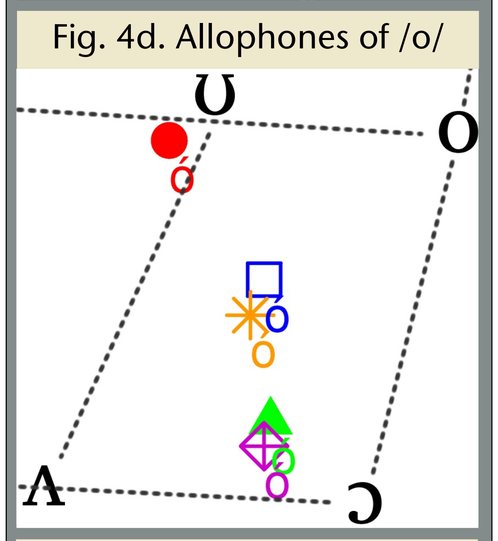
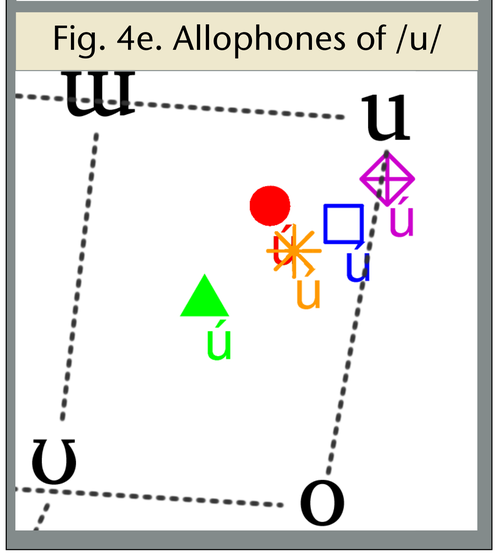


Fig. 4e. Allophones of /u/



Scott Sadowsky · ssadowsky@gmail.com · http://ssadowsky.hostei.com/