

# The Acquisition of the Spanish Trill (/R/) by Child Heritage Speakers: An Overview and Research Proposal

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## Abstract

I propose an analysis on the acquisition of the alveolar trill /r/ by Spanish-speaking children as a heritage language. I aim to determine to what extent the acquisition of the trill by these speakers may differ from the same process in monolingual children. To that end, I will recruit twenty children Spanish-English bilingual heritage speakers (3-6 years of age), and twenty monolingual children of the same age who have never been exposed to another language. To collect the data, I will schedule brief Zoom meetings with the parents of the participants, and I will ask them to connect with the children to play a quick game (a picture-naming task). I will carefully listen to the recordings and examine the participant's accuracy to produce the acoustic features of the Spanish trill. I will analyze all the tokens acoustically using PRAAT (Boersma & Weenink, 2017). The research hopes to be a contribution in the field of phonological acquisition of Spanish in bilingual settings, and to fill a gap in the literature regarding the development of the trill by heritage speakers.

**Keywords:** Spanish, trill, tap, Phonology, phonological acquisition, heritage speakers.

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## 1. INTRODUCTION

In this research proposal, I will study the acquisition of the alveolar trill /r/ by Spanish-speaking children as a heritage language. I aim to determine to what extent the acquisition of the trill by these speakers may differ from the same process in monolingual children.

The Spanish trill /r/ is represented by the digraph *rr*, and occurs in word-initial position (/roma/ 'Rome'), in intervocalic position (/perro/ 'dog'), and preceded by /n, l, s/, as in *inri*, *alrededor* and *israél* (Navarro Tomás, 1971; Lipski, 1994; Lewis, 2004; Hualde, 2005; Real Academia Española, 2005). Given its complexity, the acquisition of this phoneme by monolingual speakers has been widely studied (Carballo and Mendoza, 2000; Chillemi de Lucero, 2003; Fernández, 2004; Oropeza Escobar, 2017; Vásquez Carranza, 2018; Vivar Vivar and Figueroa Alarcón, 2019, among others). This is because it is one of the last phonemes that children acquire in Spanish, hence, Acevedo (1993) claims that most children master this sound at 5;0.

Regarding the acquisition of the Spanish trill by L2 learners, the research is also extensive (Reeder,

1998; Johnson, 2008; Rafat, 2008; Face and Menke, 2010; Olsen, 2012, Daidone & Darcy, 2014; Scarpace, 2014; among others), and most authors point out the difficulties that this phoneme poses to learners. However, there are very few studies that document the acquisition of the trill in Spanish as a heritage language.

Most authors have been oriented to the study of the phenomenon only in Spanish-speaking adults in the United States (Henriksen, 2015; Amengual, 2016; Kissling, 2018). Therefore, a research that examines this process in children heritage speakers would be a contribution to the field of phonological development.

## 2. RESEARCH QUESTIONS

The research questions in this study are as follows:

- At what age do Spanish heritage speaker's children master the apico-alveolar trill /r/?
- Are there differences between child Spanish heritage speakers and monolinguals regarding the production of the trill?

## 3. LITERATURE REVIEW

In this section, I will present the contributions that several authors have made to the study of the trill

by monolingual Spanish-speaking children, as well as in child and adult Spanish heritage speakers.

### 3.1. Monolingual Children

Chillemi de Lucero (2003) examined the acquisition of the vibrant consonants in monolingual Spanish-speaking children from Argentina, between 1;0 and 5;0. The data were randomly extracted from a longitudinal corpus of 21 male and female Argentinean children, and corresponded to the recordings of three subjects: Lucas, Bruno, and Agustín. The researcher analyzed the words where trilled sounds occurred and found that the children showed mastery in the production of the vibrant phonemes at 5;0. Chillemi de Lucero also observed that there are differences in the acquisition of the vibrant consonants related to the position of the phoneme within the word, and that there is evidence of a differentiated and progressive acquisition of Spanish phonological parameters.

Vivar Vivar and Figueroa Alarcón (2019) analyzed the rhotic consonants [ʀ] in Chilean Spanish in a sample of 161 subjects between 2;0 and 3;11 years, from a sociolinguistic perspective. For this reason, the authors classified the data according to the age and socioeconomic status of the participants (high, medium, and low). To obtain the data, the researchers designed a picture-naming task, so they showed images whose names contained the target sounds, and asked these questions to the participants: i) ¿qué es eso? (What is that?), ii) ¿qué hace? (What does that do?); and iii) ¿de qué color es? (What color is it?). The results indicated that, between 3;0 and 4;0 years, the trill reached only a 24% of correct production, while the tap was a 60%. The researchers also observed that the trills were substituted mostly by liquid consonants [l] and [r] and by dental consonants [ð] and [d]; while the tap was mainly substituted by the consonants [l], [ð] and [n]. Finally, Vivar Vivar and Figueroa Alarcón claimed that there are no meaningful socio-economic differences in the production of rhotic phonemes before the age of four.

### 3.2. Child Heritage Speakers

González Bueno (2005) studied the articulatory difficulties in the acquisition of Spanish /r/ in the productions of Alicia, a female English-Spanish

bilingual child between 4 and 5 years of age. Alicia's parents followed the "one-parent, one-language" method, in which each parent uses one of the two languages. In Alicia's case, her father spoke English, the majority language, whereas her mother spoke Spanish, the minority language. Two tasks were carried out: the first one was a game in which the girl had to discriminate between the two sounds contrasted in minimal pairs (an adult Spanish native speaker called a word, for example *perro* (dog), so the subject had to determine whether *perro* or *pelo* [hair] had been said). In the second task, two stories were read to the girl ("La rana que ya no tuvo frío" and "El perro"), for her to answer comprehension questions. The results showed that Alicia's process of acquisition of Spanish /r/ was not very different from other monolingual subjects: she could produce the trill at 4;0, an age that could even be considered early in the literature on monolingual development.

Menke (2018) examined the tap (/pero/) and the trill (/perro/) in a sample of 31 Spanish-English bilinguals, ages 6;8 to 13;15, living in San Antonio, Texas. The participants in this study were all Spanish-dominant or Spanish monolingual before entering a Spanish-English language immersion program in kindergarten. As part of the research, the subjects had to complete a picture-sorting task in which they looked through pictures to name some animals and answer short questions. All sessions were audio-recorded, transcribed, and analyzed acoustically. The results showed that the participants mastered the tap at the age of 7;0, and that the accurate production of the trill was observed at the age of 11, a later age than previously reported. Menke's findings differ from other studies in which bilingual development falls within the range of typical development. As she concluded "a greater exposure to English by the present study's participants, as well as the use of acoustic, as opposed to impressionistic analysis may explain the divergent findings of this study" (Menke, 2018, p. 799).

Kehoe (2018) investigated /r/-sounds or rhotics in longitudinal recordings of five monolingual German, three monolingual Spanish, and four bilingual German-Spanish children (1;9 to 3;6) tested from the onset of their first words. Target words containing /r/ were extracted from the data and analyzed in different phonological environments. In German, /r/ was examined in complex onsets (e.g., *drauf* 'on top of'), and in simple onsets before stressed syllables (e.g., *rote* 'red'). In Spanish, Kehoe analyzed the tap in complex onsets (e.g., *tren* [train]), and in word-medial position (e.g., *mariposa* [butterfly]). The trill, meanwhile, was examined in word-initial (e.g., *reloj* [clock]), and in word-medial position (*marrón* [brown]). The results indicated that monolingual German children acquired uvular /r/ earlier than monolingual Spanish children acquired the tap and trill (at 3;0 approximately). Kehoe observed that bilingual children acquired uvular /r/

<sup>1</sup> Spanish has two rhotic phonemes the trill /r/ and the tap /r/, which are in contrastive distribution in intervocalic position (as in *pero*, 'but' and *perro*, 'dog'). According to Kissling (2018), the canonical Spanish tap is described phonetically as having one lingual contact, a quick tap of the tongue against the alveolar ridge just behind the upper front teeth. The canonical Spanish trill, meanwhile, is described phonetically as having two or more lingual contacts in quick succession. "However, rhotics are expressed with vast sociophonetic variation throughout the Spanish-speaking world" (Kissling, 2018, p. 31).

similarly to monolingual children, and that they were advanced in the acquisition of the tap and the trill.

### 3.3. Adult Heritage Speakers

Kissling (2018) analyzed the rhotics produced by speakers of central Mexican and Salvadoran Spanish, between 18 and 28 years old, residents of the U.S. These participants used Spanish from birth with their families, who had immigrated from central Mexico or El Salvador, areas in which rhotics are realized canonically as alveolar taps and trills. The participants had to complete three tasks: in the first one, they were encouraged to start a conversation; in the second one, the participants were asked to retell a story based on pictures containing a boy, a dog (in Spanish, *perro*), and a frog (*rana*); in the third one, the participants had to complete a read-aloud task in which they read a list of 22 idioms. The results suggested that “the true heritage speakers” (those “with stronger cultural identity,” in Kissling’s words) produced rhotics that were indistinguishable from other native speakers and long-term immigrants.

In sum, previous studies have examined the acquisition of the rhotic phonemes in Spanish, and have highlighted the complexity of that process, “because they are typically the last phones acquired by Spanish-speaking children” (Kissling, 2018, p. 52). Thus, the trill /r/ is produced later than the tap /r/ in both monolingual and child heritage speakers, given its articulatory complexity. Regarding the age of acquisition, this can vary according to the method used, but most authors agree that the development of the trill is a process that takes place between 3;0 and 5;0 years of age in monolingual and bilingual children, although it may take longer in bilinguals.

The mastery in the production is another factor that has been analyzed in the studies above. For that reason, it is important to summarize what the mentioned authors have pointed out: child and adult heritage speakers can achieve the same mastery of the phoneme as a monolingual native speaker.

## 4. HYPOTHESES

The hypotheses in this research proposal are as follows:

- a) Since several authors (González Bueno, 2005; Kehoe, 2018; and Fabiano-Smith and Goldstein, 2010;) have observed that bilingual children, between 3;0-5;0, are able to produce the Spanish trill, despite lower accuracy rates, I expect the heritage speakers to master this phoneme at 6;0.
- b) Given that González Bueno (2005), Kehoe (2018), and Fabiano-Smith and Goldstein (2010) claim that the accurate production of the Spanish trill does not differ significantly between monolingual children and heritage

bilingual, I expect the heritage speakers to produce this phoneme like the monolingual Spanish children.

## 5. METHODOLOGY

### 5.1. Participants

I will recruit twenty children Spanish-English bilingual heritage speakers (3-6 years of age), and twenty monolingual children of the same age who have never been exposed to another language. All participants are expected to be developing typically.

The first group will consist of children who are heritage speakers of Spanish born and raised in Ontario, Canada, and whose parents are Spanish-English bilinguals originally from Venezuela, where the phoneme /r/ is realized canonically as an alveolar trill. As heritage speakers, these children acquire two languages simultaneously (Spanish and English, in this case). The first one is called *minority language*, which is learned at home, and the second one is called *majority language*, which refers to the code used in the society where the speaker lives and is educated (Kupisch y Rothman, 2018).

The second one will be the control group: twenty monolingual children (3-6 years of age), born and raised in Venezuela, who have never been exposed to another language, and whose parents are Spanish monolinguals.

### 5.2. Data Collection

To collect the data, I will schedule brief Zoom meetings with the parents of the participants, and I will ask them to connect with the children to play a quick game (a picture-naming task). The sessions will be recorded with the prior consent of the parents.

### 5.3. Task and Procedure

I will design a picture-naming task, so after a short warm-up conversation, the participants will complete a task in which they have to look different pictures (colours, animals, and objects). Once they have seen the images, I will ask them: i) ¿Qué color es este? (What color is this?); ii) ¿qué animal es este? (What animal is this?); and iii) ¿cómo se llama esto? (What is this called?). All expected trill productions will be identified and analyzed.

### 5.4. Stimuli

I will analyze a total of 18 stimuli: 13 images whose names in Spanish include a trill. For example: when I show the image of a dog and ask the subject “¿qué animal es este?”, I expect he/she to answer *perro* (‘dog’). The other remaining stimuli will be distractors. The words I seek to analyze will be nouns having the target sound in word-initial and intervocalic context, as shown in the following table:

**Table 1: Stimuli**

No.	Words to be analyzed	/r/ position (word-initial and intervocalic position)
1	Rojo ( <i>red</i> )	Word-initial
2	Marrón ( <i>brown</i> )	Intervocalic
3	Rosado ( <i>pink</i> )	Word-initial
4	Zorro ( <i>fox</i> )	Intervocalic
5	Perro ( <i>dog</i> )	Intervocalic
6	Ratón ( <i>mouse</i> )	Word-initial
7	Burro ( <i>donkey</i> )	Intervocalic
8	Rana ( <i>frog</i> )	Word-initial
9	Carro ( <i>car</i> )	Intervocalic
10	Robot ( <i>robot</i> )	Word-initial
11	Reloj	Word-initial
12	Guitarra	Intervocalic
13	Rosa	Word-initial
<b>Distractors</b>		
14	Verde ( <i>green</i> )	
15	Amarillo ( <i>yellow</i> )	
16	Azul ( <i>blue</i> )	
17	Caballo ( <i>horse</i> )	
18	Libro ( <i>book</i> )	

### 5.5. Data Analysis

I will carefully listen to the recordings and examine the participant's accuracy to produce the acoustic features of the Spanish trill. To that end, I will analyze all the tokens acoustically using PRAAT (Boersma & Weenink, 2017).

Each word will be coded in Excel considering duration and number of lingual contacts. These acoustic features are important for the study of /r/ because of the following reasons: i) trill mean duration has been reported as 85 ms (Rafat, 2008), but this average can vary between Spanish native speakers and learners (Swiderski, 2019); and ii) the canonical trill is described as having two or more lingual contacts. However, "Spanish speakers can produce many non-canonical rhotics" (Kissling, 2018, p. 37).

By doing this analysis, I will also determine the possible errors in the pronunciation of the Spanish trill (for example, substitution procedures by liquid consonants like [l] and [r], and by dental consonants [ð] and [d]).

## 6. CONTRIBUTION

This study aims to investigate the acquisition of the Spanish trill by heritage speakers, and analyze whether the productions of these speakers, as well as the age of acquisition, differ from that of monolingual children. The research hopes to be a contribution in the field of phonological acquisition of Spanish in bilingual settings, and to fill a gap in the literature regarding the development of the trill by heritage speakers. Therefore, my work will offer data that contributes to the study of Spanish as a heritage language, and to examine some aspects of child phonological development.

I also expect that the findings of this research lead to a better understanding of the phonetic and phonological system of Spanish heritage speakers, as I will show a characterization of two complex processes: the acquisition of /r/ by the analyzed group, and ii) the production process of this phoneme. These analyses, consequently, will allow me to describe to what extent the phonological system of a child Spanish heritage speaker develops in the same way as that of a monolingual child.

Finally, this study also has pedagogical implications, since the findings can shed light on how didactic strategies can be incorporated to the classroom to enhance and practice the articulation of the trill in bilingual settings, especially in those where the Hispanic community is considerable. For that reason, it is important to consider pronunciation instruction in the Spanish classroom, because "the inclusion of specific types of sound-system-based commentary and practice in the educational experience of heritage users of Spanish could be beneficial" (Rao and Kuder, 2016, p. 99).

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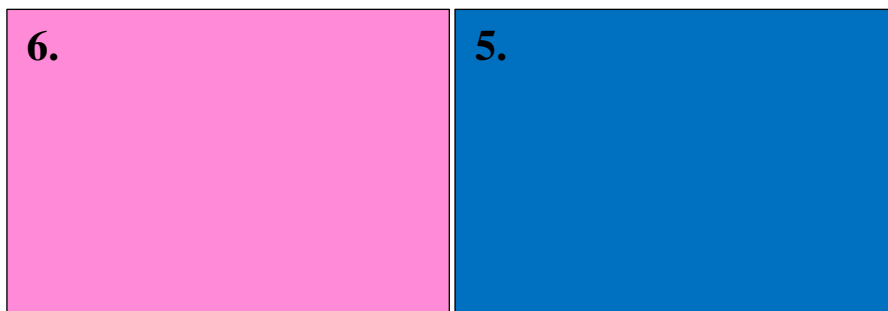
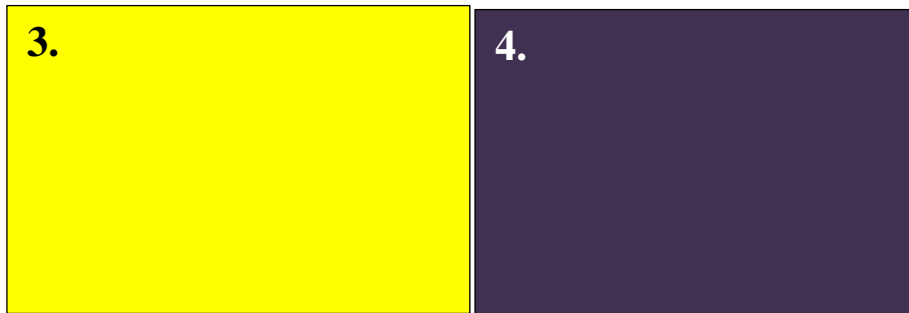
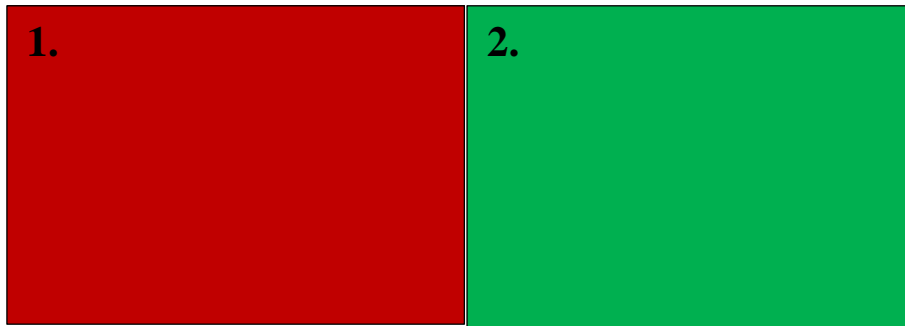
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**Appendix**

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**¿Qué color es este?: What is this color?**



**¿Qué animal es este?: What animal is this?**

1.



1) Expected answer: *zorro (fox)*

2.



2) Expected answer: *perro (dog)*

3.



3) Expected answer: *caballo (horse)*

4.



4) Expected answer: *ratón (mouse)*

5.



5) Expected answer: *burro (donkey)*

6.



6) Expected answer: *rana (frog)*

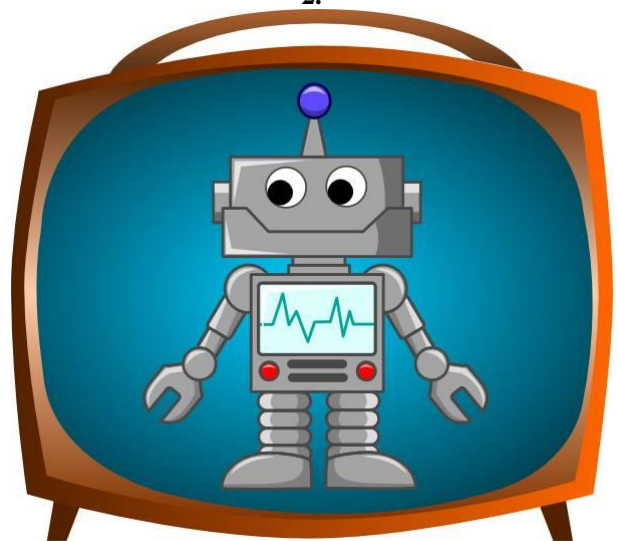
¿Cómo se llama esto?: What is this called?

1.



1) Expected answer: *carro (car)*

2.



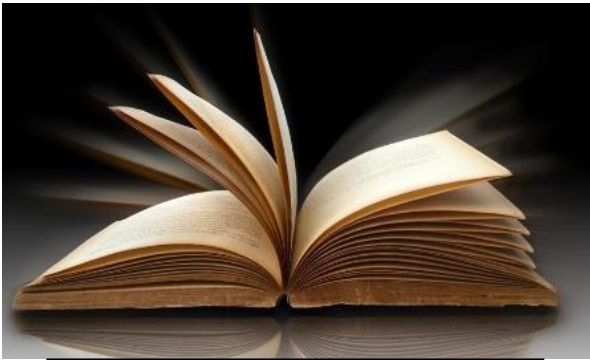
2) Expected answer: *robot*

3.



3) Expected answer: *reloj (clock)*

4.



4) Expected answer: *libro (book)*

5.



5) Expected answer: *guitarra (guitar)*

6.



6) Expected answer: *rosa (rose)*