



# Voices of The Andes:

## Intonation and Language Contact in Peru and Argentina

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### INTRODUCTION

- Our project investigates the effect of Quechua and Spanish bilingualism on the intonation of questions.
- The goal of this research is to identify which components of Spanish are influenced by the features of Quechua.
- This work uncovers greater insight into the general patterns that underlie language contact.
- We aim to better understand what features are able to cross-linguistically influence one another or transfer across languages entirely.

### BACKGROUND

- Quechuan languages and Spanish came into contact when the Spaniards arrived in the Andes region and began establishing colonies.
- Spanish became the dominant language, but Quechua speakers maintained their language, particularly in rural areas away from large cities (Muysken & Muntendam, 2016).
- Most Quechua speakers also speak Spanish as a second language, leading to widespread bilingualism.
- This bilingualism has produced a unique variety of Spanish and marked Spanish influence on Quechuan languages.
- In Quechua, questions are marked using morphological features instead of rising pitch, as in Spanish. (Cerrón-Palomino, 2006)

### RESEARCH QUESTIONS

- How does Quechua–Spanish bilingualism influence the intonation of questions asked by bilingual speakers?
- Do bilingual speakers ask questions without classical Spanish intonation due to Quechua influence?

### METHODOLOGY

In order to gather linguistic data:

1. Quechua-Spanish bilinguals in Peru and Argentina were asked to participate in pairs in a language game designed to elicit questions as participants asked each other for information about a card in front of them (e.g., *¿qué tienes?* – ‘what do you have?’ and *¿tienes una gallina?* – ‘do you have a chicken?’). (Van Rijswijk & Muntendam, 2014)
2. These sessions were recorded (audio and video).
3. ELAN (a linguistic annotation software: Sloetjes & Wittenburg, 2008) was used to isolate the questions asked during the session from the rest of the audio data.

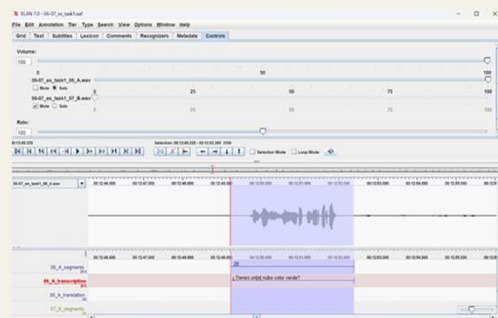


Image 1: ELAN display; audio controls, waveform, annotations

4. Segments were then exported to Praat (Boersma & Weenink, 2025) for syllabic division and tone labeling with the Sp\_ToBI system (Estebas-Vilaplana & Prieto, 2008):

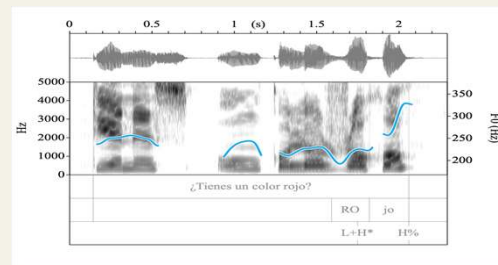


Image 2: Praat TextGrid; blue line indicates speaker's pitch

5. Processed data was returned to Dr. Antje Muntendam and Dr. Alexander Rice and checked.

This methodology enabled us to clearly see the portions of linguistic data we were interested in – most particularly Praat. Instead of relying on hearing alone, Praat provides an auditory and visual representation of spoken linguistic data, allowing for an empirical (as opposed to subjective) view of the data collected.

### PRELIMINARY RESULTS

- Yes-No Questions (Task 1): Boundary tones are mostly high (H%), most common nuclear pitch accents are low (L\*), high-low (H+L\*), high (H\*), and low-high (L+H\*)
- Wh-Questions (Task 2): boundary tones are primarily low (L%), nuclear pitch accent is primarily high-low (H+L\*) with much less variation than the Y/N questions

### NEXT STEPS

- Analysis of Quechua data
- Comparison of bilingual-monolingual data
- Analysis of variation among participants
- Repetition of tasks in Quechua compared to Spanish
- Investigating pitch range, duration
- Include tones in a digital archive

### REFERENCES



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