

CAN INTONATION BE IMITATED? SPONTANEOUS PRODUCTION VS. ELICITED IMITATION OF WH-QUESTIONS*

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1. Introduction

Elicited imitation has been used in the study of both syntactic and phonological acquisition with focus on first and second language (Lust, Flynn, & Foley, 1996; Munnich, Flynn, & Martohardjono, 1994; Markham, 1997). Very little, however, is known about the imitation of intonation in second language (L2). The current study seeks to explore whether intonation can be imitated and, if so, whether imitation is a measure of second language acquisition (SLA). This study explores the acquisition of English wh-questions by native speakers of Spanish.

2.1 Previous studies

Elicited imitation has been used in the study of first and second language syntax. Lust, Flynn, & Foley (1996) used data from a number of experiments to explain the validity of elicited imitation as a measure of syntactic acquisition in children. They stated that the assumption behind elicited imitation is that “if the child can correctly reproduce the full sentence structure, then it can be inferred that the child has the full grammatical competence for this structure” (p. 59). It seems logical, then, that the lack of this grammatical competence would result in an unsuccessful reproduction of the structure in question. The same concept can be applied to the acquisition of a second language. Munnich, Flynn, & Martohardjono (1994), who used elicited imitation in their study of SLA in adults, also define this method as reconstructive stating that “if the subject can analyze the sentence as would a native speaker, then, like the native speaker, the subject should be able to repeat the sentence without significant error” (p. 230). Munnich et al. (1994) found this task to be an “adequate measure of a learner’s knowledge” (p. 236). They also used grammaticality judgement tasks to evaluate their participants’ acquisition. The combination of elicited imitation with other methods is an important part of Munnich et al.’s (1994) work and will also be considered in this study as we will see in the following paragraphs. The use of elicited imitation is not confined to syntax. In fact Markham (1997), who works on phonetic and phonological acquisition of a second language, defines SLA as a “strongly imitative phenomenon” (p. 39). In his work imitation is the “recognition of a relationship between a stimulus and the behaviour required to generate it” (p. 39). It follows that phonetic behaviour is a more

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reliable indicator of acquisition because “listener tolerance of the variation is greater [...] for syntactic than for phonetic production” (p. 22).

The language pair considered here, L1 Spanish-L2 English, was looked at by Nava and Zubizarreta (2009). In their work they focused on two suprasegmental features that Spanish speakers need to acquire when learning English: main sentence prominence and anaphoric deaccenting. While in broad-focus contexts the nuclear stress¹ is sentence final in Spanish, English (Germanic languages in general) shows more variation that depends on a number of factors (like the transitivity of the verb or reduced relatives) (Zubizarreta, 1998). Also, if a previously mentioned (sentence-final) constituent appears in a subsequent utterance it will continue to have prominence in Spanish while it will lose its prominence in favour of the previous constituent in English. This phenomenon is called anaphoric deaccenting (Nava & Zubizarreta, 2009). These two rules need to be acquired in order for the Spanish speaker to move towards native-like prosodic production in English. Nava and Zubizarreta (2009) found that a) these two rules are independent of each other, b) both can be acquired by native Spanish speakers and c) the deaccenting rule is acquired first (i.e. speakers who had acquired the Germanic nuclear stress rule had also acquired the deaccenting rule but speakers who showed successful acquisition of the deaccenting rule did not necessarily show the Germanic nuclear stress rule). These results are useful because they support the idea that prosodic transfer does in fact happen. It also sets up a hierarchy for the type and order of prosodic features (of English) that are acquired by L2 speakers.

Similarly, Trofimovich and Baker (2006) found a hierarchy of sorts in their study. They looked at prosodic elements of English acquired by L2 speakers whose L1 was Korean and considered the effect different proficiency levels (“language experience”) would have on five different suprasegmentals². Trofimovich and Baker (2006) found that greater L2 experience (proficiency) showed stress timing that was closer to native English timing. These findings also relate to Nava and Zubizarreta’s (2009) results because in their work proficiency also had a role. In fact, those speakers who had acquired both English stress rules were only at the highest proficiency levels. As far as the other factors are concerned, Trofimovich and Baker (2006) found that other conditions, such as age of arrival and age of first exposure, had different effects on different factors. Their conclusion is that different prosodic elements are acquired gradually and that the acquisition of prosody is fairly similar to that of segmentals.

Other studies have looked at English as the L2 of the language pair. Jilka (2000) and McGory (1997) considered the effect that the speakers’ L1 had on their L2 production of intonation. The L1s of these studies were German (Jilka, 2000) and Korean and Mandarin (McGory, 1997). While the L2 production contained errors (i.e. production that deviated from what was considered native

¹ Word in sentence that receives main rhythmic prominence.

² Stress timing, speech rate, pause frequency, pause duration and peak alignment.

English), the analysis of these errors showed that the errors differed based on the L1.

Mennen (1998, 2004) looked at a different language pair: Dutch L1-Greek L2. Her studies focused on the production of prenuclear rises by Dutch non-native speakers of Greek. This is an interesting language pair because Dutch and Greek declarative sentences share the same phonological pattern but show clear phonetic differences. Mennen's (1998, 2004) findings are consistent with the intonation studies prior to hers: L2 production is indeed affected by the L1. What is interesting about her findings, however, is that the L1 production of the bilingual speakers was significantly different than the monolingual control group. According to Mennen (1998, 2004), these findings suggest that L2 learning has an effect on the L1.

While the relationship between imitation on the one hand and syntax (or phonetics/phonology) on the other seems clear, it is not the case when considering the relationship between imitation and intonation. According to Nootboom (1997) while the utterance "the MAN on the STREET" can be imitated with nonsense syllables "daDAdadaDA" and still keep the original melody, it is also the case that a monotone repetition of the utterance can be judged as a successful imitation as well (p. 653). This observation is what sparked the interest for the relationship that exists between intonation and imitation. In particular, the focus of this paper is on the imitation of English as a second language by native speakers of Spanish. The following paragraph gives a brief overview of wh-question patterns in English and Spanish.

2.2 Intonation patterns of English and Spanish wh-questions

English and Spanish both share an overall falling pattern in wh-questions (Bartels, 1999; Sosa, 1999; English and Spanish respectively). English wh-questions show a peak in the wh-word but the utterance usually has another peak that is higher than the wh-word and is perceived as more prominent (Ladd, 1997) (figure 1).

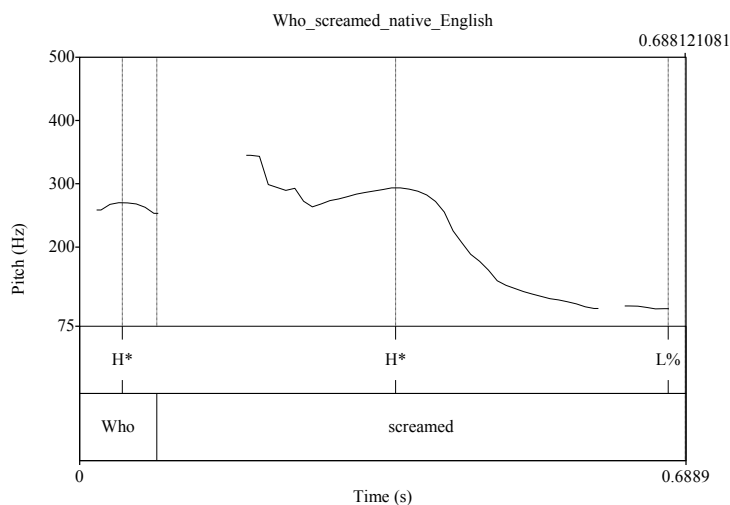


Figure 1. Typical intonation pattern of English wh-questions³.

Although the falling pattern is the most common, Spanish wh-questions often present an alternative rise or rise-fall in the final tonal group (figure 2). The peak in the wh-word is generally the highest of the utterance (Sosa, 1999).

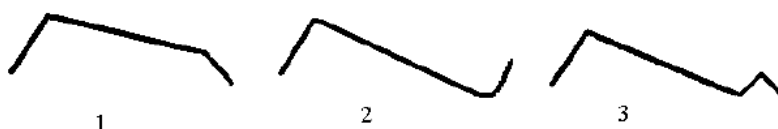


Figure 2. Possible intonation patterns of Spanish wh-questions (Navarro Tomás, 1968; Sosa, 1999).

2.3 Questions and predictions

The goal of this pilot study was to answer the following questions about L2 intonation:

1. Can native speakers of Spanish imitate intonation patterns of English wh-questions?
2. If yes, what can be imitated? (high/low tones, boundary tones)
3. Is imitation a measure of SLA?

Based on previous research the following predictions were made:

1. The final falling contour will be the easiest to imitate;
2. The distribution of high tones may show some imitation.

³ Male native speaker of Canadian English.

3. Methodology

Two males in their mid-30s participated in this study. Both participants were native speakers of Latin American Spanish, speaking the Mexico City and Bogotá varieties. They were near-native and advanced speakers of English respectively. These categories are based on self-evaluation and the author's evaluation. A proficiency test was not administered but the nature of the task proved to be an accurate indication of the proficiency level given that the participant must have had an advanced level of English in order to understand the task and perform accordingly.

The task in this experiment was to elicit English wh-questions. This was done by giving the participants a scenario⁴ and an answer. The question portion was blank (see Appendix A for more examples of scenarios):

You're having a coffee with your friend Martha when you receive a phone call. It's your brother-in-law telling you that you finally have a little nephew. When you come back to the room Martha sees that you are happy and she asks you:

Q: _____?

And you answer:

My sister's baby was born

The participants were asked to come up with a question that in their opinion best suited the scenario. They were asked to say it out loud as if they were really asking the question. Then they would listen to a *possible* question and were asked to repeat (not imitate) what they heard. The participants heard the voice of a 28-year old male speaker of Canadian English, who was also used as control. Although there was an effort to narrow down the possible questions for each scenario the participants were informed that what they were hearing could be different from their initial response and that would be fine. Both productions were recorded. This type of task was chosen in order to obtain semi-spontaneous production. The whole session, including consent, questionnaires and debriefing, lasted between 30 and 45 minutes. The recordings were done with M-Audio Microtrack 24/96 recorder and the sound files were analyzed with Praat (version 5.2.35) (Boersma & Weenink, 2011).

4. Data analysis and results

The analysis focused on three different parameters:

- presence of a high tone (H*) in wh-word;
- presence of a higher tone (H*) in the utterance (higher than the H* of the wh-word);
- presence of a final falling boundary tone (L%).

⁴ The scenarios were loosely based on Hertel (2000).

Table 1 compares the production of the native English speaker with both participants' spontaneous and imitation production. Thirteen wh-questions were considered in the final analysis. Appendix B shows the questions produced by both participants in the spontaneous and elicited imitation conditions

Native English Speaker		Participant 1		Participant 2	
		Spontaneous	Imitation	Spontaneous	Imitation
H* in Wh-word	100%	85%	92%	92%	92%
Higher (than wh-word) H* tone	92%	62%	46%	46%	70%
Final L%	100%	92%	62%	62%	85%

Table 1. Percentage of the three parameters found in the speakers' production.

The first parameter analyzed was the presence of a high tone H* on the wh-word. The participants did not stray away from the English control very much. This was expected since both English and Spanish have an H* in the wh-word (Bartels, 1999 and Sosa, 1999 respectively).

The second parameter was the presence of a higher H* tone in the utterance that would also be the highest of the whole utterance. The native English speaker performed as expected given the fact that English wh-questions often have another peak that is higher than the wh-word and is perceived as more prominent (Ladd, 1997). Participant 1 showed a decrease in production of a higher H* (from 62% in spontaneous production to 46% in elicited imitation). This means that while his spontaneous utterances showed a more English-like production with the presence of an H* tone that was higher than the one in the wh-word, the production in the elicited imitation did not show the same pattern. In fact, in this condition, Participant 1's production was closer to Spanish in that most of the utterances had their highest H* tone in the wh-word. Participant 2 showed an expected increase in production from 46% in spontaneous production to 70% in elicited imitation.

The final falling boundary tone L% was produced by the English native control 100% of the time as expected. While Participant 1 showed a decrease of the production of the falling boundary tone from 92% to 62% (spontaneous production and elicited imitation respectively), Participant 2 showed an increase from 62% to 85% (spontaneous production and elicited imitation respectively).

The percentages obtained are the instances in which a clear falling boundary tone was found. The other cases were H%, L*H% and plateaus.

5. Discussion

The main goal of this pilot study was to gain a better understanding of second language intonation. Three parameters were considered in this analysis: presence of a high tone H* in wh-word, presence of high H* tone, higher than the wh-word, in the utterance and presence of final falling boundary tone L%. Three questions were asked and two predictions were made. It seems that overall Spanish speakers can imitate intonation patterns of English wh-questions (question 1). Participant 1 showed an increase in the H* in wh-word condition while there is a decrease in the other parameters. Participant 2 however showed an increase in all three parameters. It also seems to be the case that overall any of the 3 parameters *can* be imitated (question 2). To the question of whether elicited imitation can be a measure for second language acquisition (question 3) it could be considered when coupled with other methods, as was the case for Munnich et al. (1994). In that study, elicited imitation was coupled with a grammaticality judgement task and proved to be very useful in determining the successful acquisition of certain grammatical structures. This pilot study only had two participants but it would be worth considering analysis of errors or a consideration of how the level of L2 proficiency relates to the production of intonation.

The first prediction of this study was that a final falling boundary tone would be the easiest to imitate since it is at the very end of the sentence. This prediction proved difficult to evaluate given the shared commonalities between the two languages. Furthermore Spanish presents three possible boundary tones for wh-questions (as seen in figure 2). Although the literature speaks of different connotations for the three different forms (Navarro Tomás, 1968), the setting of the experiment is somewhat artificial and may have contributed to the blurring of the meanings. Also, it is worth mentioning here that although the overall pattern for wh-questions in Spanish is falling, Sosa (1999) talks about some contradicting findings on this type of questions in speakers from Mexico City. It may be the case that the same type of question with two different underlying forms may have now come together to form one category with two forms in free variation. This could explain the decrease in the imitation condition for Participant 1.

The second prediction was that the distribution of high tones within the utterance could show some imitation. While Spanish wh-questions have the highest H* tone on the wh-word and show a progressive decrease throughout the utterance, English has a high H* tone somewhere else in the sentence that is higher than the wh-word (Sosa, 1999 and Bartels, 1999). Although Ladd (1997) explains that this higher H* tone in English is perceptually salient, the question is how salient is it for a native speaker of Spanish? The numbers in this experiment show an inconsistent pattern. Participant 1 shows a decrease of 16% between the spontaneous and the elicited imitation production while Participant

2 shows an increase of 24%. It is possible that while the two languages are different, this difference is not so salient as to create awareness of it. Although there was no direct application of Flege's (1995) speech learning model, it seems that hypothesis 2 applies. In fact it looks like there is not enough phonetic difference to create a separate category for this tone.

6. Conclusion

This study is part of the recent interest in the acquisition of second language intonation (Jilka, 2000; McGory, 1997; Mennen, 1998; Mennen, 2004). One of the important conclusions here is that not all elements of intonation are acquired successfully at the same time. This research and these findings fit into the *bigger prosodic picture*. In fact research in other areas of prosody show that different prosodic elements of a second language are acquired at different rates based on different proficiencies in the second language (Trofimovich and Baker, 2006; Nava & Zubizarreta, 2009).

This study focuses on L2 production and little attention is given to the role of perception. Future work may consider the role of perception in intonation and prosody in general. Also, dialectal differences in Spanish may be considered in future work as well as what effect the L2 has on the production of L1 (as Mennen, 1998, 2004 considered). Finally there is a need for a second language acquisition model for intonation. Flege's (1995) speech learning model has been used in the past (Mennen, 1998) and it underlyingly guides this pilot as well but it is clear that just as segmental and suprasegmentals are treated differently, it seems that a different SLA model is overdue.

Appendix A: Examples of the scenarios the participants had.

Instructions: The following pages contain situations with a final Q and A dialogue. I will read the paragraph out loud while you follow on paper. You will notice the question is missing. I would like you to fill in the question by saying it out loud as you would if you were actually asking that question. Basically you should pretend you don't know the answer. Although it is quite clear from the context, the answer part of the dialogue is provided in order for you to feel more comfortable with the exercise.

After you say the question you will hear a recording of a potential question. You will be asked to repeat that question out loud. If your original response was different from the question you hear it is not a problem because more than one question is possible for most of these contexts. Your responses will be recorded. Thank you for your participation!!! :D

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You're in the park with your friend Theresa and her children when Theresa receives a phone call. She steps away to answer the call asking you to keep an eye on her kids. In the meantime the children see one of their friends from school near the playground. They run over to say hello. When Theresa comes back she asks you:

Q: \_\_\_\_\_?

And you answer:

**They're over there with their friend from school.**

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You're watching the news with your friend Sara. She's so tired that she falls asleep for a minute. While she's asleep the news reporter announces that the President has disappeared. Sara wakes up and realizes that someone disappeared but she can't figure out who it is. She asks you:

Q: _____?

You answer:

The President disappeared.

~~~~~

Your roommate is dating two actors at the same time: Antonio Banderas and Javier Bardem. One morning she has to go out to run some errands. While she is out Antonio calls and you take a message. When your friend returns she sees a piece of paper and a pencil near the phone and asks you:

Q: \_\_\_\_\_?

And you answer:

**Antonio called**

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Your friend Jamie lost a tennis match over the weekend and now he is quite upset. Loredana, another friend, was away for the weekend and she doesn't know what happened. She asks you

Q: _____?

And you answer:

Because he lost the tennis match over the weekend.

~~~~~

Last night your friend Jamie came over to study. Your nosy neighbour, Manuel, noticed that there was a car parked in your driveway, but he didn't recognize whose it was. The next day Manuel asks you:

Q: \_\_\_\_\_?

You answer:

That was Jamie's car

Appendix B: Questions produced by both participants in the spontaneous condition<sup>5,6</sup>

| Participant 1-spontaneous | Participant 2-spontaneous    | Native English control (stimulus for imitation) |
|---------------------------|------------------------------|-------------------------------------------------|
| Where are my kids?        | Did anything special happen? | Where are my children?                          |
|                           |                              | Where did you get that bottle?                  |
|                           | Did you watch t.v. recently? | Who disappeared?                                |
|                           |                              | Why is that boy crying?                         |
|                           |                              | Who's crying?                                   |
|                           |                              | Who called?                                     |
|                           |                              | Why is Jamie upset?                             |
| Who sang?                 |                              | What happened?                                  |
| Who sneezed?              | Who sneezed?                 | Did Julian sneeze?                              |
| Why are you happy?        | Why are you so happy?        | What happened?                                  |
|                           |                              | Whose car was that?                             |
| What happened?            |                              | Who screamed?                                   |
|                           |                              | Is that Julian dancing?                         |
|                           |                              | Where's Martha?                                 |
| What happened?            |                              | What did Martha say?                            |

<sup>5</sup> Both participants produced the same sentence as the stimulus in the imitation condition.

<sup>6</sup> A blank space indicates that the spontaneous production was the same as the stimulus.

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