Vowel Weakening and Deletion in Fronterizo Spanish

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Abstract:

The current literature and research previously supported claims that the vowels of the Spanish language remained stable throughout all circumstances (Navarro Tomas, 1977). However, my research shows that when monosyllabic words with a nasal consonant are in contact with words beginning with the following phonemes, [f], [l], [m], [g], [b], and [p], deletion and weakening can occur. These monosyllabic nasal words usually appeared from the following, *me, mi, en,* and un. This confirms research done by Aurelio Espinosa (1925) that drew similar conclusions. However, unlike Espinosa, my research shows an expanded range of phonemes where weakening and deletion occurs.

Defining weakening and deletion:

Although similar, vowel weakening and deletion are two related but distinct phenomena. The phenomenon of vowel deletion occurs when a sound, or phoneme, ceases to be produced during the production of a ward. For example, the English word [af.tn], is commonly pronounced without the [t], [afn.]

When vowels become deleted, the following or preceding consonant often takes the places of the nucleus in the word suffering deletion. We have a great example of this below from a woman in her twenties from Ciudad Juarez now living in Las Cruces, New Mexico.

In order to explain this phenomenon further, it is necessary to talk about the structure of a syllable. Syllables can be divided into three components, the onset, the nucleus, and the coda. For example, the English word, [red] can be divided into the onset, [r], the nucleus, [e], and the

coda, [d]. Together the nucleus and the coda create what is called the rhyme. Therefore, words such as [red] and [ded] are said to rhyme, since they have the same nucleus and coda.

However, not all nuclei are vowels. If we take the English word, /ʃrt/ one can see that since the name /brt/ rhymes with it. This is what Espinosa means by calling this phenomenon a syllabic consonant (1925).

In this instance of deletion, the previous monosyllabic word loses its nucleus, leaving the remaining consonant to take the place of the nucleus in the syllable so that, although, [m.pu̯en.te] only contains two vowels, the ghost of the [u] remains in what was previously the coda of the previous syllable.

FJ29: E: En algunos lugares pero en realidad es más como cuando esta [m.pu̯en.te]

In this example we can see that the [m] becomes syllabic with the absence of its preceding [u]. It is also noteworthy that in cases of deletion, the [n] in words such as *en* becomes assimilated to ease the production of the following sound, given that any movement back from the lips would ease the articulation of anterior phonemes. The following example shows an instance where [un] has the [n] assimilate to [m] to ease the articulation.

FLC27: Uhhh si es claro quien es. Uhhh nosotros tenemos aquí [m.gru.po]

Vowel weakening, however, occurs when a vowel phoneme is produced with a shorter variant of measurement. In the case of this study, vowel weakening will be judged by the amount of time taken to produce the sound in milliseconds. Another English example of this phenomenon is how vowels tend to be reduced in duration after aspirated consonants, [b^{h}e:t] and [pet] for example.

Literature Review:

Since Navarro Tomas wrote that vowels in Spanish are stable (1977) the consensus has been to accept this statement. Although it is recognized that vowels in certain phonetic contexts weaken and delete themselves in Mexican dialects, ex. *Entoncs,*(Lope Blanch, 1963) there has been little research done on the vowels of the Southwestern United States. However, Eric Willis (2005) shows that the formant values of Southwestern Spanish vowels tend to centralize and show significant change in comparison to their counterparts on the other side of the Rio Grande. Furthermore, Rebecca Ronnquest (2013) shows that the vowel duration among heritage speakers of Spanish in North Carolina reduces in the time of milliseconds of production.

As previously mentioned, Lope Blanch showed that in certain phonetic contexts, common and high frequency words suffer vowel reduction such as in *antes, pesos,* and *pues* (1963). The research of Lope Blanch is particularly interesting to the ends of this project for its proof of vowel reduction in Mexico City. Lope Blanch also describes vowel reduction depending on the consonantal contexts of certain phrases. For example, he cites *vertigo* and *órgano* reducing to [bertgo] and [orgno] (1963).

These three studies suggest that vowels in US Spanish may not always stable. Furthermore, Aurelio Espinosa shows in his article *Syllabic consonants in New Mexican Spanish* (1925) that in certain multilexical contexts that vowels tend to delete themselves. Espinosa cites this phenomenon occurring in front of labial consonants that have a monosyllabic word preceding them. Ex. (mbeso) (1925). Additionally, he cites the example of (Ndedal), where the [u] in [un] is deleted to ease the articulation of the indefinite article producing the syllabic consonant, [n]. Espinosa further interests this study in that he cites this phenomenon as being universal in the state of New Mexico. However, Lipski cites this phenomenon as particular to Northern New

Mexico Spanish (2011). If this phenomenon is indeed particular to Traditional New Mexican Spanish, then it should not be expected to be heard in places as far south as Las Cruces, El Paso, or even Ciudad Juarez, Chihuahua, Mexico. Bills and Vigils (2008) describe the dialects of New Mexico as existing in two halves, the northern traditional variety and the southern border variety. According to Bills and Vigils, the southern variety represents a continuation of Mexican Spanish. This claim should be reevaluated due to the lack of linguistic, in this case particularly phonological and phonetic, research on this area, which may be indeed, the closest relative to the Traditional New Mexican Spanish (TNMS) of the north. Margarita Hidalgo further analyzes TNMS as being an extension of Mexican Spanish (1987).

This description recalls the work of Lope Blanch where, although in individual words in his case, vowel reduction occurs in consonantal contexts (1963). For example, compare the example of [m.be.so.] from Espinosa and the example of [ants.] from Lope Blanch (Lope Blanch, 1963) (Espinosa, 1925). Although the example from Espinosa occurs across the intersection of two words, nonetheless, it still occurs in consonantal contexts.

The work of Margarita Hidalgo also interests this study in that she confirms several instances of vowel instability in Chicano Spanish where interconsonontal [e] becomes [i] such as in [pi.ðiɾ] and [sos.pi.ɾo] instead of [sus.pi. ɾo] (1987).

Despite the geographic location, this phenomenon consistently turns up in contexts that Espinosa mentioned almost 100 years ago. Additionally, Espinosa cites that this phenomenon can be heard universally throughout the state of New Mexico, further calling for the reevaluation of Bills and Vigils' isogloss, or linguistic divide. This brings light to the Camino Real de Santa Fe, one of the royal roads connecting Santa Fe, New Mexico, to Chihuahua, Chihuahua, and ultimately to Mexico City. If this phenomenon is indeed something shared with the Spanish of Northern New

Mexico, this would not be anything surprising, given the fact that historically traffic with Mexico and the Spanish speaking world was done through Chihuahua (Sanz and Villa, 2011). This historic connection could possibly explain why the phenomenon is so commonly heard south of the TNMS zone.

Furthermore, anecdotally, speakers of TNMS have cited the Spanish of places as far off as Chihuahua as sounding like their dialect.

The combined work of Ronnquest, Willis, Espinosa, Lope Blanch, and Hidalgo confirms that the vowels of Spanish are not as stable as previously described.

Methodology:

This study was carried out using a smartphone to record interviews with five subjects. These interviews lasted between 10 and 50 minutes. All but two of them occurred at New Mexico State University and asked questions about life on the border and what the participants opinions and views were.

These interviews were transcribed with any outstanding phonetic phenomenon written in IPA. Later these interviews served to locate said phenomenon inside PRAAT where they were acoustically analyzed. Visual representation of the phenomenon was generated into spectrograms to clearly show the deletion and weakening of certain vowels.

In the case of deletion, showing spectrograms was enough, however, measuring vowel weakening required another metric. Instead of measuring the vowels of the participants against those of another dialect, the researcher compared the vowels of the participants against their own vowels. To do this, three vowels were selected from initial, medial, and final sections of words.

The researcher measured their length in milliseconds and then averaged their length. Vowels found to be shorter than the average duration in milliseconds were considered to have weakened.

Three of these subjects were female and two were male. All the subjects spent their formative years either completely in Ciudad Juarez or making frequent trips there. Formative years were defined as 0-10 years old. However, all the participants now reside in the United States, 3 in Las Cruces and 2 in El Paso. The participants were all between the ages of 19-29 with at least some university education. All the participants were proficient in English as well as in Spanish.

For the first three participants, a questionnaire was used in order to facilitate the interviewing process. Although the researcher used this questionnaire extensively, it was not followed to the exclusion of natural conversation with the participants. This questionnaire asked questions about life on the border and the viewpoints of those involved in the study. For the last two participants, this questionnaire was not used but rather provided several backup questions in case of necessity.

The participants in the study represent an ethnic group known as *fronterizos* Yesenia, Masias, the author of a documentary on the lives of *fronterizos*, defines *fronterizo* as a someone who has strong ties to both sides of the United States Mexican border (Burkhart, 2012) This author goes on to state that they are people from “neither here nor there” (2012) These ties can be familial, work related, historic, or constitute other forms of strong attachment to both sides.

Results:

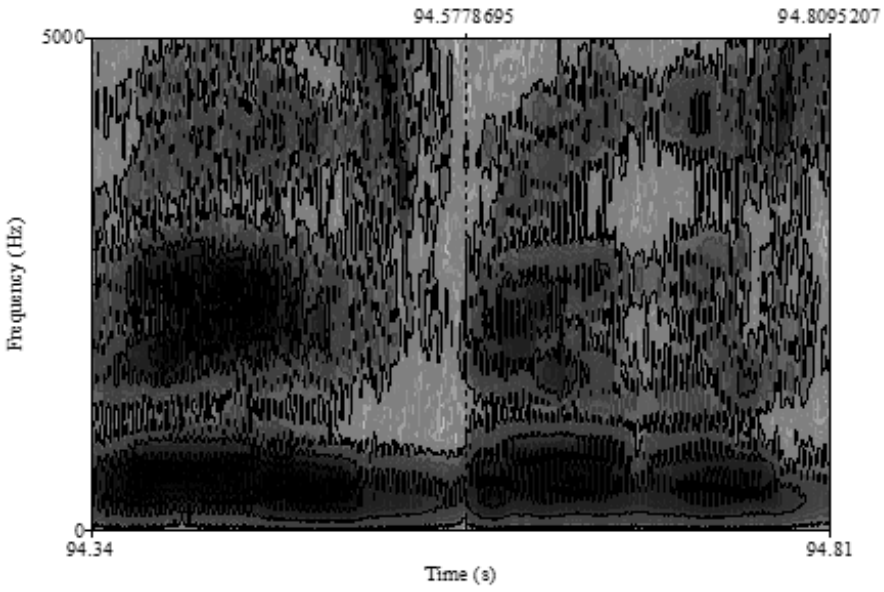
In order to explain this phenomenon, first we will talk about the vowels that weakened. Of the 5 principal vowels in Spanish, [a], [i], [u], [e], and [o], only [i], [u], and [e] showed deletion and weakening. We can explain this phenomenon with the position in which it takes to produce the sounds [a] and [o]. being back vowels, it requires more effort to delete while maintain meaning.

For example, it is more difficult to reduce the first [a] in *una chica* than it is to reduce the [u] in *un chico*. Due to place of articulation required to produce the weakened and deleted vowels, we can see that [a] and [o] are more resilient and resistant to reduction and deletion. Furthermore, [i], [u], and [e] are all relatively high vowels, [e] being slightly exceptional at mid-high. We can therefore conclude that the high vowels are more susceptible to weakening and deletion.

Another characteristic that these vowels had, was their occurrence in high frequency words. According to Mark Davies and the NOW Corpus of the Spanish Language run by BYU, *me, mi, en,* and *un* are all among the most frequent words in the Spanish Language (Davies, n.d.), with *me* having 7,531,101 entries, *mi* having 3,686,542, *en* 218,506,980, and *un* with 73,362,199.

Historically we know that syllabic nasals are unstable in Indo-European languages, for example [km.tom] to [ken.tum] (Espinosa, 1925). Furthermore, high frequency words are commonly prone to lexicalization, contractions, and phonetic changes.

The main reason for the deletion of vowels in this dialect is likely due to the principle of ease of articulation. Nasal and syllabic consonants are positioned perfectly to ease the articulation of utterances. Furthermore, this phenomenon might be lexicalized, as in the case with our first detailed analysis, [m.gus.ta.ria]. This analysis will be carried out using the following spectrogram extracted from Praat and using only the first two syllables of the phrase, [m.gus].



M G U S

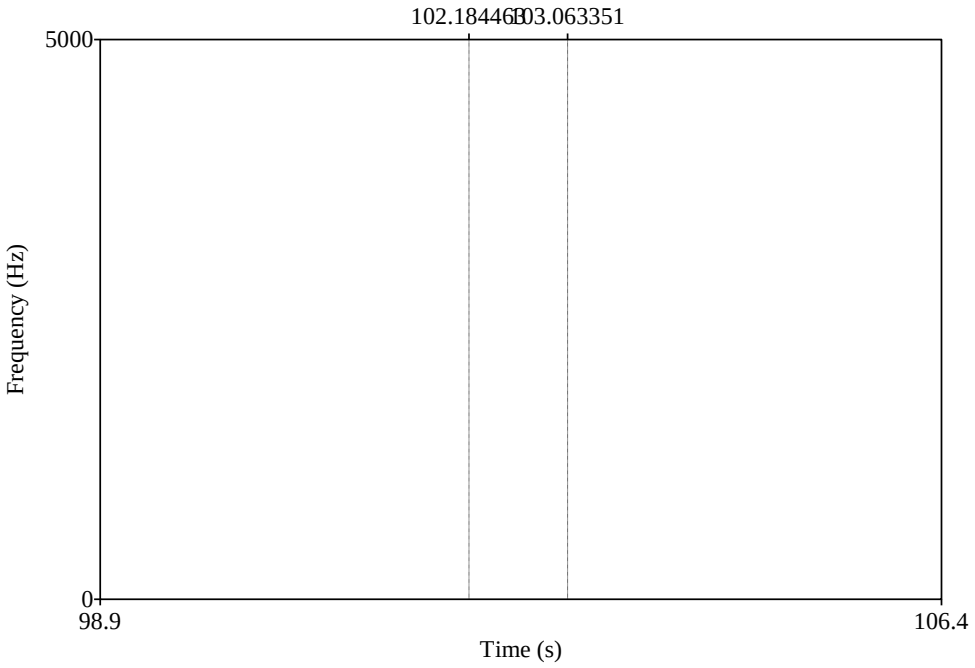
To start off our analysis of this spectrogram, we can see from the darkness of the first and second formants, that the phoneme produced is [m] and lacks any vowel whatsoever. The following space shows lighter spaces of intensity, showing the production of the stop [g]. Afterwards the [us.] follows.

This phrase is further interesting due to the large amount of times that it triggered deletion of initial [u]. The following chart below shows the amount of deletion across participants.

	[i]	[e]	[u]
A	3	5	0
B	0	1	1
C	1	15	1
D	1	3	0
E	0	0	4

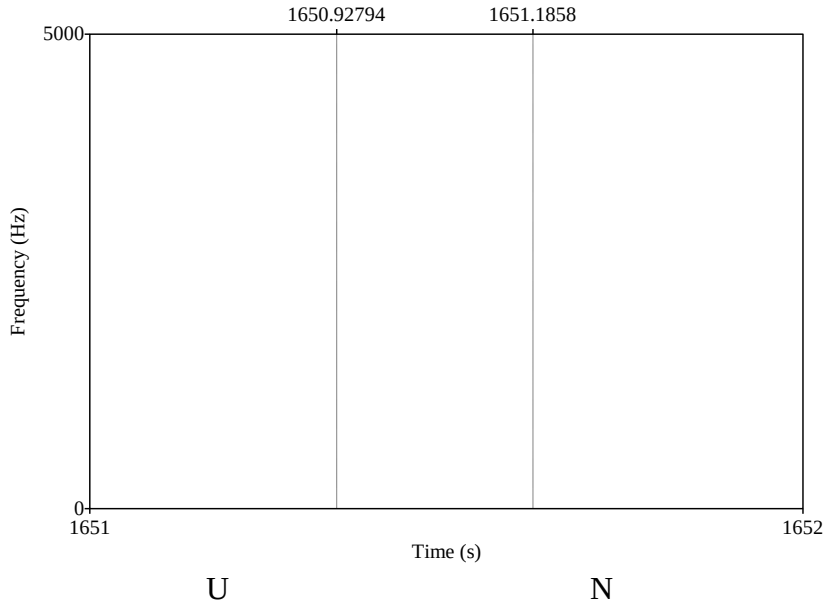
The large outlier in this group, participant C, vastly overdeleted the [e] on first glance. This participant used the phrase [m.gus.ta.ri.a] extensively. Furthermore, if *me* becomes lexicalized in front of *gustar* and its various forms, this would explain the constant deletion of [e]. Although participant A did not use the phrase as much as participant C, the same phenomenon was consistently observed with them as well. This coincides with the previous statement that higher vowels are more prone to weakening/deletion.

Using the previous database from BYU, we can see that *gustar* shows up 25,016 times and *gustaría* 1,949,53 times. Given the high rate of appearance of *me* and these two forms of *gustar*, it can be concluded that two high frequency words that interact in a common construction often, are likely to go through a process of lexicalization. However, more research may be necessary in determining the lexicalization of *me* in the construction of *me gustaría.*



To confirm this phenomenon, we will examine another sample taken from a different participant. Although the use of [m] instead of [n] here is not noteworthy due to the word suffering deletion being *me*. However, the ease of articulation is produced through this phenomenon in that [m] and [p] can be produced by the same movement of the mouth, as opposed to if there was a vowel present.

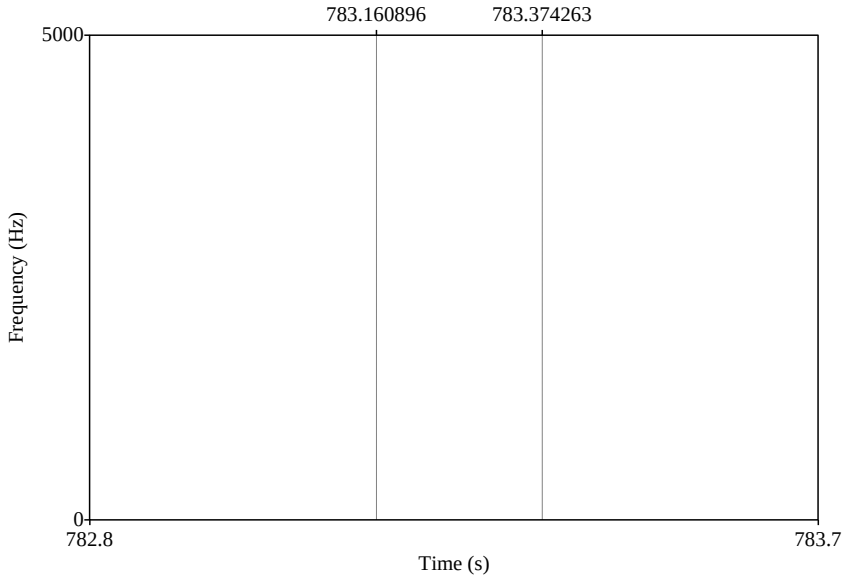
In order to analyze the phenomenon of weakening, the researcher has provided the following sample. When we compare the below utterance of the word [un], at 50ms, we find that it has been significantly weakened in terms of its duration. Below we can compare this utterance to the mean duration of production of [u] across participants.



The average duration of vowels across participants is displayed in the chart below. These were the determining values of whether vowels had suffered weakening. The researcher deemed it necessary to measure the participants' vowels against themselves to not compare across dialects which may show more variance between vowel duration.

	[i]	[e]	[u]
Duration in ms.	83.6	93.4	80.6

Below another example of weakening from participant D during the production of the phrase [me.ði.kụ̲en.ta]. However, unlike the previous case of weakening which shows up in a similar context to the previous contexts of deletion that have been previously described, this example is more similar to Espinosa's description of Ndedal.

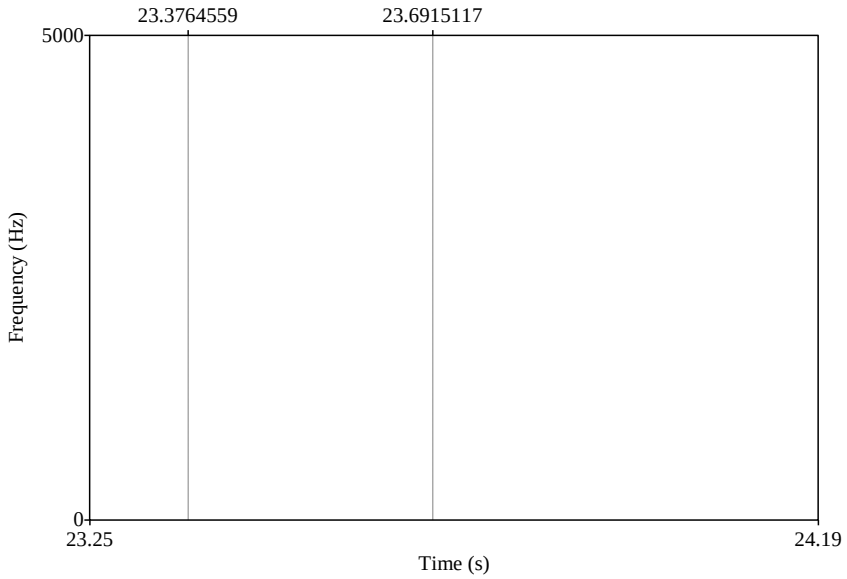


Additionally, for comparison's sake, the table of average duration for the individual participants is included below. This chart serves to compare the duration of vowels between and across the participants of the study.

	[i]	[e]	[u]
A	106	76	79
B	83	85	73
C	81	86	79
D	86	129	95
E	62	91	77

Extension of the phenomenon outside the studied demographic:

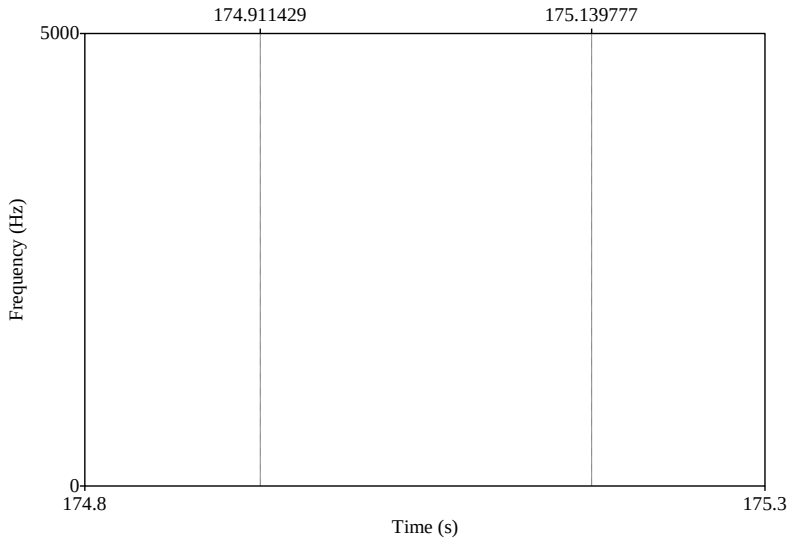
Although this phenomenon was primarily studied using young university educated adults, it appears that it extends to other demographics as well. According to Aurelio Espinosa, if this phenomenon is heard universally throughout the state of New Mexico, then it may not be unreasonable to think that the highly trafficked *fronterizo* city of Juarez, would not also be prone to deletion and weakening in similar circumstances. NetnoticiasMX published a news story on how people from Ciudad Juarez speak. In this piece, we can see an older man who appears to be between ages 50-80 deleting the [u] in the word [un].



Unlike the previously looked at samples, this utterance has more in common with the Ndedal sample from Espinosa (1925) in that it deletes the [u] is deleted next to a phoneme not encountered to have been near deletion in the interviewed particpants.

In another video published on youtube, seeking to describe the way that people from Juarez speak, another man in the same demographic exhibited the same type of deletion in a similar context.

As can be seen in the sample below, the [u] in the phrase *un burrito* has been deleted. This example is more in line with the sample that Lipski cites from Espinosa, [m.be.so], since it deletes the [u] in the phrase and also assimilates the [n] to the following voiced labial stop.



These examples are noteworthy because they may prompt further investigation into this phenomenon as a dialectal feature of Border Spanish, especially if its production can be heard from people of such different demographics.

Influence from English:

Due to the proximity, of TNMS, and Border Spanish, to English and the centralization of vowels previously discussed by Willis, it is possible to assume that an influence from English is occurring. This idea is further influenced by the dialectal lexicon of the region that includes anglicisms such as *troca* and *wachar*. However, the current data cannot support such a claim without further research. Although it is tempting to assume that contact is the culprit, the data to support such a claim, is not available.

Conclusions:

This data and study is relevant because it proves that, unlike the traditional consensus, the vowels of the Spanish language are not as consistent as previously described. The previous

studies of Aurelio Espinosa show that the Spanish of the region of New Mexico has a distinct phonetic characteristic, despite the currently accepted isogloss.

Furthermore, this study opens the possibility for comparative study between the Spanish of New Mexico with that of its southern neighbor. If the claims of Espinosa are to be given credence, it is possible therefore to compare this New Mexican phenomenon to places that have historically been linked through trade, migration, and history.

The broadcast from NetnoticiasMX not only provides the opportunity for further research into the use of the phenomenon on the border and in the north of Mexico's interior, but also to expand the demographic that this study has applied to. It might also be relevant to the claims of Espinosa and the syllabic consonant.

Lexicalization of high frequency words would also benefit from further study in order to predict whether or not certain words are more likely to trigger weakening or deletion. For example, although the four words primarily analyzed in this study, *me*, *en*, *mi*, and *un*, all show consistent weakening or deletion, *me* and *un* merit further research on their lexical effects, especially with the high results of deletion from participant C.

The rate and contexts of lexicalization merit further investigation into whether deletion occurs from a previous process of weakening. If we are to take the first example of weakening from the sample [un], it may be analyzed so that it is understood as a precursor to deletion. Thus if a speaker tends to weaken their vowels, this may be an indication that they may also be likely to delete their vowels. A similar process occurred in the evolution of Spanish from Vulgar Latin where the [u] in words such as *oculo* was deleted, later leaving *oclyo* and eventually, *ojo* (Resnick y Hammond, 2011).

In conclusion, however, vowels consistently weaken or face deletion in multilexical contexts where a monosyllabic word with a nasal consonant is followed by one of the following phonemes, [f], [l], [m], [g], [b], and [p].

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