

Systematic transfer of ‘uptalk’ from English (L1) to Spanish (L2) for native English speakers: A developmental study

Gavin Buck¹

¹University of Michigan
College of Literature, Science, and the Arts
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Director: Nicholas Henriksen
Reader: Lorenzo García-Amaya

Uptalk: A manner of speaking in which declarative sentences are uttered with rising intonation at the end, as if they were questions (Oxford Dictionary).

or

Uptalk: A marked rising intonation pattern found at the ends of intonation units realized on declarative utterances, and which serves primarily to check comprehension or to seek feedback (Warren, 2016).

1. Introduction

Uptalk is a highly controversial linguistic practice, typically and unknowingly utilized by younger generations, that has been referred to as “an irritating verbal tic” (Marsh, 2006), as “a real credibility killer” (DiResta, 2010), or, more kindly, “as a means of signaling inclusion of the listener” (Warren, 2016, p. 2). However, the spectrum of opinions regarding uptalk is not nearly so polarized, nor is it a static phenomenon in our phonology. The following pages seek to understand uptalk, its uses, its origins, its future, and, most importantly, whether the transfer of uptalk from English to Spanish occurs for native speakers of English.

1.1 Understanding Uptalk

‘Uptalk,’ coined by James Gorman in his 1993 article in the *New York Times* called “ON LANGUAGE; Like, Uptalk?” (Lieberman, 2006), has also been referred to as upspeak, high-rising tone (HRT), high-rising terminal declarative (HRTD), Australian question intonation (AQI – likely as a means of blaming the advent of uptalk on Australian English), and many other more colorful descriptions like the “moronic interrogative” (Warren, 2016, p. 4-6). In his article, Gorman highlights his confusion when he entered the world of academia and noticed that his “students had this rising intonation thing” that seemed to “be as contagious as the common cold” (Gorman, 1993). While rising intonation was not foreign to him when the “phrase final rise” indicated a question, he had never before encountered uptalk at the end of declarative utterances (Gorman, 1993). Despite his initial shock upon learning of the phenomenon, Gorman continues to explain that, for better or for worse, uptalk is here to stay and is becoming more and more prevalent – even referencing a University of Pennsylvania linguist, Cynthia McLemore, who noted that the current trend could potentially signal a fundamental “dialect shift” in America (Gorman, 1993).

Since 1993 when Gorman initially popularized the term, the discourse has continued over the 23-year span until today. In both the public and private spheres, opinions span a continuum – from the idea that uptalk is crucial to effective interpersonal communication to the assertion that uptalk represents an inherent character flaw in the speaker.

1.2 Popular Views of Uptalk

In the media and throughout the public discussion regarding uptalk, the popular stance on the issue is largely negative – with many bloggers, news stations, newspapers, and radio talk shows highlighting the social stigmas associated with ending declarative sentences with a rise in pitch. However, not all sentiments on the subject are quite so derogatory as many people note and place value in the potential for improved communication, understanding, and interpersonal interaction.

The negative interpretations of the phenomenon largely surround the initial stereotypes of the stigma – so much so that such sentiments span three continents – North America, Europe, and Australia – and have lasted for decades. Most critics of uptalk consider it an “irritating verbal tic” (Marsh 2006) or, more strongly, a “lilting interrogation with which young people can cast doubt on any certainty” (Wollaston, 2005, p. 51). The *New York Post* even quoted speech expert Sam Chwat in 1998 when he commented on the speaking tendencies of Monica Lewinsky, stating that she had “classic late teen-ager upspeak patterns” demonstrating “a lot of insecurity” (Morris, 1998 p. 5). Many others expand on this definition and claim that uptalk also conveys uncertainty, tentativeness, a lack of education, nervousness, immaturity, and myriad other negative connotations. Holly Ojalvo, a writer for *The New York Times Learning Blog*, compared uptalk to other spoken phenomenon like slang, the incessant use of “like” as a conversation filler, and vocal fry – a raspy or croaking sound artificially added to the end of a phrase or a “guttural fluttering of the vocal cords” that has become a new trend among female college students (Ojalvo, 2012).

These negative connotations surrounding uptalk have potentially serious implications for those who use it in the real world. More than half of 700 men and women in managerial positions who were surveyed in a 2014 study by U.K publisher Pearson said that uptalk would hinder the prospects of employees and interviewees (“Want a Promotion?,” 2014). Further, 70% claimed that the use of uptalk was “particularly annoying” (“Want a Promotion?,” 2014). Finally, 85% of respondents stated that they thought the use of uptalk was a “‘clear indicator of insecurity’ and could hinder their chances of a promotion or [raise]” (“Want a Promotion?,” 2014). Sue Shellenbarger in an article for *The Wall Street Journal* titled, “Is This How You Really Talk?,” explains that even though people are often judged in the workplace for vocal quirks such as uptalk, it is not necessarily the listener’s fault for subconsciously analyzing the speaker’s speech (Shellenbarger, 2013). Lynda Stucky, president of a speech coaching company in Pittsburgh, was quoted in the article as saying, “We are hard-wired to judge people [and] when you hear somebody speak, the first thing you do is form an opinion about them” (Shellenbarger, 2013). To that note, Shellenbarger also cited a study by Quantified Impressions, a communications analytics company, that found in a study of 120 executives’ speech, the sound of the speaker’s voice mattered twice as much as the content of the message (Shellenbarger, 2013).

Jessica Grose, a freelance journalist in her 30’s, is a self-diagnosed “inveterate upspeaker” with a “girlish voice” (Grose 2013). She admits that as a result of her uptalk, her “statements can sound like questions, which can telegraph uncertainty” (Grose, 2013). In an article for *The New York Times* titled “She Turned Her Upspeak Down a Notch,” Grose recounts and analyzes her own personal experience with uptalk interfering with her professional career. After an annoyed listener heard her on a popular podcast and commented on the podcast’s Facebook wall that the

“show has become totally unlistenable due to the valley girl/faux socialite voice of the youngest panelist,” she began to recognize that the manner in which she spoke detracted from the content of her message (Grose, 2013). She understood that future employers could look down upon her or deny her opportunities because she seemed too insecure or immature – despite being an accomplished, 30-year-old reporter. In contrast, she thought her manner of speech communicated how energetic and enthusiastic she was to her work and to the people she was interviewing, “but clearly many of her listeners did not agree” (Grose, 2013).

As Grose indicated in her stance on uptalk, there are actually a number of positive uses of uptalk in everyday life. For instance, uptalk can be used to ensure understanding by using “confirming statements” that, while not questions, attempt to illicit some sort of response from the listener like a nod or an “uhh huh” grunt (Hoffman, 2013). In addition, researchers found that uptalk can also serve a strategic purpose by using a technique known as “holding the floor,” in which the speaker uses a rise in pitch in order to indicate that the thought is not done and the listener should expect more (Hoffman, 2013). Interestingly, studies ranging from 1980 to 2010 have found that people already in positions of authority, namely President George W. Bush and a director for Nickelodeon television shows, use uptalk to make subtle requests without appearing demanding or overbearing (Warren, 2016, p. 55).

Returning to Gorman’s article on the subject, Gorman cites Cynthia McLemore, a University of Pennsylvania linguist, and her study of a Texas sorority where she studied the intonation of sorority members’ speech and analyzed it for its potential uses of uptalk (Gorman, 1993). She found that uptalk was a way to be inclusive, to connect phrases, and to truly “connect the speaker

to the listener” (Gorman, 1993). McLemore continues to explain that uptalk could be used as a tag to highlight new information or to improve the attention of the audience by varying the pitch of the phrases.

However, even Gorman, who generally has an understanding point of view on uptalk, expresses concern about the pervasiveness of the phenomenon. He raises an interesting, yet potentially crucial question to be considered – what if uptalk becomes so widespread and prevalent that it permeates into necessarily authoritative professions? For example, if a police officer were to say – “You’re under arrest?” – it is not nearly as convincing when the listener is not sure if they are truly under arrest or if it were a question. Perhaps more comically, Gorman proposes the situation of an airline pilot – a profession with traditionally very authoritative pilots who speak over the intercom – who seemingly does not know what he is doing:

Hello? This is Gavin Buck?

Your pilot?

We’ll be flying to Detroit at a cruising altitude of 35,000 feet?

We’ll be arriving at 6:30 pm?

To most passengers – many of whom would already be uneasy about flying – this use of uptalk would convey the impression that the pilot was unsure about who he was, what he was doing, how the plane would get to its destination, and when it would arrive. Such unease among the passengers might actually represent a safety issue.

Overall, despite a wide array of different views on the subject, many people view the spread as a global, fundamental shift in the English language – with some relating it to the importance of the

Great Vowel Shift from 1350-1600 (Blair and Collins, 2001, p. 330). With such a shift occurring, it may become less and less important to monitor one's use of uptalk in situations where it could imply uncertainty or uneasiness. For instance, Grose continued in her article to cite speech coach Diane DiResta who remarked that uptalk "might not be such a drawback in the future – it's so pervasive among both women and men in the millennial generation that once they are in more positions of power, it might become the corporate norm" (Grose, 2013). In addition, Gorman, though internally torn about the use of uptalk, even concedes that if and when airplane pilots begin using uptalk, it will signal "that a full-blown dialect shift has occurred" and that "uptalk won't be uptalk anymore. It will be, *like*, American English?" (Gorman, 1993).

1.2.1 Origins of Uptalk

With such a popular following from the media of English speaking nations, the origins of uptalk have been widely studied and debated. While uptalk is often associated in the United States with the "California Valley Girl" (that assumption likely fashioned by the 1982 release of Frank Zappa's song "Valley Girl") (Hoffman, 2014), the phenomenon is also prevalent throughout the United Kingdom and Australia – raising the question about the true origin. Did it start in the U.S. and spread to other English speaking nations or is there some unifying, common factor that explains the wide-spread growth of uptalk? Many people in the United Kingdom claim that the nasty habit of uptalk began with the arrival of Australian Soap Opera, "Neighbours," in 1986 (The Unstoppable March of the Upward Inflection, 2014). However, Australian linguists even claim that the use of uptalk in Australian English has its roots in New Zealand where English speakers were influenced by Maori speakers (the indigenous population of New Zealand) in the 1950s (10 Theories on How Uptalk Originated, 2014). Mark Liberman of the University of

Pennsylvania states that, in short, no one really knows and that “linguists often have to rely on written accounts” to try to understand speech throughout different eras and geographical distributions (2014).

One predominant theory on the start and rapid acceptance of uptalk places the origin, at least in part, in Scandinavia (10 Theories on How Uptalk Originated, 2014) (The Unstoppable March of the Upward Inflection, 2014). In an article that appeared in BBC Magazine titled “10 Theories on How Uptalk Originated,” anecdotal evidence is used to paint a vivid picture regarding the potential origin of uptalk. Johann from Iceland notes that “Norwegian is the mother of all uplifting inflection languages. Whether a question or a statement, Norwegians always end on a high note” (10 Theories on How Uptalk Originated, 2014). Similarly, a resident of Minnesota notes that people have been “uptalking [there] well before California made it famous” as a result of the Scandinavians who settled there – highlighting popular movie and TV series, Fargo, as an example of ubiquitous uptalk in the area (10 Theories on How Uptalk Originated, 2014).

Other more scattered and less prominent theories include the idea that uptalk began in 1870s Scotland. That theory is based upon a language primer that described how “rising tone is often employed monotonously, not only in questions but also in answers and statements of facts” – relatively close to today’s current definition (The Unstoppable March of the Upward Inflection, 2014). Also, some researchers hypothesize that the origin could be a derivative of the Japanese intonational system that has slowly permeated the English speaking world in which speakers use a rise in pitch in order to soften an assertion (10 Theories on How Uptalk Originated, 2014). Finally, there are some linguists who believe that uptalk is just an evolution of the “sales voice”

that ends with a rise in pitch in order to make the listener more prone to agree with the speaker (10 Theories on How Uptalk Originated, 2014). Whatever the true origin, it remains clear that uptalk has been present in many dialects of English for decades and that it will likely continue to influence our production and understanding of the English language well into the future.

1.3 Linguistic Studies of Uptalk

In addition to the popular views of uptalk widely distributed across numerous mediums, many scientific studies have been conducted in order to understand the fundamental basics of the phenomenon (what rises look like, when they occur, how often they occur, etc.), investigate the potential geographical influence that may exist, and seek to identify any differences that may exist across gender lines between males and females. Scholars have found that “rising inflection can suggest a range of nuanced meanings in different geographical areas and conversational contexts” and that “its use is not exclusive to young women,” but is rather pervasive among the younger generations (Hoffman 2013).

To begin, an article titled “The Phonetics and Distribution of Non-Question Rises in Two Varieties of American English,” (Armstrong et al., 2015) investigates the use of uptalk in English across two geographical regions, Southern California and Massachusetts. The article investigates uptalk using two key metrics: the frequency of rises and the overall shape or duration. The authors examined the data from narrative retellings of past experiences for 16 total speakers: four males and four females from Southern California and four males and four females from Massachusetts. In the end, the authors found that while there was no significant difference in the frequency of rises across region nor gender, there did exist sociolinguistic variation in the

length and slope of the rise among speakers from different regions (Armstrong et al, 2015). They discovered that even though females from both regions typically had longer rises than their male counterparts, females specifically from Southern California produced rises that rose much more quickly in pitch – potentially contributing to the stigma of “Valley Girl Speak” (Armstrong et al, 2015).

Armstrong’s findings provide the scientific community with two key takeaways. First, the article offers evidence for an understanding of uptalk very different from that of many popular opinions. By showing that the frequency of rises is not statistically different for female speech than for male speech, the authors were able to show that the only differentiating factor leading to the “Valley girl” stereotype is, in fact, the shape of the rise and not the overall frequency. Second, by taking speakers from two separate geographical regions, she was able to provide more evidence for the growing understanding that uptalk is not limited to any one region or group of people, but widely spread across the U.S. (Southern California to Massachusetts) and likely elsewhere across the English speaking world.

In addition to the previous study, Ritchart and Arvanti, in an article titled “The form and use of uptalk in Southern Californian English,” examined the phonetics, phonology, and pragmatic function of uptalk in Southern Californian English (Ritchart and Arvanti, 2014). Most notably, the authors found that of the 23 speakers (11 male and 12 female), that females used uptalk more than males: clearly contradicting one of the key findings of the Armstrong paper above (Ritchart and Arvanti, 2014). In this instance, researchers used the data from more controlled tasks than the memory retelling from Armstrong. For this study, to attempt to provide a better degree of

structure and consistency to the tasks, speakers were asked to provide directions using a map and were asked to retell a video clip from a popular sitcom. The research also found evidence for the use of uptalk in socially pragmatic ways such as in confirmation requests and in holding the floor – providing evidence that uptalk is likely more than simply an annoying verbal tic, but may actually provide useful linguistic context and information during conversations (Ritchart and Arvanti, 2014).

In addition, much of the significance of Ritchart and Arvanti’s study comes in what the authors were able to rule out as potential variables to the frequency of uptalk. The study found that ethnicity, socioeconomic status, and bilingualism of the speakers did not affect either the frequency or shape of rises.

Further, in an article written by John Tomlinson and Jean Fox Tree titled “Listeners’ comprehension of uptalk in spontaneous speech,” researchers examined the how temporal and situational context are important in determining the use of pitch variation in everyday, spontaneous conversation (Tomlinson and Fox Tree, 2011). Tomlinson and Fox Tree were able to examine scientifically many of the social stigmas surrounding uptalk. In fact, they were able to show that when speakers ended a declarative sentence with a rise, listeners were more prone to label the speaker as uncertain about the content of the sentence. On the other hand, the authors were also able to show that the interpretation of uptalk is largely dependent on the context and that it could actually have a number of social uses. For instance, researchers found evidence for uptalk being used to hold the floor to increase the attentiveness of listeners by measuring their reaction times to auditory stimuli. By conducting this study, the authors were able to investigate

what we generally tend to accept as true regarding uptalk – that it can negatively affect our public image, but also that there may be social value in the phenomenon.

In spite of the large amount of research that has already been done on uptalk, there is still much more that is unknown and yet to be understood, namely how uptalk is transferred between languages. While some studies have been conducted that investigate whether being bilingual in English and one other language affects the frequency of occurrences of uptalk in English, no work has been done to investigate the transfer of uptalk to another language that does not readily exhibit the phenomenon. This is the broad motivation for the present thesis project.

1.4 Monolingual Nature of Past Studies

The unique aspect of this study is the bilingual nature of its purpose since all studies done previously have simply examined the phenomenon in English. The primary goal is to determine if and how often native speakers of English transfer their use of uptalk in their L1, English, to their L2, Spanish – a language generally understood to not use uptalk at the end of declarative sentences. Secondly, this study will build on the understanding of the relationship between gender and frequency of rises by investigating to see if gender will have any effect on the frequency of rises between the native language and the language being learned.

While some research has found that uptalk is used to a limited degree in Puerto Rican Spanish, no one has yet been able to identify the use of the phenomenon in Iberian Spanish (Warren 2016, p 166). By looking into this gap in our understanding, this study is uniquely positioned to do what many past studies have neglected.

By investigating the dual nature of uptalk in its prevalence in English and its transfer to Spanish, this study seeks to expand upon our current knowledge of the phenomenon at large in addition to the transfer of phonetic properties from native English to Spanish as a second language. To date, no studies have yet been performed that focus on the transfer of uptalk from English to Spanish.

1.5 Research Questions and Hypotheses

In order to guide the research and help develop the methodology for the study, three central questions were considered in order to best address the use of uptalk across lingual barriers.

Research Questions:

- 1) Do native speakers of English use uptalk when they speak Spanish and does gender have an effect on the frequency of occurrences?
- 2) Do native speakers of English modify their use of uptalk over time during a study abroad experience in Spain and does gender have any effect on the outcome?
- 3) How does the frequency of uptalk in Spanish compare to the frequency of uptalk in English for non-native speakers?

Further, these central questions correspond to three initial, yet focused hypotheses that were considered throughout the duration of the study.

Hypotheses:

- 1) We expect learners of Spanish to transfer English patterns of uptalk into Spanish (at Time 1), because all aspects of first language phonology are initially transferred into second language phonology (Henriksen, 2016). We also expect that if the stereotype of the ‘valley girl’ is to be confirmed and that the Ritchart and Arvaniti article will

- remain true for speakers from the University of Michigan studying Spanish, then females will use comparatively more rises than their male counterparts in both English and Spanish. However, an argument could be made that there should be no reason to believe learners would transfer their use of uptalk because they would never have heard it from a native Spanish speaker since it is inherently an English-speaking phenomenon.
- 2) We also expect learners of Spanish to use less uptalk over time (by Time 2) during their experience abroad, since native speakers of Spanish do not use uptalk – thus, learners of Spanish will become more ‘native-like.’ While this would be the ideal case, it may not be the most likely outcome as the immersion period may not be long enough to warrant such a drastic change in the phonetics of each student’s speech.
 - 3) Finally, we expect there to be no difference in the relative frequency of rises between speakers’ L1 and L2 at Time 1, given that the L1 phonology is transferred to the L2. However, if Hypothesis 2 holds true, then we would expect that at Time 2 Spanish learners will become more native-like and use less uptalk in Spanish compared to the native English.

1.6 Motivation for the Study

This study is also unique in three key aspects. First, much of the prevailing research that has been conducted focuses on speakers from either Southern California or the east coast of the United States. Therefore, by studying speakers based out of the University of Michigan, this study aims to continue to build upon our understanding of the phenomenon across the United States.

Second, past studies have also uncovered conflicting evidence for the use of uptalk between males and females – with some claiming that there is a significant difference, while others have claimed there is no noticeable difference.

Finally, by examining the transfer of uptalk from English to Spanish, this study will be the first to determine if the phenomenon does, in fact, transfer across the language barrier – even if the phenomenon does not occur natively. Subsequently, it is not known whether the frequency of uptalk use in the L1 will affect the frequency of the use of uptalk in a speaker’s L2. Lastly, the use of both male and female speakers will allow for an investigation to determine if gender affects the transfer of uptalk from one language to another. All of these aspects combined will allow us to better understand how phonology is transferred across languages and contribute to our understanding of how uptalk is affected by the gender of the speaker.

2. Methods

The methodology for this study was based strongly upon that of Armstrong et al (2015).

2.1 Speakers

A total of twelve speakers were recorded: 6 male and 6 female. All speakers were native speakers of English and students at the University of Michigan hailing from a wide array of states primarily across the Midwest.

In addition, a native speaker of Spanish who has lived in the United States for six years was recorded in order to develop a baseline for native Spanish speakers. However, it was determined after further analysis that his phonology had become too native-like in English, after six years of immersion, to provide adequate data about the use of uptalk in native Spanish.

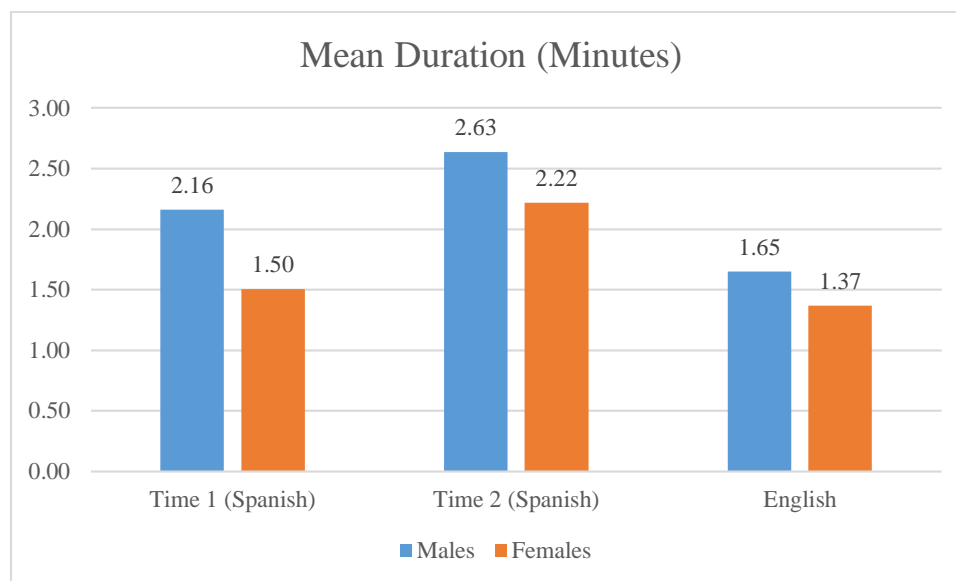
2.2 Tasks and Procedures

Recordings of the speakers were made at the University of Salamanca in Salamanca, Spain while they were studying abroad as a part of a six-week school program. All of the recordings took place in a secluded room with minimal background noise and few sources of distraction for the speakers. Each speaker was required to complete a series of tasks at the beginning of the program (Time 1) and at the end of the program after six weeks (Time 2). The speakers also answered questions about their interest in learning Spanish, their academic goals, and their desire for future travel. However, only the data presented here are from the story retellings. At Time 1, each speaker watched two videos about a cartoon cat and later retold them in Spanish. At the end of the six weeks at Time 2, the task was repeated in Spanish with similar, but different videos of the same cat to allow for continuity between the tasks and to make it easier for later comparison. Further, also at Time 2, the learners watched an additional two videos and retold them in English to create a baseline for the phenomenon in the speakers' native language.

The mean overall duration for all of the story retellings was 1.92 minutes (2.14 minutes for males, 1.70 minutes for females). Further, the minimum and maximum story length were 41.5 seconds and 3.99 minutes, respectively. The mean duration at Time 1 was 1.83 minutes (2.16 minutes for males, 1.5 for females). The mean duration at Time 2 was 2.43 minutes (2.63

minutes for males, 2.22 minutes for females). Finally, the mean duration for the English retellings was 1.51 minutes (1.65 minutes for males, 1.37 for females). See **Figure 1**.

Figure 1 – Mean Duration Across T1, T2, and English



Video retellings were used in order to provide the most constant and replicable results across languages and time periods. While other methodologies are certainly possible, as seen in Armstrong, Ritchart, etc. above, using a task like that used in the Armstrong study where speakers were asked to recount a memory allows for a lot of variation in the length of the narration and the complexity of the vocabulary and grammar structures. Further, since this study is longitudinal, it is crucial to maintain a relatively consistent task in order to ensure that the conditions during the two recordings were as similar as possible. Finally, since much of this study revolves around the transfer of uptalk from the L1 to the L2, access to a facilitator was restricted and videos without any dialogue were used in order to avoid any influence from native speech.

2.3 Annotations and Measurements – Acoustic Analysis

All text annotation, measurements, and analysis was done using Praat's TextGrid annotation tool. Initially, the number of rises were measured for four female speakers retelling stories at Time 1 in order to determine if the analysis was feasible and if the speakers transferred this particular aspect of their L1 to their L2. See **Figure 2** for a representation from Praat on the initial test and **Figure 3** for the initial findings.

Figure 2 – Initial Analysis in Praat

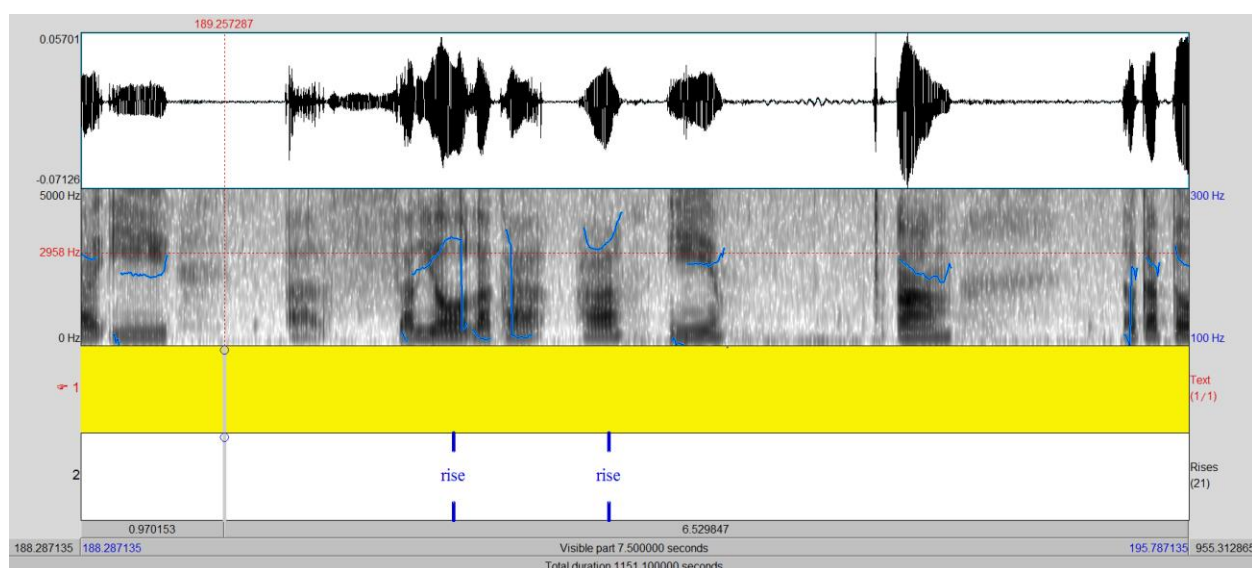


Figure 3 – Occurrences of Rises in Initial Test for Viability

SPEAKER	GENDER	SPAN_T1	SPAN_T2	ENG
EA	F	28	40	13
MA	F	31	34	19
AB	F	44	42	23
KB	F	16	54	18

Once further analysis was deemed feasible, a more advanced and in-depth labeling protocol was developed in which each breath unit was labeled according to its contour shape (rising, level, or falling), the utterance discourse type (non-question, question, or non-question filler), and the “story mode” of the speaker (in-story mode or out-of-story-mode). Contour types were based on the change in pitch between stressed syllable and the end of the breath unit where an increase in pitch between these two points was labeled as a “rise,” no material change in pitch as “level,” and a decrease in pitch as “falling.” In cases where pitch tracking gave an ambiguous result, auditory perception of the utterance was used to assign contour shape. See **Figure 4** for a representation from Praat on the full analysis and **Figure 5** for a representation of each contour type.

Figure 4 – Full Breakdown of Breath Units in Praat

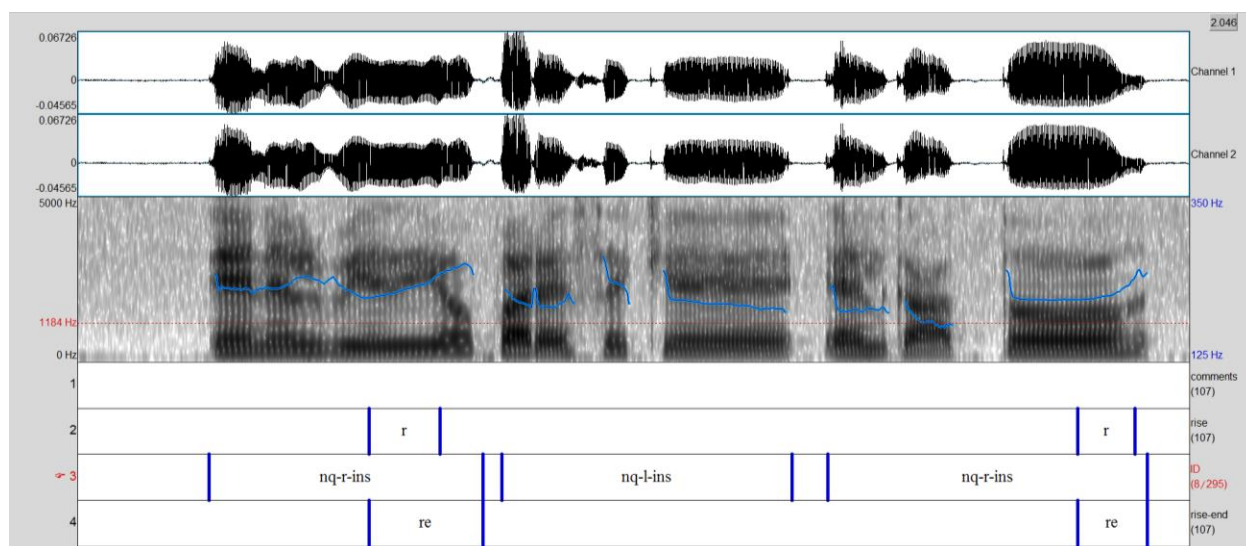
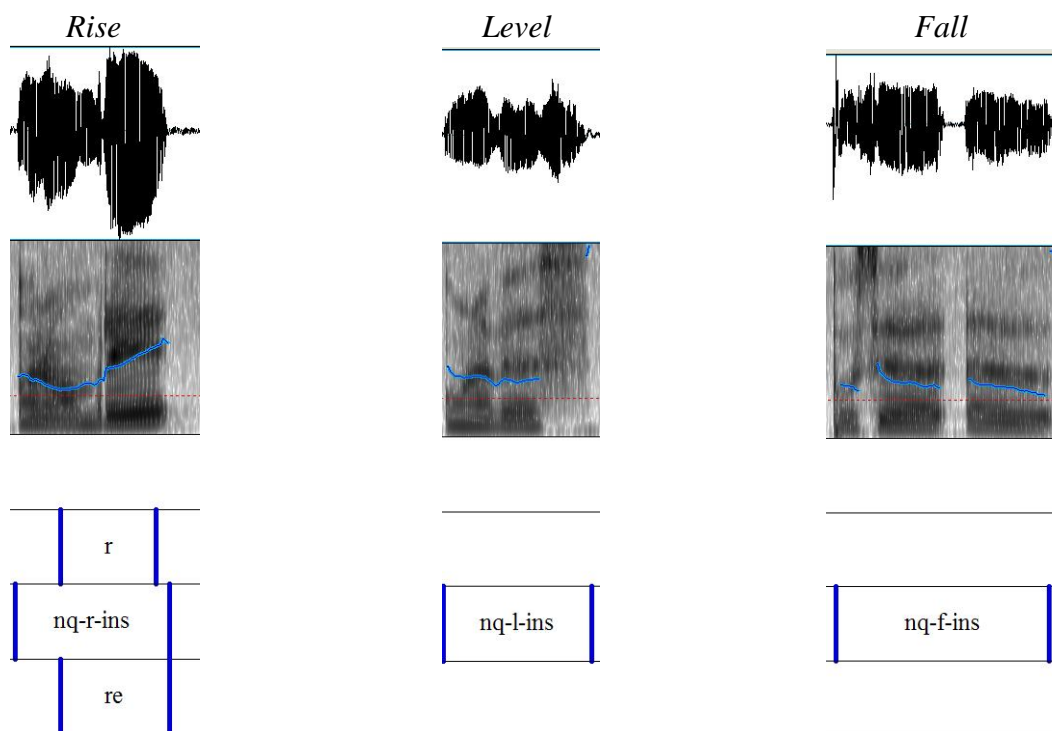


Figure 5 – Examples of Breath Unit Rise, Level, or Fall



Utterances were considered questions if they could reasonably be answered with a “yes” or “no” or if they were traditional wh-questions (e.g. Why did you throw a snowball at me?). If not, all other utterances were considered non-questions (statements).

Utterances were considered discourse fillers if the breath unit were strictly a well-known filler word (uhh, umm, ehh, etc.), a conjunction when isolated from other non-fillers (but *o pero*, and or *y*, etc.), or a combination of the two.

In story mode and out of story mode were defined by whether the speakers were speaking in the context of the story or speaking to the proctor. For instance, if the speaker were asking the proctor a question about how to say an unknown word in Spanish, it would be considered out of story mode (e.g. “Como se dice ‘bee’ en español?” directed to the researcher).

3. Results

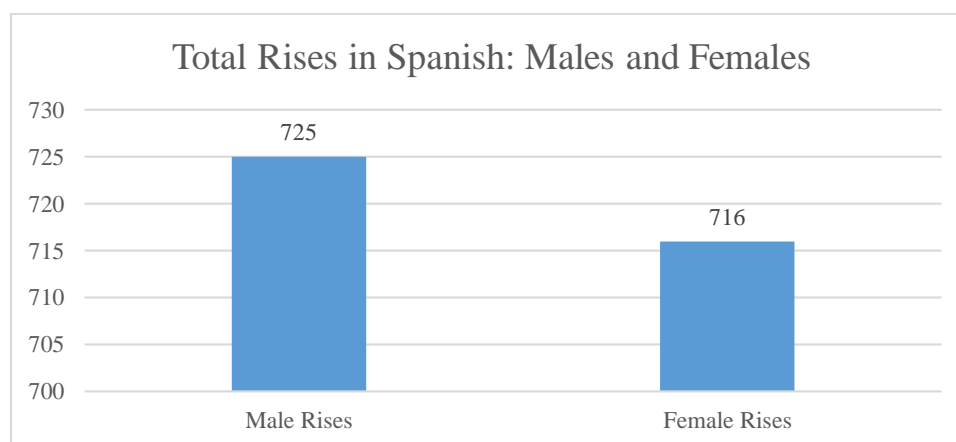
3.1 Global Results

Overall, it is clear from the results to follow that both males and females not only exhibited uptalk in their L1, but also transferred it to their L2 during their retelling of the story. Further, while at first it may seem that females and males used roughly the same amount of rises, by using a ratio of Breath Units to Rises (BU/R), one can more accurately understand the proportion of breath units to rises by accounting for the rate of speech and duration of the narration.

3.1.1 Key Results

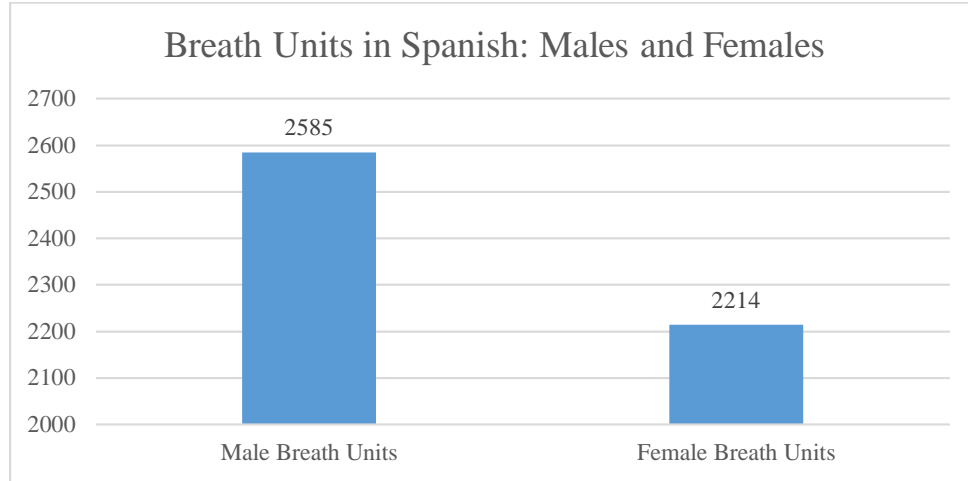
Figure 6 below shows the total number of rises used based on the two recording times in Spanish. The data show that males (725) use more rises than females (716), but the difference is insignificant.

Figure 6 – Total Number of Rises in Spanish



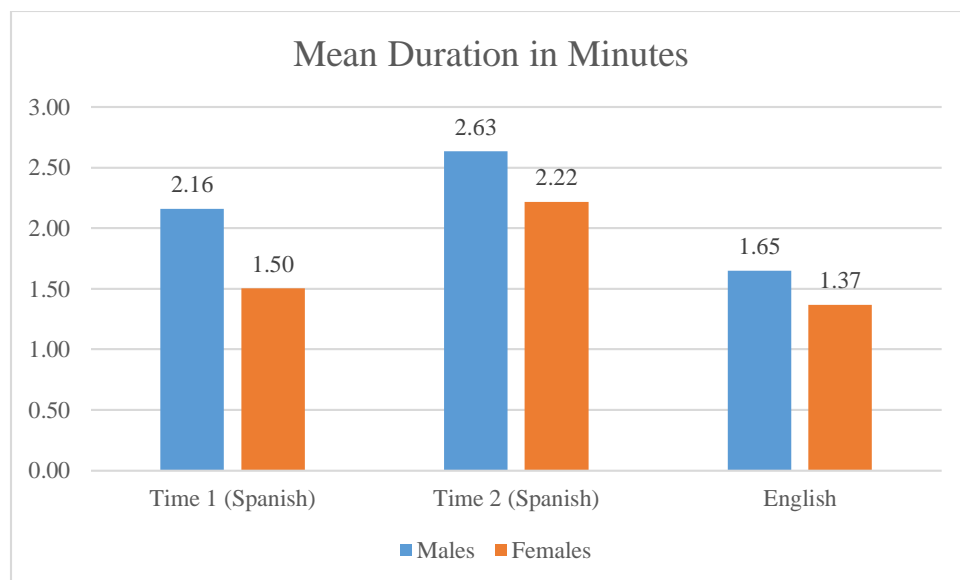
However, despite having more rises, males spoke more and had more breath units (thus yielding a higher BU/R ratio signifying less use of uptalk as a whole). For instance, **Figure 7** shows the total number of breath units produced by males and females in Spanish at both recording times. We see there that males produced considerably more breath units than females: 2585 to 2214.

Figure 7 – Total Number of Breath Units in Spanish



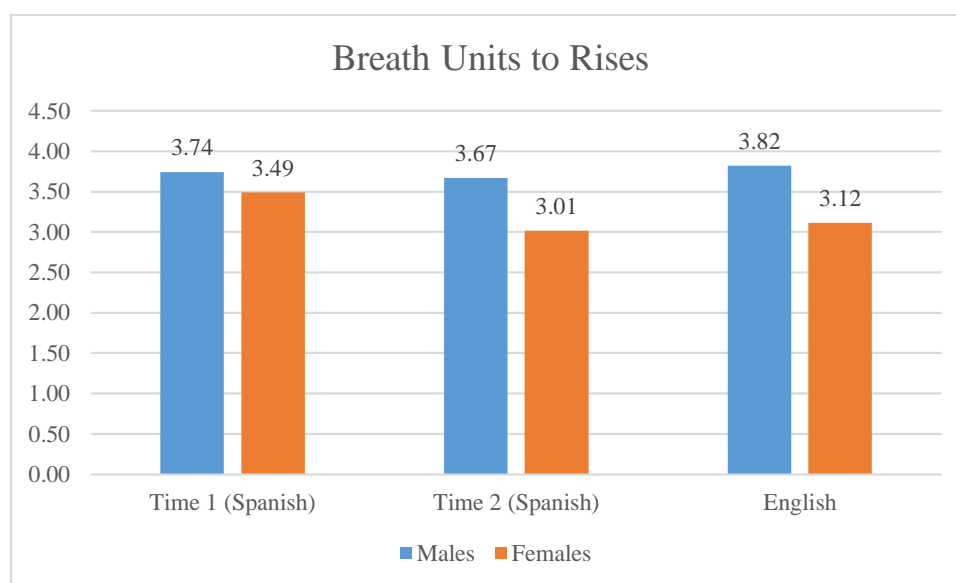
It can also be seen in **Figure 8** that on average males not only produced more breath units, but also spoke significantly longer than their female counterparts. At Time 1 in Spanish, males spoke 2.16 minutes compared to females speaking only 1.5 minutes. At Time 2 in Spanish, males spoke for 2.63 minutes compared to 2.22 minutes for females. Finally, for English, males still outspoke their female counterparts by speaking 1.65 minutes compared to 1.37 minutes for females.

Figure 8 – Mean Duration of Male and Female Narrations Across T1, T2, and English



Further, to account for variability in the duration of the stories and the rate of speech, a ratio of Breath Units to Rises (BU/R) was used in order to better standardize the results. This is shown in **Figure 9** below. On the whole, males had a higher BU/R ratio; therefore, they used comparatively fewer rises per meaningful speech than their female counterparts. In **Figure 9**, at Time 1, males had 3.74 breath units for every rise compared to 3.49 for females. Similarly, at Time 2, males had a BU/R ratio of 3.67 compared to a BU/R ratio of 3.01 for females. Finally, for English, males had a ratio of 3.82 compared to a ratio of 3.12 for females.

Figure 9 – Male and Females BU/R Ratio Across T1, T2, and English



3.2 Analyzing Individual Trends

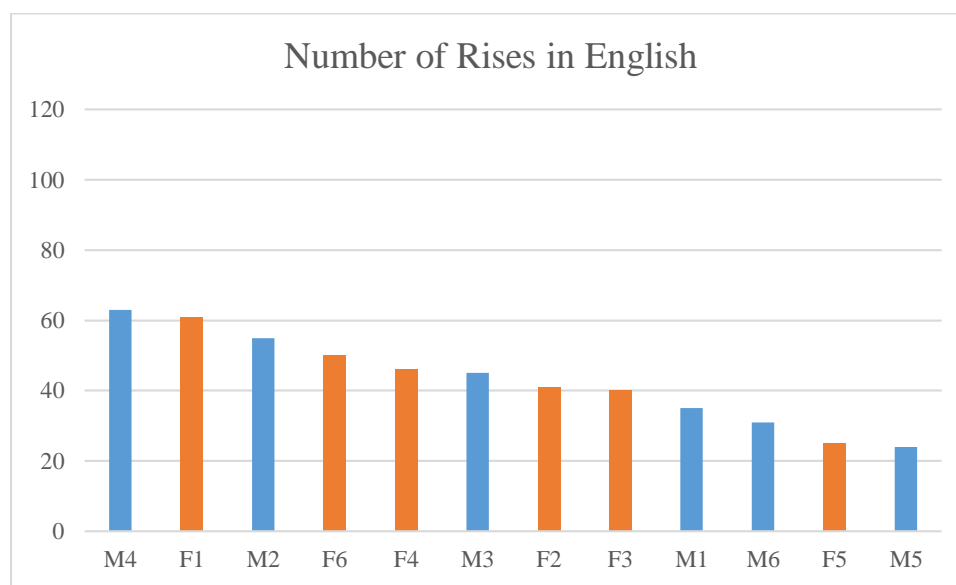
Next, it is important to understand exactly how each individual trend affects that of the whole data set. To do this, it will be useful to investigate each individual's results compared to that of their gender and the grouping as a whole. While there does not appear to be a single unifying trend that *all* females use more rises than *all* males, since some males used uptalk more than some females, there is certainly evidence showing that males generally use fewer rises than their

female peers – according to **Figure 9** above. Further, while uptalk clearly transfers from the L1 to the L2, there is no clear distinction between the frequency of occurrences.

3.2.1 Individuals Compared to the Whole – Telling the Story

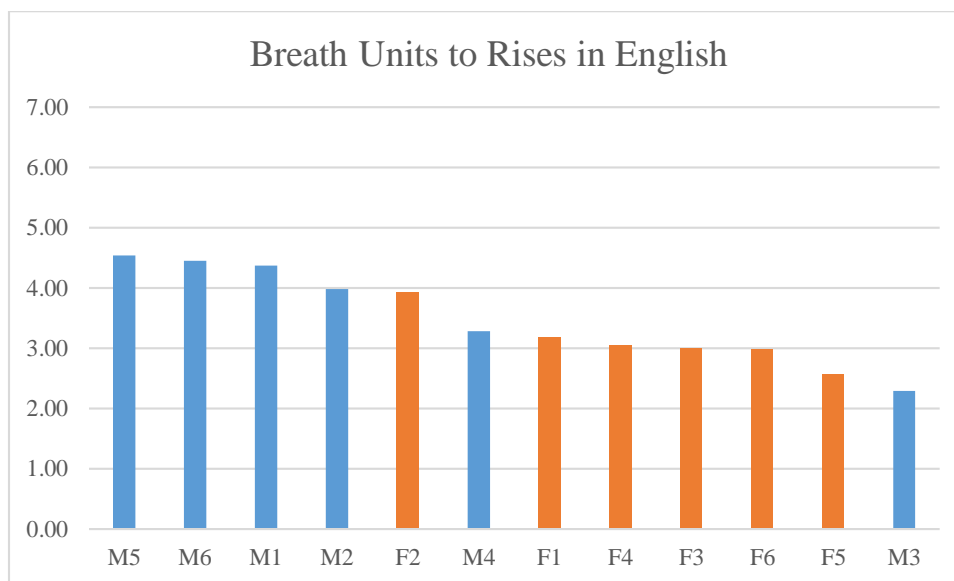
First, it is imperative to establish a baseline for each speaker in their L1 in order to determine how often rises are used in the L2 compared to the speakers' native language. Thus, in **Figure 10** below, one can clearly see the total number of rises across all twelve speakers in English: from M4 at 63 to M5 at 24.

Figure 10 – Total Number of Rises in English for All Speakers



Next, **Figure 11** shows that the number of total rises has little bearing on how many rises they are using compared to the overall number of breath units from M5 at 4.54 and M3 at 2.29. As **Figure 11** demonstrates, males generally, have higher BU/R ratios, indicating that they are using comparatively fewer rises for a given amount of narration.

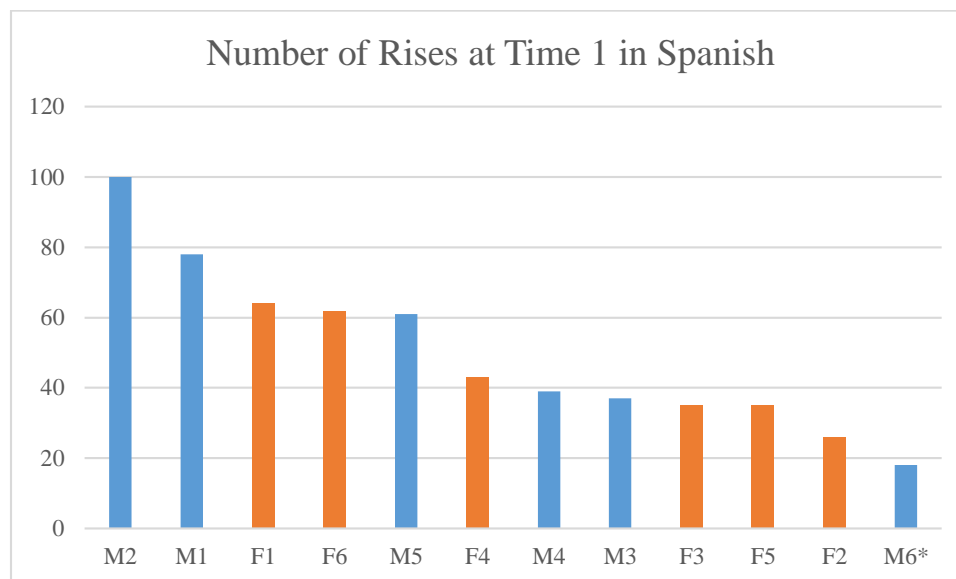
Figure 11 – BU/R Ratio in English for All Speakers



The two graphs above serve two purposes: they show that uptalk does occur relatively frequently in narrative English and that it occurs for both males and females with differing frequencies, though favoring males at the higher end of the BU/R ratio.

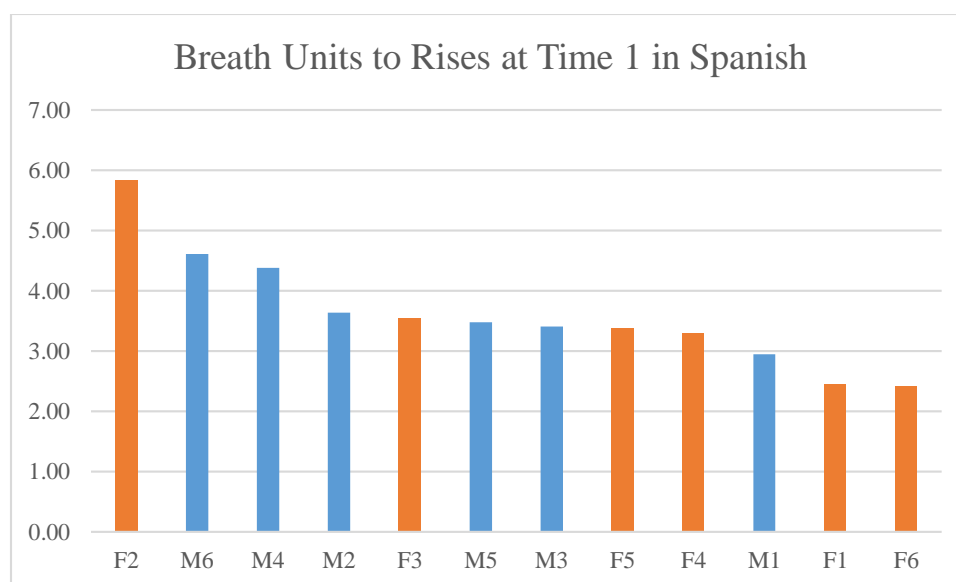
Next, it is important to explore each speaker's Spanish data at Time 1 to see how each speaker transferred his or her use of uptalk in English to narrative Spanish and to examine if those who used rises frequently in English would use them with a comparable frequency in Spanish. **Figure 12** shows the total number of rises at Time 1 in Spanish from M2 at 100 and M6 at 18. It should also be noted that M6 only narrated one video at this time due to a software malfunction during recording. However, since his BU/R ratio will not be materially affected, M6 was not omitted.

Figure 12 – Total Number of Rises at Spanish Time 1 for All Speakers



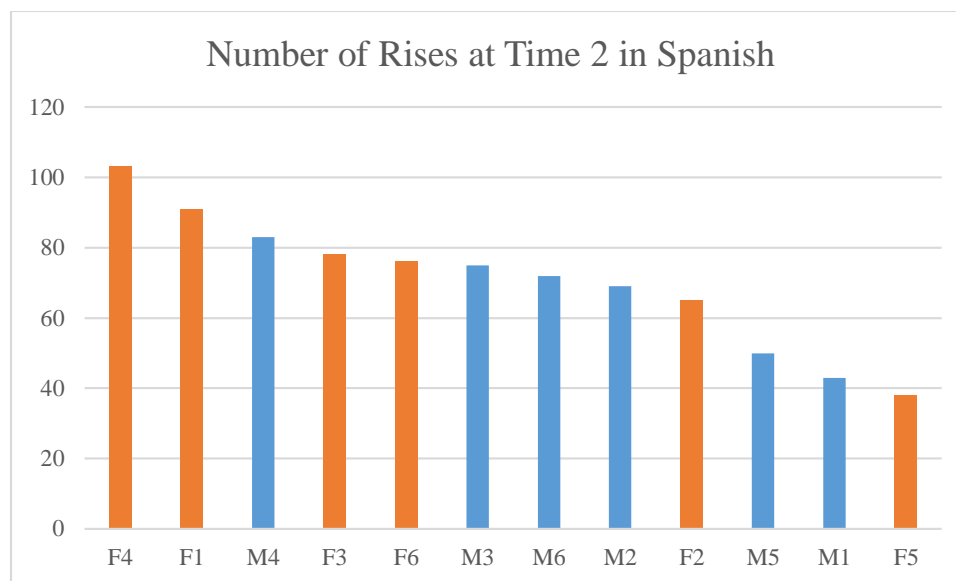
Next, one can compare the number of rises to the BU/R ratio for Time 1 in Spanish. While the results are similar to the results of the English Narrations (five out of the seven highest ratios are male), there does appear to be an abnormally high ratio from F2 – a potential outlier that will be examined later. **Figure 13** below shows the results of the ratios from F2 at 5.85 BU/R to F6 at 2.42 BU/R.

Figure 13 – BU/R Ratio at Spanish Time 1 for All Speakers



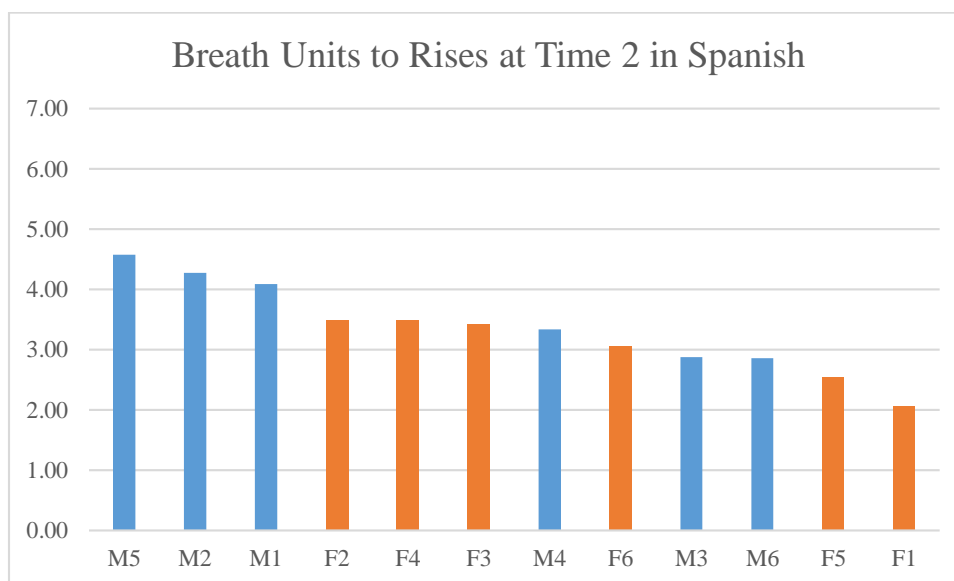
Finally, with that basis for analysis established, one can look into how each speaker's Spanish changed over time after six weeks studying abroad. Similar to the previous two charts on the total number of rises, **Figure 14** shows the number of rises at Time 2 in Spanish ranging from F4 to F5 with their number of rises totaling 103 and 38, respectively.

Figure 14 - Total Number of Rises at Spanish Time 2 for All Speakers



When adjusting from rises to the BU/R ratio, a familiar pattern appears in which males dominate the higher end of the ratio, taking the top three spots by a relatively wide margin. **Figure 15** shows the relationship below with values ranging from M5's 4.58 to F1's 2.07.

Figure 15 – BU/R Ratio at Spanish Time 2 for All Speakers

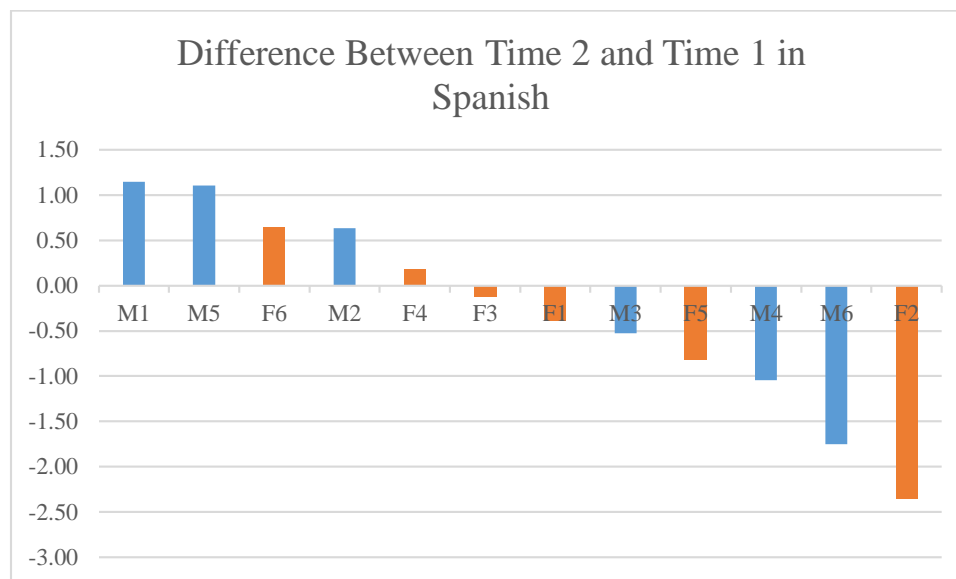


In summary, these data show clearly that across the three instances of recordings – Time 1, Time 2, and English – males use comparatively fewer rises for a given amount of breath units. This effect can also be seen in the condensed graph, **Figure 9**, that details the BU/R ratio for males and females across the three categories.

3.2.2 The Six Week Difference

After six weeks, it was conjectured in Hypothesis 2 that the students' speech would become more native like – meaning a decrease in the number of rises per breath unit, or an increase in the BU/R ratio. However, upon further examination, there was no overall trend in the data that indicated that students became more native-like during the six-week period. The difference between Time 2 and Time 1 Spanish ratios is shown in **Figure 16** in which the largest increase was 1.14 and the largest decrease was 2.35 for M1 and F2, respectively.

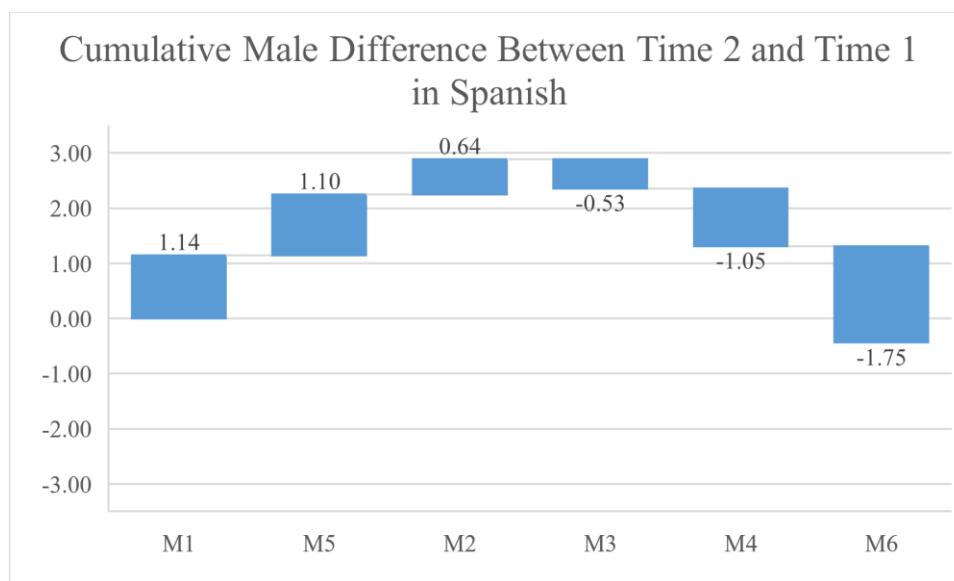
Figure 16 – Difference Between Spanish Time 2 and Time 1 for All Speakers



As depicted above, it seems as though males and females changed an indistinguishable amount as a gender, with some large swings offsetting others. Next, it may be useful to determine outliers from the group by analyzing the speakers according to their gender and adjusting the analysis accordingly.

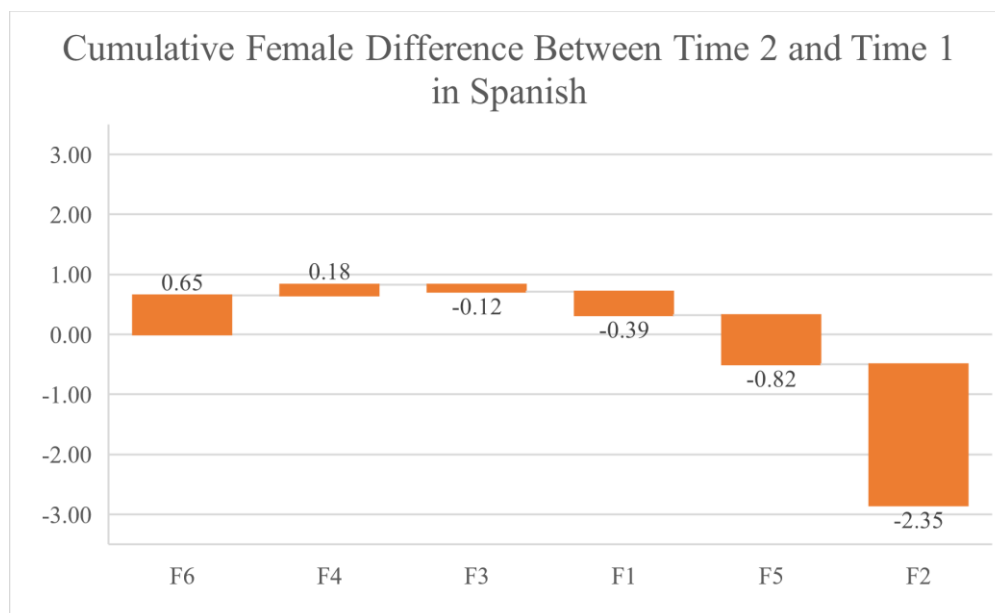
Figure 17 below represents the cumulative difference for males between Time 1 and Time 2 in Spanish. From the data, it appears that three people used fewer rises and three people used more rises for a small cumulative difference slightly below zero – meaning that the BU/R ratio actually decreased contrary to Hypothesis 2.

Figure 17 – Difference Between Spanish Time 2 and Time 1 for Males



However, as **Figure 18** below shows, only two females used fewer rises compared to breath units while four females actually used more – with a notable downward shift from F2. Unlike the males, who barely changed in their use of uptalk from Time 1 to Time 2, females actually used a significant amount more for a marked decrease in the BU/R ratio.

Figure 18 – Difference Between Spanish Time 2 and Time 1 for Females



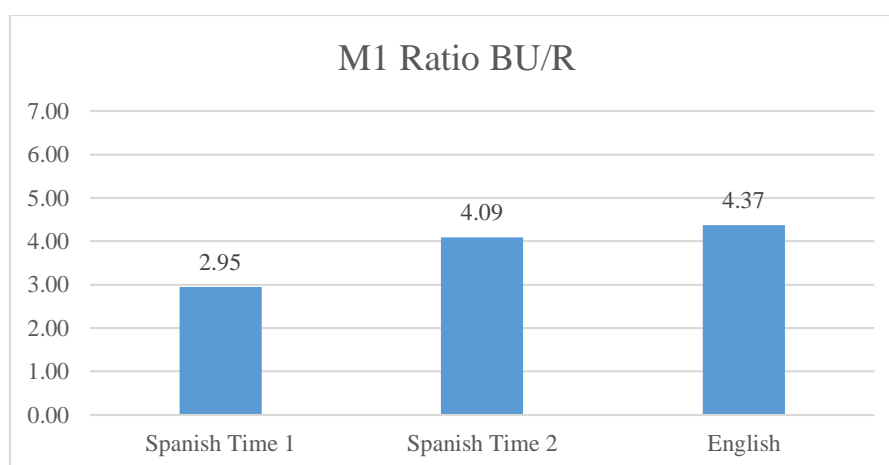
In summary, while there is no discernable trend in the data showing whether speakers became more native-like, an interesting comparison can be made between the change in BU/R ratio for males and females. It seems that over time, for males, the average change in the ratio is close to 0, with the three speakers whose ratios decreased offsetting the three increases. Conversely, female speakers actually used comparatively more rises over time – largely due to the effect of F2.

3.2.3 Individual Results

Next it is important to consider all of the individual results in order to determine if some may stand out as outliers that could materially alter the analysis and conclusions of the study.

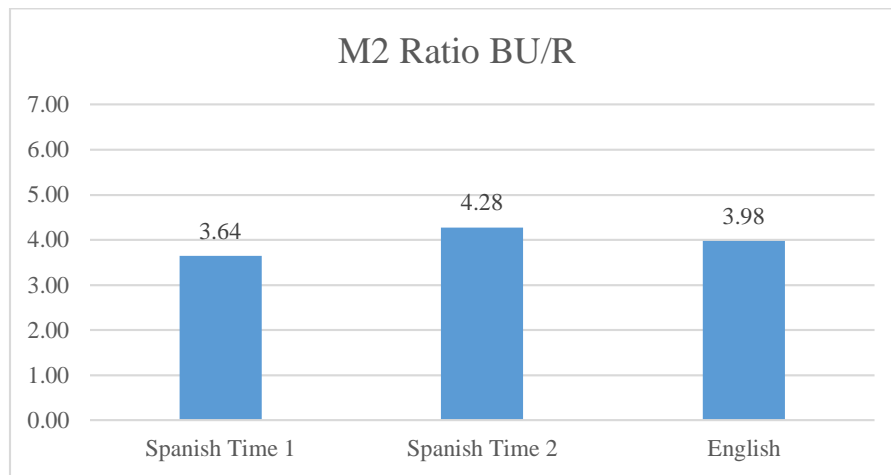
M1

In English, speaker M1 uses fewer rises per breath unit than in his Spanish at Time 1 and his Spanish at Time 2. Additionally, he uses fewer rises per breath unit over time in Spanish (2.95 at Time 1 to 4.09 at Time 2).

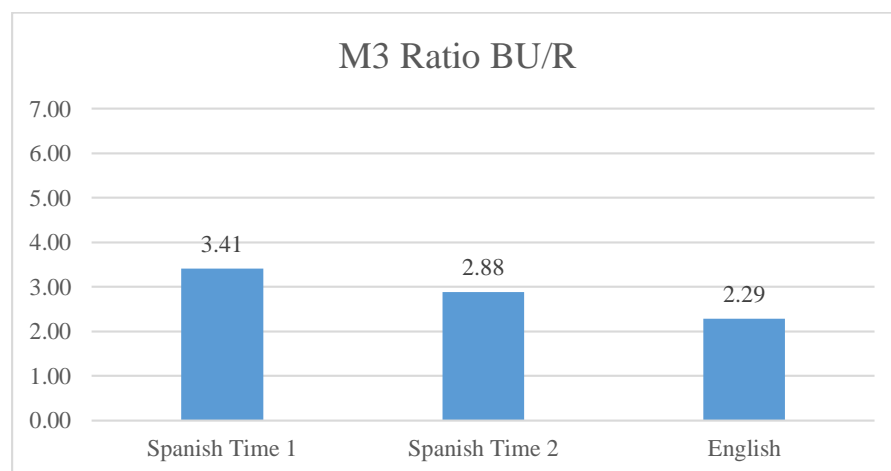


M2

In English, speaker M2 uses fewer rises per breath unit than in his Spanish at Time 1, but more rises than his Time 2. Additionally, he uses fewer rises per breath unit over time in Spanish (3.64 at Time 1 to 4.28 at Time 2).

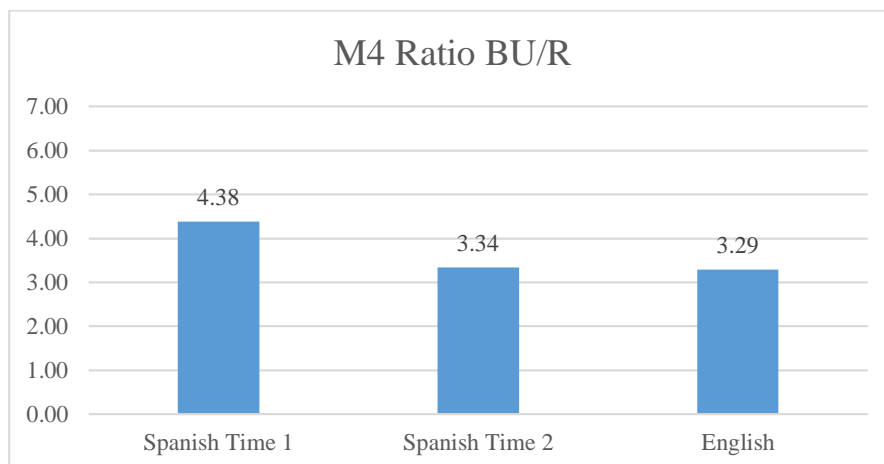
**M3**

In English, speaker M3 uses more rises per breath unit than in his Spanish at Time 1 and his Spanish at Time 2. Additionally, over time he uses more rises per breath unit in Spanish (3.41 at Time 1 to 2.88 at Time 2).

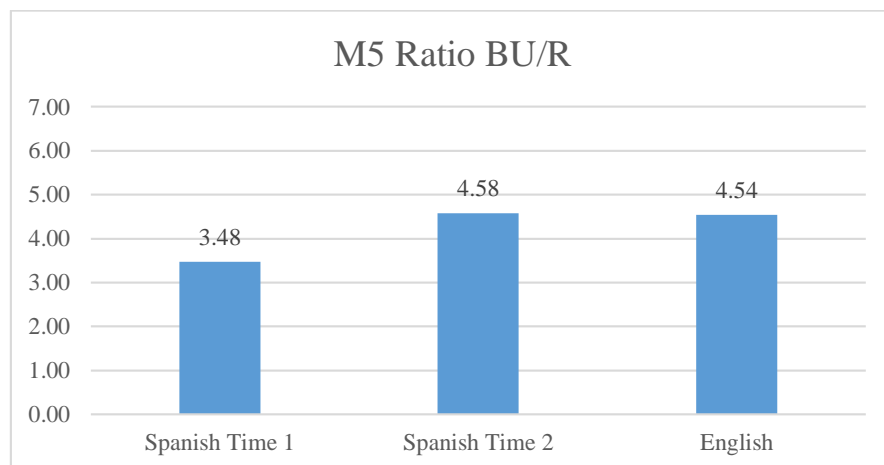


M4

In English, speaker M4 uses more rises per breath unit than in his Spanish at Time 1 and his Spanish at Time 2. Additionally, over time he uses more rises per breath unit in Spanish (4.38 at Time 1 to 3.34 at Time 2).

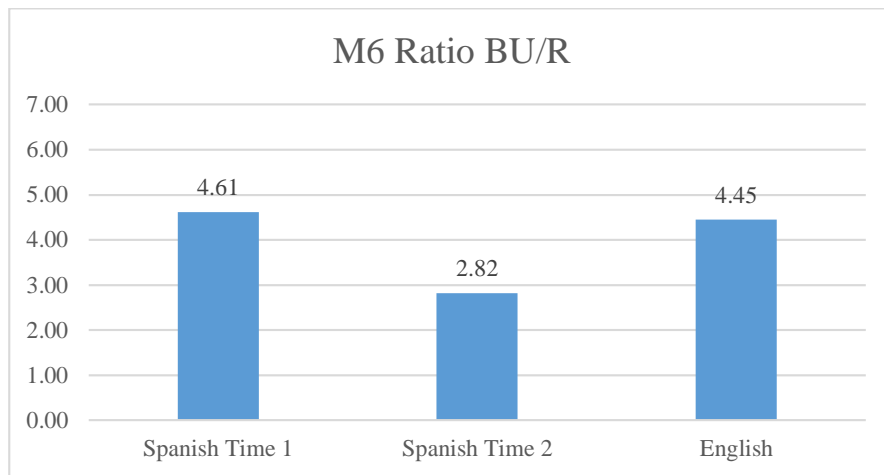
**M5**

In English, speaker M5 uses fewer rises per breath unit than in his Spanish at Time 1, but more rises than his Time 2. Additionally, he uses fewer rises per breath unit over time in Spanish (3.48 at Time 1 to 4.58 at Time 2).

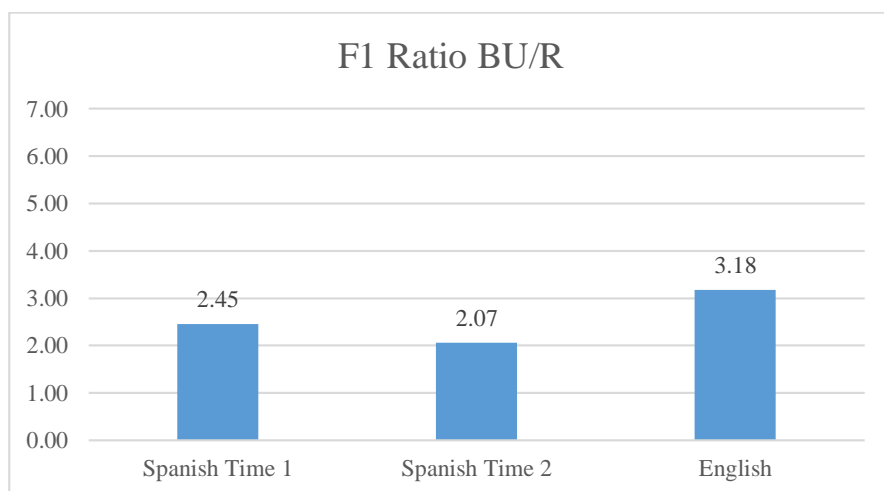


M6

In English, speaker M6 uses more rises per breath unit than in his Spanish at Time 1, but fewer rises per breath unit than his Spanish at Time 2. Additionally, he uses more rises per breath unit over time in Spanish (4.61 at Time 1 to 2.82 at Time 2).

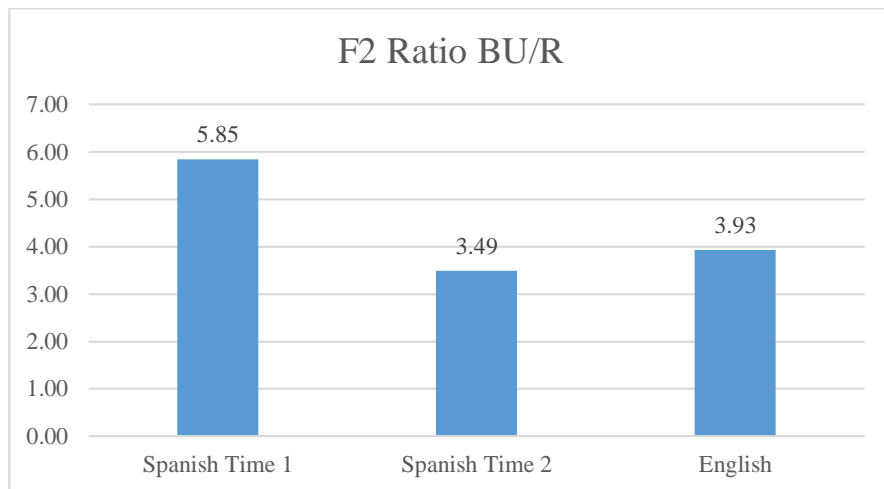
**F1**

In English, speaker F1 uses fewer rises per breath unit than in her Spanish at Time 1 and her Spanish at Time 2. Additionally, she uses more rises per breath unit over time in Spanish (2.45 at Time 1 to 2.07 at Time 2).

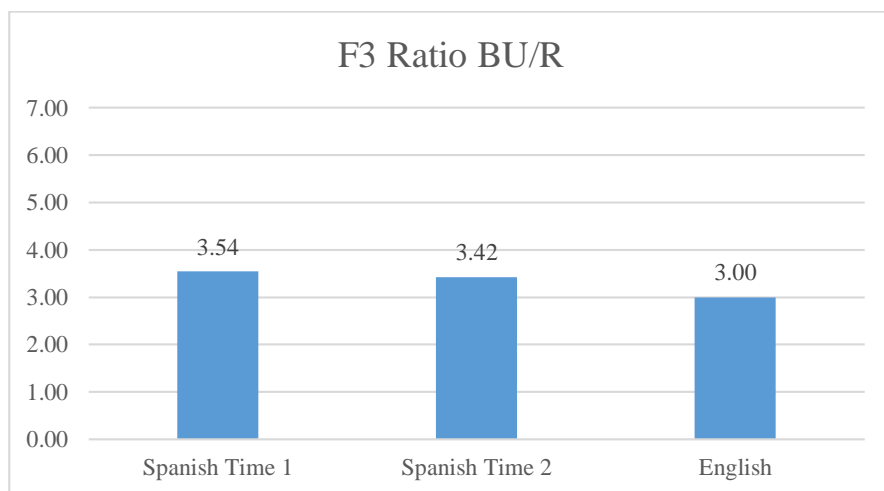


F2

In English, speaker F2 uses more rises per breath unit than in her Spanish at Time 1, but less rises than her Spanish at Time 2. Additionally, she uses more rises per breath unit over time in Spanish (5.85 at Time 1 to 3.49 at Time 2).

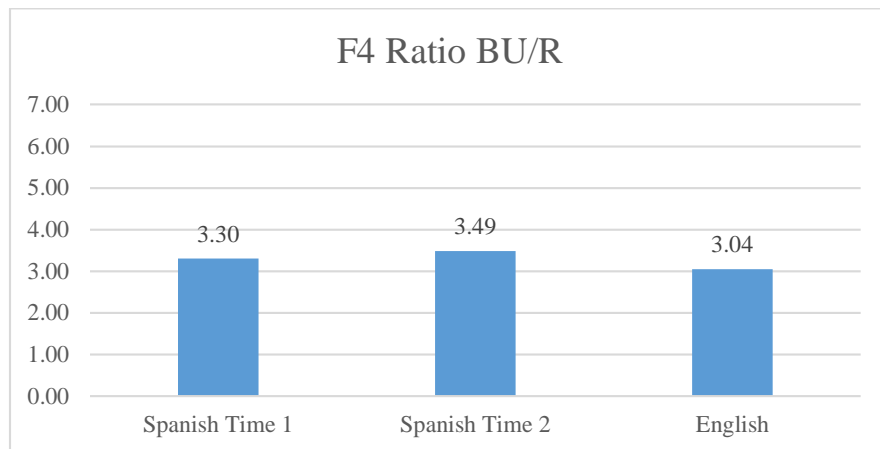
**F3**

In English, speaker F3 uses more rises per breath unit than in her Spanish at Time 1 and her Spanish at Time 2. Additionally, over time she uses more rises per breath unit in Spanish (3.54 at Time 1 to 3.42 at Time 2).

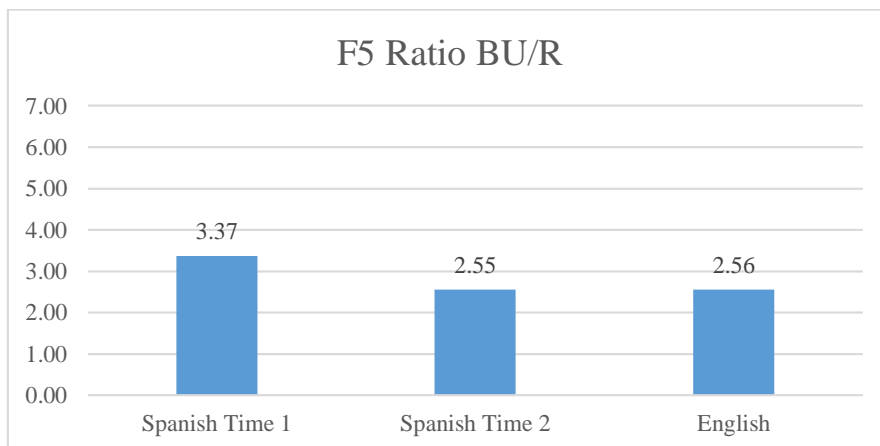


F4

In English, speaker F4 uses more rises per breath unit than in her Spanish at Time 1 and her Spanish at Time 2. Additionally, over time she uses more rises per breath unit in Spanish (3.30 at Time 1 to 3.49 at Time 2).

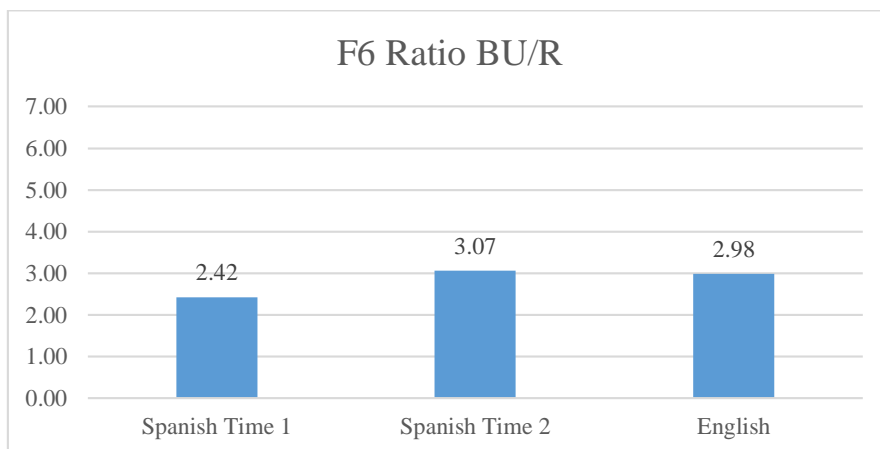
**F5**

In English, speaker F6 uses more rises per breath unit than in her Spanish at Time 1, but fewer rises per breath unit than her Spanish at Time 2. Additionally, she uses more rises per breath unit over time in Spanish (3.37 at Time 1 to 2.55 at Time 2).



F6

In English, speaker F6 uses fewer rises per breath unit than in her Spanish at Time 1, but more rises per breath unit than her Time 2. Additionally, she uses fewer rises per breath unit over time in Spanish (3.48 at Time 1 to 4.58 at Time 2).

**3.2.4 Summary of Individual Results**

In the following two tables, the results are compiled for the number of breath units, rises, ratios, and lengths of the narrations. While the relationship between the transfer of uptalk from the L1 to the L2 does not have any observable patterns between English and Spanish, it is clear that speakers are using uptalk regularly and largely to the same degree between the two languages. See below for **Figure 19** and **Figure 20** about male and female speakers, respectively.

Figure 19 – Male Statistics

M1 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	230	78	2.95	0.34	111.13	138.18	124.655
Spanish Time 2	176	43	4.09	0.24	90.97	96.13	93.55
English	153	35	4.37	0.23	65.36	88.17	76.765

M2 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	364	100	3.64	0.27	228.77	233.47	231.12
Spanish Time 2	295	69	4.28	0.23	209.32	182.15	195.735
English	219	55	3.98	0.25	157.15	119.58	138.365

M3 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	126	37	3.41	0.29	68.82	76.9	72.86
Spanish Time 2	216	75	2.88	0.35	156.95	101.72	129.335
English	103	45	2.29	0.44	53.67	72.19	62.93

M4 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	171	39	4.38	0.23	64.57	155.31	109.94
Spanish Time 2	277	83	3.34	0.30	185.65	239.6	212.625
English	207	63	3.29	0.30	131.51	134.3	132.905

M5 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	212	61	3.48	0.29	142.38	124.6	133.49
Spanish Time 2	229	50	4.58	0.22	149.67	206	177.835
English	109	24	4.54	0.22	63.32	68.24	65.78

M6 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	83	18	4.61	0.22	105.99	N/A	105.99
Spanish Time 2	206	72	2.86	0.35	112.59	166.12	139.355
English	138	31	4.45	0.22	118.84	114.7	116.77

Figure 20 – Female Statistics

F1 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	157	64	2.45	0.41	62.12	116.06	89.09
Spanish Time 2	188	91	2.07	0.48	85.56	109.09	97.325
English	194	61	3.18	0.31	109.58	108.69	109.135

F2 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	152	26	5.85	0.17	80.95	104.27	92.61
Spanish Time 2	227	65	3.49	0.29	106.27	138.25	122.26
English	161	41	3.93	0.25	83.02	104.43	93.725

F3 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	124	35	3.54	0.28	43.44	84.03	63.735
Spanish Time 2	267	78	3.42	0.29	89.05	205.65	147.35
English	120	40	3.00	0.33	56.44	73.91	65.175

F4 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	142	43	3.30	0.30	79.75	111.82	95.785
Spanish Time 2	359	103	3.49	0.29	190.15	233.14	211.645
English	140	46	3.04	0.33	75.96	101.59	88.775

F5 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	118	35	3.37	0.30	83.87	72.55	78.21
Spanish Time 2	97	38	2.55	0.39	53.71	65.73	59.72
English	64	25	2.56	0.39	41.48	44.56	43.02

F6 Results	Breath Units	Rises	Ratio BU/R	Ratio R/BU	Length of 1st	Length of 2nd	Average Length
Spanish Time 1	150	62	2.42	0.41	103.7	140	121.85
Spanish Time 2	233	76	3.07	0.33	137.65	183.72	160.685
English	149	50	2.98	0.34	93.2	91.91	92.555

3.3 Recognizing Outliers

Considering all of the speakers, there do seem to be two clear outliers who are shifting the data away from potentially clearer conclusions, M1 and F2. Therefore, it seems imperative that at least some qualitative research is conducted in order to better understand their speech patterns. First, M1 seems to drastically reduce his ratio of BU/R between Time 1 and Time 2 and also from Time 1 to English. M1 sounded rushed and slightly nervous throughout his two stories at Time 1. However, upon listening to his speech at time 2, it is much slower, more relaxed with fewer mistakes. When he was new to the activity at Time 1, he may have let his nervousness project uptalk more frequently as a form of showing uncertainty. See **Figure 21** and **Figure 22** below for reference. Both of these diagrams depict the beginning of each of the first stories at Time 1 and Time 2, respectively. As one can clearly see, not only did this speaker use one more rise in roughly the same time frame, but his rises at Time 1 are much longer and more pronounced than at Time 2.

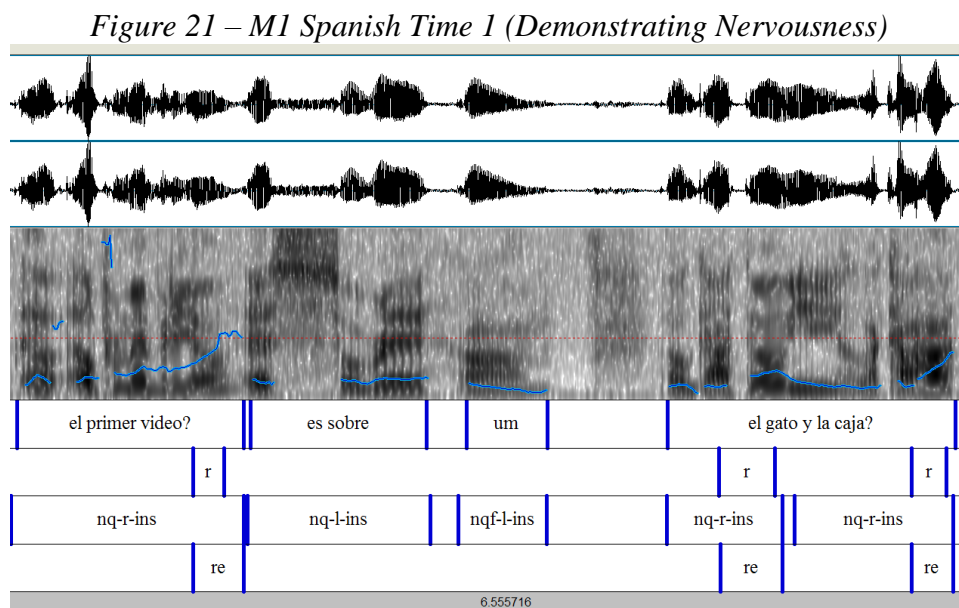
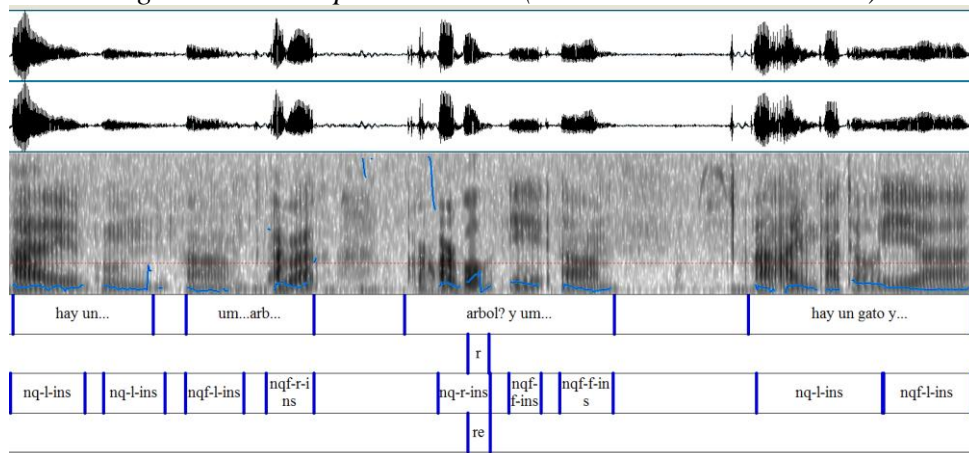


Figure 22 – M1 Spanish Time 2 (More Calm and Collected)



On the other hand, F2 seems to drastically increase her ratio of breath units to rises: from barely using any at Time 1 to using them frequently at Time 2 and in English. Qualitatively, she seems to use a rather monotonous tone so that her rises at the beginning of the story are not as pronounced, long, or as steep as many others. To compare, at Time 2 she is speaking much more quickly with a lot more excitement and emotion. See **Figure 23** and **Figure 24** for reference. Oddly, even though she sounds more confident in her Spanish, she is not only producing more rises, but is also producing more defined rises. In this case, I would surmise that she is now trying to include any listener by using rises as a way to make him or her feel more engaged.

Figure 23 – F2 Spanish Time 1 (Slow, Monotonous Tone)

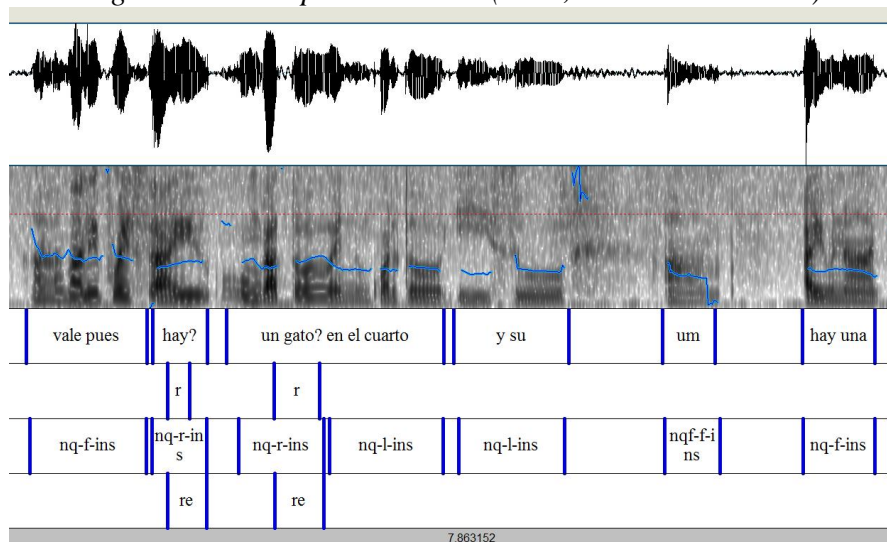
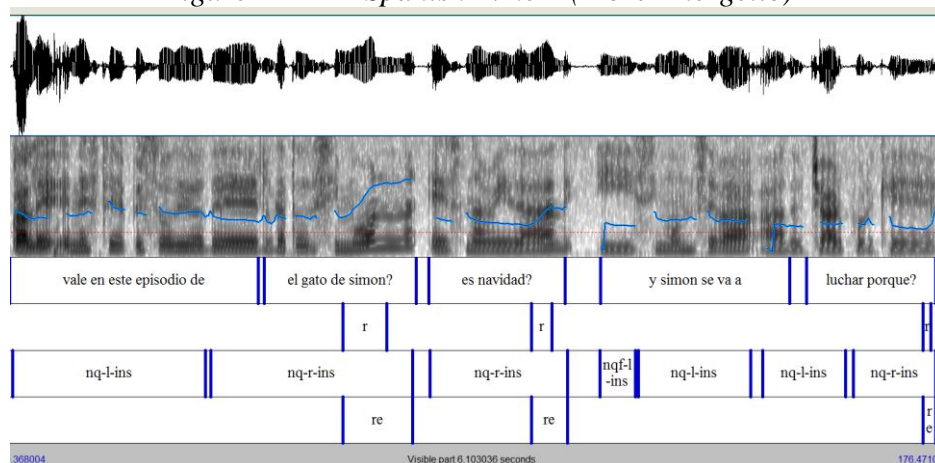


Figure 24 – F2 Spanish Time 2 (More Energetic)



While the two observations may, at first glance, appear to contradict each other, it appears that both speakers are using uptalk in different ways. First, M1 initially uses uptalk as a way to express uncertainty in his command of Spanish at Time 1 (i.e. in uncertain verb conjugations or unknown vocabulary). However, by Time 2, it seems that this uncertainty has diminished after the six-week period. On the other hand, F2 appears to use uptalk not as much to express uncertainty, but to demonstrate her energy level or enthusiasm – so by Time 2 when she is more comfortable she uses more uptalk to convey excitement and include others. This manner of speech is similar to that described by Jessica Grose in Section 1.2 of the Introduction.

4. Discussion

Overall, the study will open new pathways of exploration into the bilingual transfer of uptalk and build upon the foundations set by others, especially in regard to the gender-based differences among males and females, the use of developmental studies to investigate changes over time, and the use of novel metrics to better compare speakers.

4.1 Uniqueness of the Study – A New Contribution to Linguistic Studies

The uniqueness of this study poses three key advancements for the world of linguistic studies.

First and most importantly, the monolingual nature of past studies has left a gap in our understanding of uptalk as a linguistic phenomenon. This study has been able to demonstrate that uptalk is not just a habit to be broken, as many in the popular media would suggest, but rather an aspect of our L1 phonology that is so deeply ingrained that it is automatically transferred to native English speakers' L2 – as seen in Henriksen, 2016. While many studies and popular media have investigated and discussed the implications of uptalk in the L1, such in-depth analysis had not yet been investigated in regard to the effects on the L2 – a gap that needed to be filled.

Second, anecdotal evidence in the media and scientific linguistic studies have all recorded speakers at one particular time in order to attain their data – another unique aspect of the methods presented in this study was that the data in this study sought to investigate the developmental nature of the phenomenon. By monitoring speakers over a period of six weeks, we were able to see how the use of uptalk may vary over time – potentially leading to future longitudinal studies of speakers' use of uptalk over a number of years.

Finally, after noticing a potential flaw in accounting for rises in past studies, this study was able to introduce a novel metric, the Breath Units to Rises ratio, in order to adjust for possible sources of variation in the data. The two key confounding variables in the narrations were the duration of the stories and the speed with which each language learner spoke – both directly affecting the number of rises and breath units in a narration. Therefore, the BU/R ratio is better suited to

compare one speaker's use of uptalk to another speaker's use by taking into account the number of rises per unit of meaningful speech.

4.2 Research Questions and Answers – Where do the Hypotheses Stand?

After much discussion and presentation of the results, it is important to return to the research questions and hypotheses to determine how the inferences gathered from the data affect the initial inquiries.

4.2.1 Question 1: Do native speakers of English use uptalk when they speak Spanish and does gender have an effect on the frequency of occurrences?

In response to the first question, it was expected that learners of Spanish would transfer English patterns of uptalk into Spanish (at Time 1), because all aspects of first language phonology are initially transferred into second language phonology. Based on **Figure 8** in Section 3.1.1 in the Results, it is made apparent that the use of uptalk is readily transferred from English to Spanish, at relatively the same frequency. *Confirming the first part of Hypothesis 1.*

Second, it was also expected that if the stereotype of the 'valley girl' were to be confirmed and that the Ritchart and Arvanti article would remain true, then females should use comparatively more rises than their male counterparts in both English and Spanish. Based on **Figure 8** mentioned above, males did, in all three cases, have a higher BU/R ratio – signifying less use of uptalk than their female peers. *Confirming the second part of Hypothesis 1.*

4.2.2 Question 2: Do native speakers of English modify their use of uptalk over time during a study abroad experience in Spain and does gender have any effect on the outcome?

Based on the second question, it was hypothesized that learners of Spanish would use less uptalk over time (from Time 1 to Time 2), since native speakers of Spanish do not use uptalk and that the second language learners should become more native like over time. However, based on the graphs presented in “3.2.2 The Six Week Difference” (namely **Figure 16**), there is not enough evidence to say that speakers became more native like. This likely indicates that a six-week developmental study is not long enough a period to determine if uptalk will decrease in its frequency over time. *Hypothesis 2 is unclear.*

4.2.3 Question 3: How does the frequency of uptalk in Spanish compare to the use of uptalk in English for non-native speakers?

Finally, the third question led to the third hypothesis in which it was expected that there would be no difference between speakers’ L1 and L2 at Time 1, given that all aspects of the L1 phonology transfer to the L2. Given the very similar BU/R ratios between Time 1 Spanish and English in **Figure 8** presented in 3.1.1, it is evident that uptalk is deeply engrained in the L1 that it is transferred to the L2. *Confirming the first part of Hypothesis 3.*

It was also surmised that as speakers became more native like at the end of the study abroad program, that they would use less uptalk in Spanish compared to the native English. However, since the period was not long enough in order for speakers to adopt more of the L2 phonology, there is not enough evidence to shed light on the issue. *The second part of Hypothesis 3 is unclear.*

4.3 Broader Implications

Overall, the study has uncovered some very interesting and notable findings and made numerous contributions to the linguistic community. First and foremost, it was confirmed that uptalk is not just a habit to be broken, but a fundamental part of the L1 phonology for native English speakers. In addition, by providing a more reliable metric for the analysis of rises, the BU/R ratio, it was determined across Time 1, Time 2, and English narrations that males systematically use less rises than their female counterparts – confirming the findings of Ritchart and Arvanti, but calling into question the findings of Armstrong et al. (2015).

4.3.1 Implications for the Popular Understanding

With the broader implications in mind, the effect of the phenomenon on the popular understanding of the media should be considered. It is evident from the introductory analysis presented above that uptalk is present across New Zealand, Australia, the United Kingdom, and the United States. However, no previous study has directly investigated uptalk in the Midwest United States or, even more specifically, Michigan (most others focus on the difference between Southern California and the East Coast). Thus, by using a different subject pool, it can be surmised that uptalk is relatively ubiquitous across the United States – especially if the “General American” or “Midwestern Accent” can be influenced by such a phenomenon. Therefore, as it becomes more popular across the U.S. and English speaking world, the negative stigmas surrounding its use should diminish over time (Gorman, 1993). Further, it appears that the stereotype of the “valley girl” may have some basis in fact since it was shown that gender does, in fact, play a role – with females using uptalk more frequently than males.

4.3.2 Implications for Existing Linguistic Studies

This study also has a large set of implications for the scientific community. Since no previous studies have looked into either the transfer of uptalk from the L1 to the L2 or the use of a developmental study to investigate the change in use over time, it may spur more researchers to begin studies based on this methodology. Second, while past investigations have found conflicting evidence for the role of gender in the frequency of uptalk, hopefully the use of a new ratio to measure the relative frequency of rises to meaningful speech may provide a more accurate measure and show that males, on average, use less uptalk than females. Finally, this research has shown that uptalk is not just “valley girl speech” that affects members of the younger generation and can be outgrown, but rather an aspect of an already complex L1 phonology that will be transferred to other languages.

4.3.3 Implications for Areas Not Yet Studied

Finally, there are some implications that are not covered in past studies and only hinted at in this one: namely the effect of time abroad on the use of uptalk and the shape of the rises in English compared to those in Spanish. Thus, since six weeks did not seem to be enough time to see if speakers would become more native-like and decrease their use of uptalk, it would be interesting to see if future studies could be conducted with varying developmental time periods. Also, one of the key findings of Armstrong et al. (2015) was that even though the researchers did not find a difference in the frequency of rises, they found that females in the Southern California region used rises that were longer and sharper than other speakers. Therefore, it would be useful to then see if the shapes of the rises differed between speakers’ English and Spanish.

5. Conclusion and Future Work

Overall, a large quantity of data has been analyzed and many important findings have been made. Also, while numerous inferences can be made about the data, the most significant portion of the study was to be able to show analytically that uptalk is transferred from English to Spanish at relatively the same frequency – further proving that all aspects of the L1 phonology are transferred to the L2. Second, since the effect of gender is widely debated in the scientific community, by providing a more accurate measure of the phenomenon and by presenting evidence that males use uptalk less than females, this study is likely to modify our understanding of how uptalk is used in everyday speech.

Despite examining a lot of data and finding some very impactful results, there is still more that can be done – in future work. Using the labeling that has been done, there is much more to be gleaned from these particular speakers. For instance, in order to determine how rises would differ between males and females or between English and Spanish, it would be useful to look into the duration of the rises, the slope of the rises, and the ratio from the length of breath unit to the length of rise – all pieces of data that have been labelled already. All of these metrics could be useful in determining if frequency is not the only factor surrounding the perceptions of uptalk, but also the shape of the rises relative to the length of breath units.

In addition, if more time were available to analyze the data in further depth, another hypothesis could be formed – namely that we would expect the phonetic properties of the uptalk rises that learners use in Spanish to be similar to the rises that they use in English, since they presumably

transfer all aspects of uptalk rises from English to Spanish. Such a phenomenon has been witnessed before through the transfer of the aspiration of occlusive, non-voiced consonants such as /p,t,k/ from English to Spanish. For instance, for each rise in a sentence, several measurements were taken. First, the duration of the rise (from beginning to peak) was recorded. Second, the duration from the beginning of the rise to the end of the breath unit was recorded. Third, the overall length of the breath unit was recorded for comparison of all three metrics. All of these measurements could be used to later identify differing characteristics between English and Spanish and males and females.

In the end, while a lot of information is known on the subject, there will always be more to uncover regarding the ever-changing field of linguistics.

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