2016

STRESS VARIATION AS UNIFYING FEATURES OF UPSTATE NEW YORK

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Digital Object Identifier: https://doi.org/10.13023/ETD.2016.530

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THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Arts in the
College of Arts and Science
at the University of Kentucky

By

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2016

STRESS VARIATION AS UNIFYING FEATURES OF
UPSTATE NEW YORK

This study investigates sociophonetic stress variation in the Onondaga County area of Upstate New York. I argue that five variations of stress correlate to factors of age, education level, place of residence, frequency, and analogical change. Dinkin and Evanini (2010) have examined and discovered similar outcomes of stress variation in his work with dialectal features across the state of New York. Rather than analyze the state and its borders in their entirety, I focus on morpheme-specific analogical change of stress in specific social categories within the Syracuse, New York region. In terms of lexical items, I analyze stress placement within four-, five-, and six-syllable words containing the -mentary affix and explore how stress shifts in these words depending on those social and linguistic factors. Data were collected through formal and informal sociolinguistic interviews in which each instance of the target words were analyzed as belonging to one of five types of stress. Results indicate that Syracuse is one of the locations in the state that see all five stress patterns. To further investigate, I take the provided evidence of stress variation and filter for sociological relevance for factors of age, gender, and residence.

KEYWORDS: sociophonetic, stress, syllable, frequency, variation

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7/28/2016

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7/28/2016

ACKNOWLEDGEMENTS

I would first like to thank my Thesis Chair, Dr. Jennifer Cramer, for her constant support and guidance along my academic route here at the University of Kentucky. Her direction and encouragement have allowed me to reach this point in my education and she is constantly contributing to the program by enthusiastically supporting student goals.

I would also like to express gratitude to Dr. Mark Lauersdorf from whom I have learned a great deal about the field of sociolinguistics. His enthusiasm and dedication to the program is inspiring and need be commended. He has dedicated an impressive amount of time to quality student education and is always willing to go the extra mile.

Dr. Kevin McGowan also provided a great deal of programming knowledge and expertise. I would not have been able to answer my research questions without his help and this paper would not be what it is without his time and assistance.

In addition to the technical and theoretical assistance above, I received equally important collaborative from other faculty members, colleagues and friends. Each and every one of you has taken a part in shaping the scholar and person I am today, and I am appreciative of all your encouraging words.

Of course, my undeniable gratitude also goes out to my family who has always provided support and words of advice to keep me grounded and motivated along the way. I have reached many life goals because of your support and I cannot thank you enough.

Finally, though they must remain anonymous, I wish to thank the participants of my study, as this thesis would not exist without their cooperation. Their responses provided insight to this field and created opportunities for future work.

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Section 1: Introduction

In American English, lexical stress cannot be predicted for each lexical item (Bergs and Brinton, 2012). Although there are patterns of lexical stress that typically depend on syllable count and base morphemes, stress may vary in flexibility and allow for multiple types of stress placement, including that of primary and secondary stress (Bergs and Brinton, 2012). Kager states that:

> In stress languages, one or more syllables in each word or phrase is said to be 'more prominent' than others. 'Prominence' is not an intrinsic property of stressed syllables, but a matter of relative strength between 'stronger' and 'weaker' syllables. Most stress languages distinguish only two degrees of stress: stressed and unstressed. (Kager, 2007:1)

When analyzing lexical stress variation within a speech community, frequency, analogical change, and social categorization are also very important for understanding the diffusion of multiple stress varieties (Dinkin and Evanini, 2010). Frequency is defined in terms of number of occurrences of a given linguistic structure or item set, such as a large data set pertaining to a lexicon, and can be directly linked to language change and acquisition. Although frequency does not impact every regular sound change, it is crucial, for example, in understanding those changes seen by lenition and fortition, in which consonants change in sound from weak to strong and vice versa (Dinkin, 2009). Sound change can alter syllable structure that is directly linked to lexical stress. Stress is allowed to vary in this chain-like manner due to these changes in other surrounding linguistic entities in

the lexical item itself or the lexicon in its entirety. In other cases, it is a collaboration of sociological factors that alter stress, sometimes determined by the speaker community such as demographic features of age, ethnicity, gender, residence, and education.

This research project involves discussion of stress considering all three factors of frequency, analogical change and speech community. For the purposes of this study, I analyze a set of words that terminate in -mentary in the specific geographical area of Syracuse, New York. This set of words is important to consider in the Upstate New York setting because research has shown this location to have access to a variety of stress patterns, and many of these differ from the standard pronunciation; that is, the Standard American English form of *elementary*, for example, sees complete deletion of schwa in [ˌɛləˈmɛntɹi], which is commonly used throughout the rest of the country. Dinkin and Evanini (2010) also refer to the item [ˌɛləˈmɛntɹi] as the SAE[1] form as it is most commonly used across the United States more so than other pronunciations. In addition to this standard pronunciation, there are four more forms for -mentary words with varying stress patterns (Dinkin, 2009). Table 1 below represents a 0-4 stress category scale that codes stress of -mentary words, specifically *elementary* as the example here shows.

[1] As discussion of stress and pronunciation continues in this thesis, I will be using the term Standard American English or SAE to refer to the socially-preferred style of English as opposed to the less common forms found in this research.

Table 1: Coding stress in -mentary words

code	level of stress	example
0	Complete deletion	ˌɛləˈmɛntɹi
1	Reduction to schwa	ˌɛləˈmɛntəɹi
2	Intermediate or ambiguous forms	ˌɛləˈmɛnˌtəɹi
3	Secondary stress	ˌɛləˈmɛnˌtɛɹi
4	Reduction of antepenultimate	ˈɛləmənˌtɛɹi

Table 1 modeled after Dinkin (2009)

Furthermore, data show that these multiple, nonstandard stress forms are being used in large numbers inside the New York border, and even further, dwindle greatly the farther data is collected away from the state (Dinkin, 2009).

There is an unexpected and still unexplained phenomenon involving the pronunciation and lexical stress of words containing the -mentary suffix, such as *elementary, documentary,* and *rudimentary*. Using data collected in 100 sociolinguistic interviews with speakers from the Syracuse area, I discuss how speakers of this geographical region use nonstandard and varied stress patterns in these word types. The most prominent lexical stress pattern that arises in this area can be described as a "stress clash between the primary-stressed antepenult and the secondary-stressed penult"; this stress clash appears as -méntàry, such as in item eleméntàry (Dinkin and Evanini, 2010:3)[2]. This sociophonetic survey of lexical stress aims to discover patterns of diffusion in nonstandard formations.

[2]Multiple dictionaries consider certain forms to be standard. Oxford Dictionary (2016) presents secondary stress [eləˈment(ə)rē] as an option but also recommends reduction to schwa [ˌɛləˈmɛntəɹi] with the audible pronunciation system. Webster Dictionary (2016) displays both secondary stress and complete deletion next to each other.

My study is a small-scale replication of Dinkin and Evanini's (2010) work in that it analyzes a -mentary lexicon in the Upstate New York area. I place my data into the same five stress categories, as well as analyze some of the same -mentary lexical items. There are some differences between our studies in methodology, including that I added additional lexical items and test words and am solely analyzing data from Onondaga County (which contains Syracuse), rather than the entire state and its bordering states. At the least, my data enhances Dinkin and Evanini's (2010) argument that these stress phenomena are a distinct dialectal feature for its geographical location and have connecting sociological factors. Just as Dinkin and Evanini (2010) attested for age and gender, I also consider these social categories with the addition of residence.

I investigate both the linguistic and social correlates of five stress categories proposed by Dinkin and Evanini (2010); I parse interview data to determine the percentages of each stress category that is being used in the Syracuse region, as well as assess repeating patterns of stress across social categories to determine whether there is correlation. I examine stress placement within four, five, and six syllable words featuring the -mentary affix, including two nonsense words. I attempt to analyze how stress shifts in each of these words. The objective of my analysis is guided by these two research questions:

- How does stress vary in the Syracuse, New York area?
- Which sociolinguistic features are affecting this stress variation?

There are multiple issues that arise when attempting to explain both the high

amount of stress variation for this lexical subcategory of -mentary words, as well as which social categories are at play in this change.

Throughout the remainder of this thesis, I will present a phonetic understanding of the multiple stress forms occurring in Syracuse and analyze in detail those social factors of age, gender, and residence that I believe are affecting dialect diffusion. In what follows, I present a review of the pertinent literature about those features that alter or cause stress variation, including previous phonological, morphological, and sociolinguistic studies that relate to stress phenomena. After this, I provide a comprehensive overview of the methods employed in this research, including a description of the speakers, data collection procedures, and statistical tests that were used to analyze the data. After discussing the results and implications of the study, I propose areas for future research.

Section 2: Literature Review

In SAE, various linguistic factors (phonological, morphological, etc.), as well as social ones, can significantly affect stress (Plag et al., 2011). Stress within SAE can also be complicated because of diffusion of stress placement and word frequency, primary and secondary stress placement, and base morphemes. I move on to discuss each of these components as they pertain to stress.

When comparing and analyzing data, choice of lexical items must be carefully considered as they hold varying frequencies or usage across speaker communities, and thus frequency holds the ability to alter or inhibit lexical diffusion (Bybee,

2002). Lexical diffusion, both a theory and a phenomenon, refers to the way that a sound change affects the lexicon over time (Bybee, 2002). If sound change is lexically abrupt, all the words of a language are affected by the sound change at the same rate. Word frequency and lexical analysis of speakers are undoubtedly tied, as evidenced by Bybee's claim that:

high-frequency words form more distant lexical connections than low-frequency words. In the case of morphologically complex words…high frequency words undergo less analysis and are less dependent on their related base words than low-frequency words. (Bybee, 2002:118)

This is the basis of Phillips' (1984) Frequency Implementation Hypothesis. Though with respect to lexical diffusion of sound change, an important detail is that supra-segmental changes that require analysis "affect the least frequent words first, whereas changes which eliminate or ignore grammatical information affect the most frequent words first" (Phillips, 1984:231). Recall that the lexical item *elementary* is interesting because of its high frequency and informal use, and is applicable here within the Frequency Implementation Hypothesis[3]. This theory relies upon usage by speaker community, and frequency effects are found over a population of speakers but not within individual speakers (Phillips, 1984:2).

Lexical diffusion concerns a phoneme that changes in the context of a subset of a lexicon and continuously spreads to other lexical items over time (Phillips, 1984), though even if these items are susceptible to such change, this spread may not affect

[3] While the word *elementary* is frequently used, words such as *rudimentary* or *sedimentary* are less frequent and are thus more subject to change.

each item in the lexicon; diffusion is sporadic and some changes show no clear phonetic conditioning (Phillips, 1984). Even the most minuscule, gradual phonetic changes can become enveloped in lexical diffusion while in the process of changing; considering lexical stress in my study, phonetic change looks like moving from one syllable to another, vowel-shortening, or deleting syllables or stress altogether. In evaluating lexical variation in phonetic detail, Bybee (2002) presents an outlined, alternative exemplar model to portray such modifications; this model, in particular, predicts that the frequency and its contexts will change how readily the word undergoes transformation. Word frequency should be especially considered in the case of a phonetic study such as mine, and Bybee (2007) continues to argue similarly for the importance of using frequency as a definitive factor in the analysis and explanation of language structures. I consider word frequency throughout the entirety of my study as it is possible that phonetic stress variation is linked to level of frequency of usage; the higher the frequency of use of a lexical item, the less change or the slower the variation of a change it sees over time, and that less frequently used lexical items appear to see more change and even standard stress more often because they have quickly altered to fit Standard American English (SAE) patterning, such as that of complete deletion in [ɛləˈmɛntɹi].

Components that also account for phonetic variation involve primary and secondary stress placement; within SAE there are accented and unaccented morphologically complex words that are either left-prominent or right-prominent, for example, *element* [ˈɛləˌmɛnt] versus *elementary* [ˌɛləˈmɛntɹi] (Alber, 2004).

Although the dominant root word typically sees initial stress, such as *element* [ˈɛləˌmɛnt], this does not necessarily precondition stress patterning in the same place for a similar version of the base form, such as *elementary* [ˌɛləˈmɛntɹi], which sees primary stress on the penultimate syllable.

Schwa deletion must also be considered because schwa is subject to deletion as a consequence of stress; as stress patterns shift, schwa acts differently. Schwa has always been somewhat of a complex subject in the context of phonological representation, as well as its articulatory properties. By conducting a pharyngeal study, Patterson et al. (2003:8) provides evidence of schwa retraction in American English, "as compared with the lingual rest position for speech." Their study provided another perspective in analyzing the means of interpreting and measuring 'rest position' during speech, providing more insight on the subject. They claim that pharyngeal constriction of schwa points more towards a retraction than a rest position, and contradict previous theories that discuss schwa as a targetless or neutral position as a minimal vowel; they support Geigrich (1992) in confirming that schwa is typically recognized as an empty slot unassociated with any melody segment. In my study, I take into account Patterson's et al.'s (2003) phonological theory of schwa when assessing -mentary words that see a schwa vowel before [ɹ].

I consider whether schwa is a consequence of stress variation or is itself causing stress variation. Since all factors pointing to phonemic and phonetic change of lexical items need to be considered, schwa is a direct target as it sometimes sees deletion in -mentary words but appears to exist more often in Upstate New York dialect data, especially in that of most frequently used secondary stress form

elementary [ˌɛləˈmɛnˌtɛɹi]. I consider whether schwa is a consequence of phonological change and whether it is causing multiple types of stress to appear or is deleting because of varying stress placement.

Apparent time should also be especially considered as it specifically ties into the social and demographic factor of age and is a vital part to understanding sound change. Change over time must be accounted for since perception of language and choice of language varies over time between age groups and generations (Dinkin, 2009). Linguistic variation, whether it is based on regional, contextual, or social differences, can be analyzed across varying age groups to test for changes in apparent time (Dinkin, 2009). In the case of my study, it is specifically lexical stress choice. Linguists such as Labov conducted apparent time studies, such as the Martha's Vineyard study in 1961 that used an age grade study to analyze linguistic variables in the speech of islanders (Labov, 1972).

As my sociophonetic study of nonstandard stress variation is concerned with the social, cultural, and linguistic factors that condition that variation among speakers interviewed in Upstate New York, it is important to understand what has already been discovered about this phenomenon within this geographical area. Onondaga County shows a range of multiple stress forms besides the SAE complete deletion form [ˌɛləˈmɛntɹi], that four syllable version with a deleted schwa, which occurs most often across the United States. Speakers in Upstate New York exhibit at least five forms of stress in addition to the SAE complete deletion form, as seen earlier in Table 1 (Dinkin, 2009) that represents a 0-4 stress category scale that codes stress

of -mentary words. These categories are principal routes of determining and coding -mentary items in my research.

Dinkin and Evanini (2010) took a survey of lexical data from New York State and surrounding border areas by conducting 116 sociolinguistic interviews of eastern communities in New York, 59 sociolinguistic interviews in far western New York and northwestern Pennsylvania, and a rapid and anonymous telephone survey of the lexical item *elementary* that included 188 towns across the entire state and other towns spilling into bordering states. By analyzing this data, he found that the stressed-penultimate syllable, such as in *eleméntàry*, is apparently confined to Upstate New York and nearby regions of adjoining states, such as northern Pennsylvania and a couple towns in southwestern Vermont. He observes the relationship between this stress patterning phenomenon and "other isogloss boundaries that serve as boundaries between major dialect regions in the area" (Dinkin and Evanini, 2010:2).

The New York map in Figure 1 derives from Dinkin's (2009) results of a school-district study. Blue points symbolize districts where only stressed-penult [ˌɛləˈmɛnˌtɛɹi] tokens were collected, red points symbolized districts where only reduced tokens were collected, and yellow points to symbolize districts where both were found (Dinkin, 2009:375). Notice that Syracuse accounts for both reduced and stressed penult and is labeled yellow as opposed to its surrounding solely stressed-penult districts. As Dinkin (2009) notes, "the red isogloss outlines the full geographic extent of the stressed penult in the school-district data; only reduced variants were produced outside the red line" (375). Note that effect of city size is

possibly at play in the results of the school-district survey; the nine most populous cities that confirm stressed-penult usage are Buffalo, Rochester, Syracuse, Albany, Schenectady, Utica, Niagara Falls, Troy, and Binghamton, all having populations of more than 40,000, according to the 2000 U.S. census (Dinkin and Evanini, 2010:41).

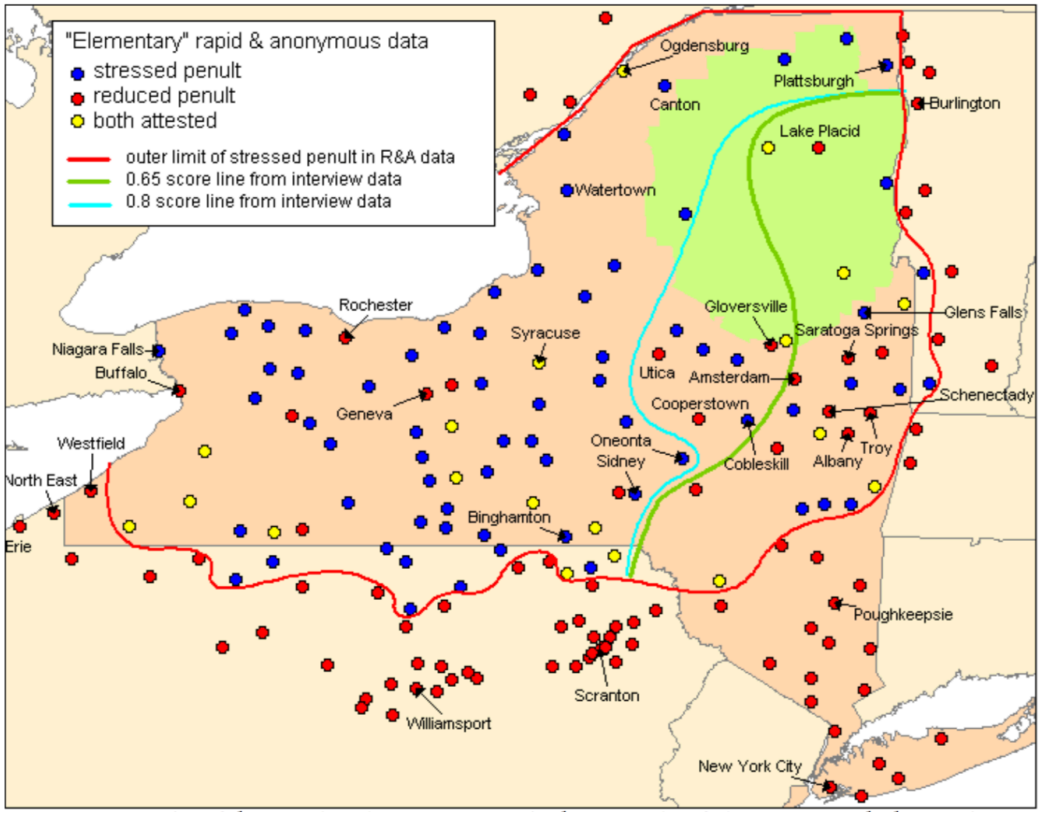

Figure 1: "Elementary" results of New York from Dinkin and Evanini (2010:41)

Although Dinkin conducts phonological research, rather than identifying phonological reasons for these relationships, it appeared that cultural boundaries coincided more with established dialect regions across Upstate New York. Put more specifically, these linguistic boundaries are caused by communication patterns, which call attention to analogical change in nonstandard stress and pronunciation.

Due to Dinkin and Evanini's (2010) analyses and findings, I find it most compelling to analyze sociocultural factors when continuing to explain further the penultimate syllable phenomenon since it is possible that stress categories could be influenced by communication patterns.

Rather than using the SAE form of complete deletion of schwa [ˌɛləˈmɛntɹi], the four-syllable version, Upstate New York speakers see an average of 72% usage for the secondary stress type [ˌɛləˈmɛnˌtɛɹi] (Dinkin and Evanini, 2010). By SAE ruling, this highly frequent item of secondary stress with stress falling on the penultimate is linguistically nonstandard because the nationwide average sees a highest result of schwa deletion in [ˌɛləˈmɛntɹi] (Dinking and Evanini, 2010). Although it is not deemed standard in SAE, Dinkin and Evanini (2010) mention that from a morphological and phonological standpoint, this shift occurrence of stress to the penultimate syllable is neither atypical, nor surprising. Other large quantities of American English data words with the -ary suffix standardly contain a secondarily stressed penultimate, such as words *dietary*, *fragmentary*, *missionary*, etc. (Dinkin and Evanini, 2010:3). So, "it is a regularization of the pronunciation of the morpheme -ary to be the same in -mentary words as it is in most of the other words in which it appears" (Dinkin and Evanini, 2010: 339). Therefore, as these words see stress change, there is an underlying shift due to analogical change. Dinkin and Evanini's (2010) results suggest the hypothesis that the stressed penult originated as an analogical change in the pronunciation of morpheme -ary. Historical linguistics confirms that it is the more frequently used items that resist change (Dinkin and Evanini, 2010), as in the case of item *elementary*. Over time, stress has slowly

begun to frequently fall more so on the secondary syllable in secondary stress form [ˌɛləˈmɛnˌtɛɹi], thus weakening other stress forms in consequence. Some final results from Dinkin and Evanini (2010) find that the reduced-antepenultimate [ˈɛləmənˌtɛɹi] form is receding:

This may indicate that as the shift toward the stressed penult goes to completion—i.e., as there is less and less variation in the community between stressed and reduced penults in *-mentary* words—individual speakers are less likely to feel uncertain of the pronunciation of a *-mentary* word, and therefore less likely to resort to an analogical spelling pronunciation (such as the reduced- antepenult variant) when such a word is encountered in a written wordlist. (Dinkin and Evanini, 2010:384)

Frequency Implementation Hypothesis must be considered when comparing stress variations across lexical items and their stress categories, and Dinkin and Evanini (2010) assesses their work in comparing items *elementary* and *complimentary.* He uses these two lexical items from his data as examples to show statistically significant change in apparent time. Displayed below, he shows a moving-average plot of the probability of stressed penult in elicited tokens for both of these words, averaged over 20-year spans in apparent time (Dinkin and Evanini, 2010).

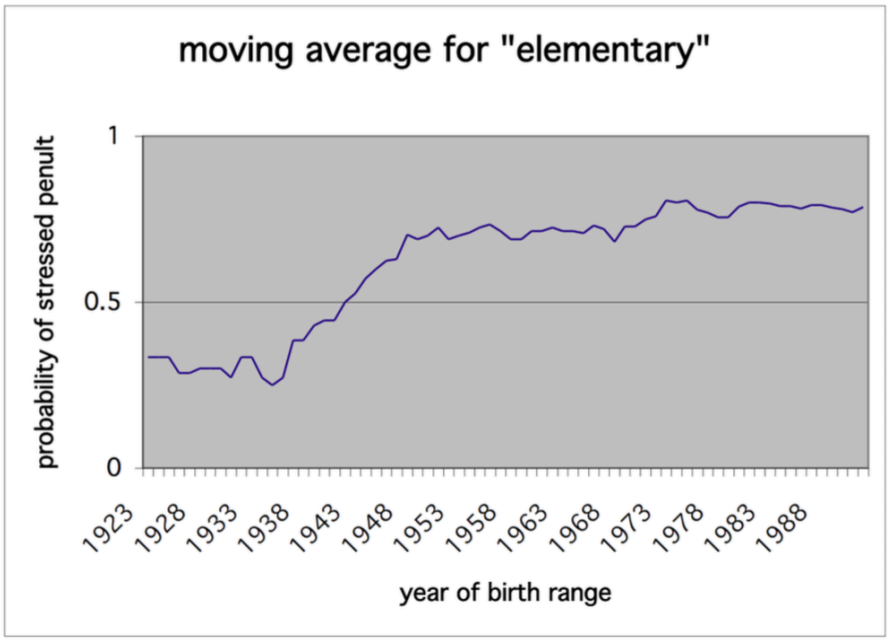

Figure 2: Moving average for "Elementary" from Dinkin and Evanini (2010)

Figure 2 visualizes the stressed penult of lexical item *elementary* [ˌɛləˈmɛnˌtɛɹi]. There is a constant increase starting in 1938 and data shows slow leveling around 1953. Next, Dinkin and Evanini (2010) display a similar moving average-plot for the lexical item *complimentary* that also sees an overall probability increase of the stressed penult from 1925 to 1990, as shown in Figure 3.

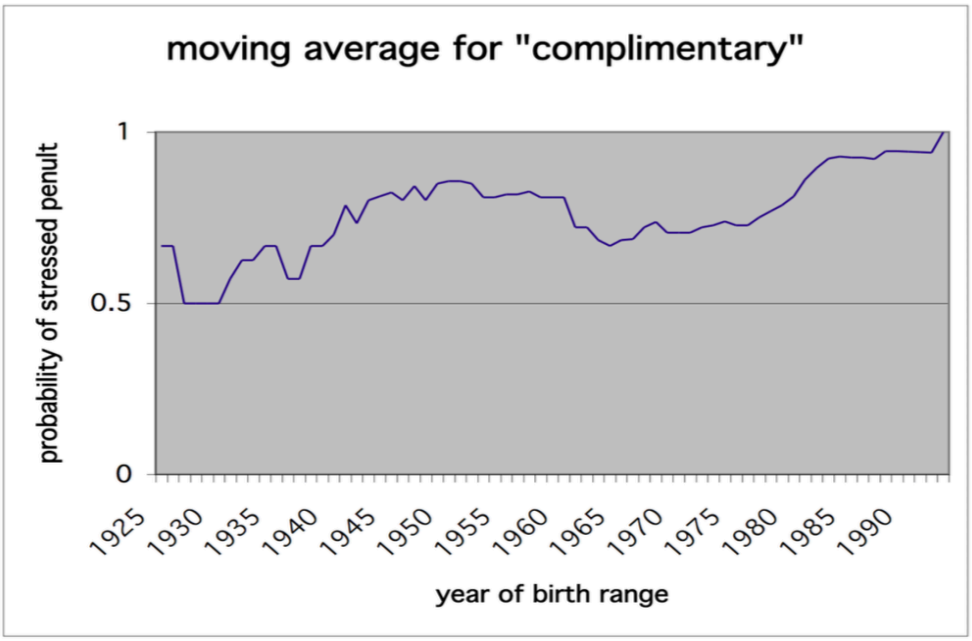

Figure 3: Moving average for "Complimentary" from Dinkin and Evanini (2010)

In summary, both items see different rates but increase towards the stressed penult, and these plots show that there is movement from the antepenult to the penultimate syllable for frequently used words, such as with *complimentary* and *elementary* (Dinkin and Evanini, 2010:366). These results are interpreted as a general change in apparent time, moving from the reduced antepenult to stressed penult. The same is not as true for the words *sedimentary* and *rudimentary* that did not see such clear results, possibly due to lack of frequency.

Age, gender, and the lexical items that see change by frequency have effects on stress choice and indicate the possibility of the existence of analogical change for the phenomenon of stress variation (Dinkin and Evanini, 2010). When testing lexical stress across male and female gender and four age categories, Dinkin and Evanini's (2010) data validates that less familiar words are more subject to change and that although all of the attested lexical items were under the -mentary lexicon,

they saw different outcomes in usage (Dinkin and Evanini, 2010:364). The status of *sedimentary* saw the reduced penult more often than *complimentary*, *elementary*, and *documentary.* This is not surprising since "less familiar words are more likely subject to analogy", such as the word *sedimentary* (Dinkin and Evanini, 2010:364). Most native words containing suffixes are stressed on the base morpheme (Phillips 1967). Relating to this typical phenomenon is that "the stress pattern of the -ary word mimics that of the root *missionary*, *dietary*, and *planetary* all bear primary stress on the first syllable, just as *mission*, *diet*, and *planet* do" (Dinkin and Evanini, 2010:364). This is not the case for the majority stressed-penult variant; sediméntàry does not share the stress pattern of sédimènt (Dinkin and Evanini, 2010: 383). So, the reduced antepenult pronunciation of *sedimentary* is the product of analogy in two ways: comparing *sédimentàry* with root *sédimènt*, and admitting suffix -ary to have the same phonological relationship to its root of *sediment* as it has in other -mentary words (Dinkin and Evanini, 2010:365).

Dinkin and Evanini (2010) also found gender differences in terms of stress variation choice. Concerning gender, males were recorded as favoring the reduced antepenult (365). They consider this tendency as possibly due to the cognitive differences between men and women and "their degree of reliance on memory versus real-time definition in the production of morphologically complex words" (Dinkin and Evanini, 2010:365); he refers to the Ullman et al. (2002) report that states the following based on the results of several experiments: "females may tend to memorize previously encountered complex representations (e.g., regular past-tenses; *played*) that males generally compose on-line (*play* + *-ed*)." Thus, females

are more likely to use the most frequently used pronunciation of a lexeme, while males resort to analogical pronunciation when dealing with a morphologically complex item. It appears that gender is an important factor when considering lexical items, including stress.

Keeping in mind factors of age, gender, and lexical item, the information in Table 3, taken from Dinkin (2009), displays a "logistic-regression analysis of variation between the two stressed-penult variants, with reduced antepenult as the positive value; $n = 266$."

Table 2: Logistic regression analysis

Gender:	Weight:	Lexical Item:	Weight:	Age Group	Weight:
Male	.65	sedimentary	.787	1923-1942	.364
Female	.335	complimentary	.569	1943-1960	.711
		elementary	.466	1962-1980	.638
		documentary	.183	1981-1993	.318

*Logistic Regression Table by Dinkin (2009)

Table 3 exhibits results of a "multiple logistic regression on 266 of the 274 word list style tokens against four factor groups" (Dinkin, 2009:363). Data for *sedimentary* favored the reduced antepenult the most as it is the least familiar of the four -mentary words; data in this table exposes the idea that "less familiar words are more likely to subject to analogy" (Dinkin, 2009:364). Dinkin (2009:363) states that

"the reduced antepenult is very infrequent in the data: among 274 tokens of stressed-penult *-mentary* in wordlist style, the reduced antepenult only occurs a total of 20 times, or about 7%."

Lexical stress choice is also determined by age, and variation is seen again across lexical items. Intermediate age groups, those born between 1943 and 1980, favored the reduced-penult (Dinkin and Evanini, 2010:365). For lexical item *elementary*, the stressed penult appeared 30% of the time in the oldest age group in comparison to the 70% rate of those born later than the 1940's (Dinkin and Evanini, 2010:349). This increased favoring of the stressed penult follows the same patterning. All of these phenomena across age and gender point to the significance and appearance of analogical change.

Additionally, clash and lapse affect stress placement. A stress clash constitutes two back-to-back syllables that contain stress or when a stress domain may not contain adjacent stressed syllables. Lapse occurs when a string of more than one consecutive stress-less syllable may not occur (Alber, 2004). There is stress clash between the antepenultimate and the penultimate in item *elementary*, a newly recognized and innovative occurrence of syllable stress shift as opposed to complete deletion of SAE form (see Table 1); "Words of this type were found very frequently in early data collection to be pronounced with secondary stress on the penultimate syllable, leading to a stress clash between the primary-stressed antepenultimate and the secondary-stressed penultimate, thus: *eleméntàry*" (Dinkin, 2009:17). The stress phenomena that have been discussed, including this secondary stress item with clash, can all be categorized as morpheme-specific analogical change (Dinkin,

2009:17). This phenomenon of stress placement in the Upstate New York dialect is deemed a morpho-phonological issue, discussed earlier in this section.

Although there are irregular exceptions of stress, most native words containing suffixes are stressed on the base morpheme (Kurath, 1967). Some examples of this fore-stress are seen in such words as *réader*, *fríendship*, *lónger*, *gódlìke*, *and cáreless*. Those base words containing prefixes see stress again on the base and so have end-stress, such as *belóng*, *forbíd,* etc. (Kurath, 1967). Kurath mentions that Latin stems stress *-ári-*, *-óri-*, *éri-* saw full-stress on the suffix and half stress before it when used in Medieval English. This full stress then "shifted forward and the suffix received half-stress", such as in these current four-syllable American English with *sécretàry, nécessàry, tránsitòry, óratòry, mónastèry* (Kurath, 1967). In relation to *elementary* then, it is understandable that primary stress surfaces in the middle of the word. Knowing that lapse and clash are atypical in Standard American English, that is, words aim to stay away from these and occur in a rhythmic pattern instead, it is possible that stress occurs on the penult to avoid lapse, although constituting in clash, and even further changing to schwa deletion in progression. Sound change may be an effect of disturbance due to pronouncing each rhythm in a systematic sound pattern formation. This has instead caused the standard to move toward schwa deletion or reduction since this is a common occurrence in American English with fast-moving speech (Kurath, 1967). Schwa deletion takes place when a schwa occurs between consonants in non-word final position. Also, instead of pronouncing stop [t] in *elementary,* this sound can easily be replaced in the same space by a strident [tʃ] sound, which is easily pronounced following an [n], such as in the word

bench.

Again, understanding that *elementary* is a high frequency word, it sees reduction from a five-syllable word to a four-syllable word due to schwa deletion or syllabified [r] (Bergs and Brinton, 2012).

Since this is a quantitative study and contributes comparative linguistic data from individual speakers in a particular geographical setting, it is crucial to take into consideration all factors of dialect topography, including representation, time-effectiveness, mass literacy, and community and speaker access. Chambers (1994) provides a comprehensive overview of the dialect survey and field process by touching upon topics of questionnaires, surveys, and computerized databases. These topics are most useful to understand before diving into the work of the geographical area of focus seeing that these topics discuss all factors involved in conducting fieldwork for a dialect study. Concerning representativeness in regards to dialect topography, Chambers (1994) critiques and cautions against solely targeting NORMs (non-mobile, older, rural, predominantly males) as they are only a small minority of the general population. Rather, linguists in the field must deliberately access a representative sample in the community of focus, gathering information on both sexes and all ages, classes and other social factors. It was necessary that I considered all of these factors as they applied to interview data, which I discuss next in Section 3 of methods. Having discussed those topics of diffusion, stress placement, and word frequency, I consider the methods necessary to answers my proposed research questions.

Section 3: Methods

Since this is a quantitative study and contributes comparative linguistic data from individual speakers in a particular geographical setting, it is crucial to take into consideration all factors of dialect topography, including representation, time-effectiveness, mass literacy, and community and speaker access. Chambers (1994) provides a comprehensive overview of the dialect survey and field process by touching upon topics of questionnaires, surveys, and computerized databases. These topics are most useful to understand before diving into the work of the geographical area of focus seeing that these topics discuss all factors involved in conducting fieldwork for a dialect study. Concerning representativeness in regards to dialect topography, Chambers (1994) critiques and cautions against solely targeting NORMs (non-mobile, older, rural, predominantly males) as they are only a small minority of the general population. Rather, linguists in the field must deliberately access a representative sample in the community of focus, gathering information on both sexes and all ages, classes and other social factors. It was necessary that I considered all of these factors as they applied to interview data, which I discuss next in Section 3 of methods.

It has been suggested by dialectologists, such as Chambers (1994), that dialect studies should collect detailed and thorough information in order to make fair representations of the community of study. To provide for realistic representation,

my study assesses a total of 100 speaker interviews[4], each meeting a range of social factors; those social factors analyzed in detail for this study are age, gender, and residence. In order to gather an appropriate amount of speaker interviews while also accounting for each of the social categories, I conducted interviews in local malls, community colleges, cafés, and auto shops, in addition to contacting personal relatives and using the friend-of-a-friend method (Milroy, 1980). These places were most accessible and allowed me opportunities to interview speakers who had time to conduct the entire interview without interruptions. Besides these locations, I also met with interviewees at their homes. I aimed for less threatening environments rather than professional settings to encourage authentic speech. Interviews were recorded using a hand-held R-09 Edirol 24bit digital audio recorder.[5] All recordings were created as wav files with a sample rate of 44,100 with 16 bits per sample. Due to time restriction, I chose to perform an apparent time study across a variety of ages in order to study language variation and change in relation to stress.

This study was conducted using face-to-face interviews with speakers who were raised in Upstate New York and have lived in the region for the majority of their life. I utilized three survey instruments throughout the entirety of the interviews in this order: a demographic survey, interview questions, and a word list (See Appendix A, B, and C, respectively). To fully explore the sociolinguistic variation of lexical stress in Onondaga County, I first asked each speaker to complete a

[4] A total of 105 speakers were interviewed but five of those interviews were not counted as valid as some left the survey uncompleted or were found unable to meet the required criteria for the study.

[5] All surveys and recorded interviews have been scanned, stored, and saved, and there are future plans to make recorded interview data accessible to the public while at the same time securing anonymity.

demographic survey before the interview process began. The purpose of this demographic survey was to collect a wide range of information about each speaker for future analyses of the data, such as which social factors showed patterns of predictable stress across -mentary items. The survey asked for information on the following categories: age, gender, education level, ethnicity, birthplace, place of residence, development of place of residence, year of arrival and number of years in place of residence, other places lived, and native languages. In this study, I focus particularly on age, gender, and residence out of all of the collected demographic information.

Table 3: Demographic results of Upstate New York speakers

CATEGORY		**Total (100)**	**Percentage**
Age	< 30	33	33%
	31-50	30	30%
	51-70	37	37%
Gender	Male	49	49%
	Female	51	51%
Residence	Rural	32	32%
	Suburban	42	42%
	Urban	26	26%

Table 4 above focuses on those demographic survey results for categories of age, gender, and residence. For each category, the table represents number of speakers in that category and the percentage that the category represents out of the total number of 100 speakers. Age is split into three subcategories: less than 30, 31-50, and 51-70. In terms of gender, 49 speakers were male and 51 were female. Residence was also considered and split into three subcategories of rural, suburban, and urban. This demographic table that derives from speaker surveys demonstrates

the diversity of data and allows opportunity for future studies, such as a gender study or geographic relevance. I purposefully attempted to balance the distribution of speakers across categories for fair comparison while collecting data; for example, male and female numbers are very close, with 49 male speakers and 51 female speakers.

After the demographic survey was taken, I prepared the interviewee by providing the list of interview questions and the word list to give reference to what the interview entailed. The recorded interview was twofold: an informal discussion and a formal word list reading. The informal discussion occurred first in order to successfully gather natural, authentic speech from the interviewee and to avoid creating biased answers. In the informal discussion between the speaker and myself, I asked 11 specific questions on the topic of schooling to engage in a conversation about personal school experiences and childhood stories, as well as current schools in the area where the interviewee is currently living. The main goal in the informal discussion, when asking questions on the topic of school, was to elicit the lexical item *elementary* at least twice from each speaker. There were filler questions asked on other topics besides schooling that were included for the purposes of prompting narratives and also for preventing speakers from determining or assuming what the survey was designed to investigate.

For the second part of the interview, the formal word list reading, I handed each interviewee a list of words and asked them to read each word out loud as they went down the list. Before the reading began, I attempted to prevent interviewees from believing that the formal word list reading was a skills test, as this was sometimes

assumed. Just as there were filler questions for the informal discussion, there were also filler vocabulary items in the word list. The entire 30-word list was randomized in terms of three suffixes: -ism, -ator, -mentary, 10 of these words being -mentary items. Words with these specific suffix endings were randomized in order to specifically break up the -mentary words, as these are the target words of the study.

The categorical coding system in Table 1 below is applied to nine different -mentary items seen in Table 2. These lexical items in Table 2 test for primary and secondary stress in order to see how stress is used and diffused across this lexical subset. The two test words in this list, *dublomentary* and *pamentary*, were invented nonsense words to test for naturally occurring stress placement. I chose to use *dublomentary* because it fit a five-syllable pattern and *pamentary* because it fit a four-syllable pattern; assessing for both of these test words allowed me to gauge whether speakers collapse either item from five to four-syllable or four to three-syllable words and other patterns concerning syllables.

Table 4: List of -mentary lexemes

documentary
pamentary (test)
elementary
rudimentary
dublomentary (test)
nonelementary
complimentary
unparliamentary
sedimentary
testamentary

Before starting the interview, speakers were informed that they could discontinue the interview at any point for reasons undisclosed. As a result, several

speakers chose not to complete both parts of the interview. A total of 105 speakers participated in the informal discussion, while only 100 speakers participated in the formal word list reading due to illiteracy or reading disabilities. In addition to this, there were two more criteria for exclusion. First, since interviews were sometimes recorded in populated and noisy areas, such as local auto shops and malls, some of the data was too noisy to precisely parse. Since the objective of this study is to identify specific stress patterns, these noisy data are not included in any of the data results discussed later in this study. Second, as this study specifically considers only American English stress patterns in New York as focus, I did not include speakers who were born outside of New York State or whose first learned language was not American English. After collection was complete, 100 speakers were counted in total with 10 tokens each; that is 1,000 tokens were collected altogether.

The primary focus of both parts of the interview was to collect tokens of -mentary items to parse for stress patterns. Recall that the first part of the interview, the informal discussion, was aiming to collect at least two tokens of item *elementary* from each speaker. Recall also that the second part of the interview, the word list reading, was aiming to collect 10 -mentary tokens from each speaker. Due to time restriction and large data content, both parts of the interview were analyzed differently. I parsed more thoroughly those *elementary* tokens from the informal discussions, as these tokens were fewer in number and plausibly more authentic. I used Praat Version 6.0.14 (Boersma and Weenink, 2016) to parse and analyze each token in terms of the five-category system seen earlier in Table 1. I parsed by ear those tokens from the word list reading. Despite this difference in analysis, all

tokens from each part of the interview were categorized similarly in the five-category stress system and referred to as levels 0-4; that is, each token received a number of either 0, 1, 2, 3, or 4 depending on where primary and secondary stress existed when analyzed in Praat for the informal discussion or by ear for the formal word list reading.

When analyzing *elementary* tokens in the informal discussion, I analyzed one token per person in Praat; if there were two tokens in the discussion, I purposely analyzed the second token out of the two in order to best gauge for authentic speech. Labov (1984) states, "The vernacular, in which the minimum attention is paid to speech, provides the most systematic data for linguistics analysis" due to its truest reflection of the speaker's identity (29). For each informal discussion, I located the second spoken *elementary* token and attached five tier levels in Praat: word, V1, V2, V3, V4. The word tier was named depending on results of V1 and V2, that is, Vowel 1 and Vowel 2. For example, if V1 was labeled as [ɛ][6] and V2 as [ɛ], then the word tier would be titled *elementary* 3 [ˌɛləˈmɛnˌtɛɹi], that is, category 3, as the spectrogram in Figure 4 displays.

[6] Since the epsilon symbol does not appear in Praat, letter *E* was used in its place to stand in for epsilon. The same convention was used for schwa in which symbol @ was used in its place.

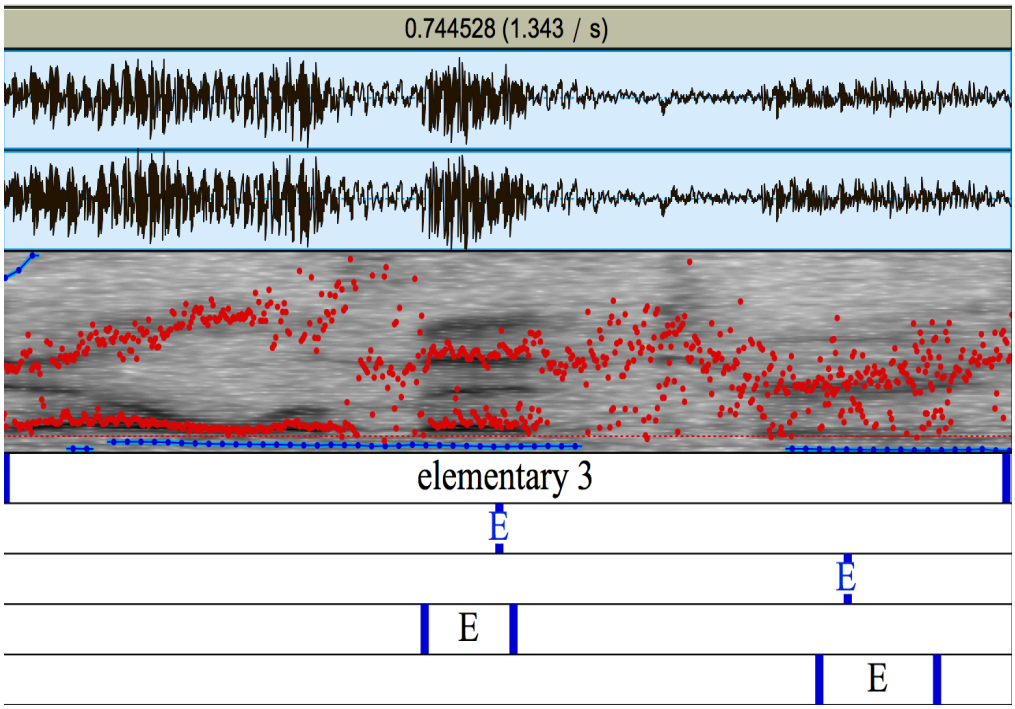

Figure 4: Spectrogram of secondary stress [ˌɛləˈmɛnˌtɛɹi]

V1 and V2 directly correlate with V3 and V4; V1 and V3 mark the same vowel, but V1 marks a point tier while V3 marks duration. The same goes for V2 and V4 with V2 marking a point tier and V4 marking duration for the same vowel. In this case, the token fell under category 3 [ˌɛləˈmɛnˌtɛɹi], known as that of secondary stress in Table 1. After listening to each recording multiple times, I parsed those vowels of focus where primary and secondary stress fall. These vowels are noticeable in the dark bands. For example, primary stress labeled by E appears as a dark band with high pitch intensity, while the secondary stress, also marked as E appears again as a dark band, but lower in comparison in level and in pitch intensity. Compare this spectrogram to the one in Figure 5 which visualizes category 0, known as that of complete deletion [ɛləˈmɛntɹi] and labeled here in the word tier as *elementary* 0.

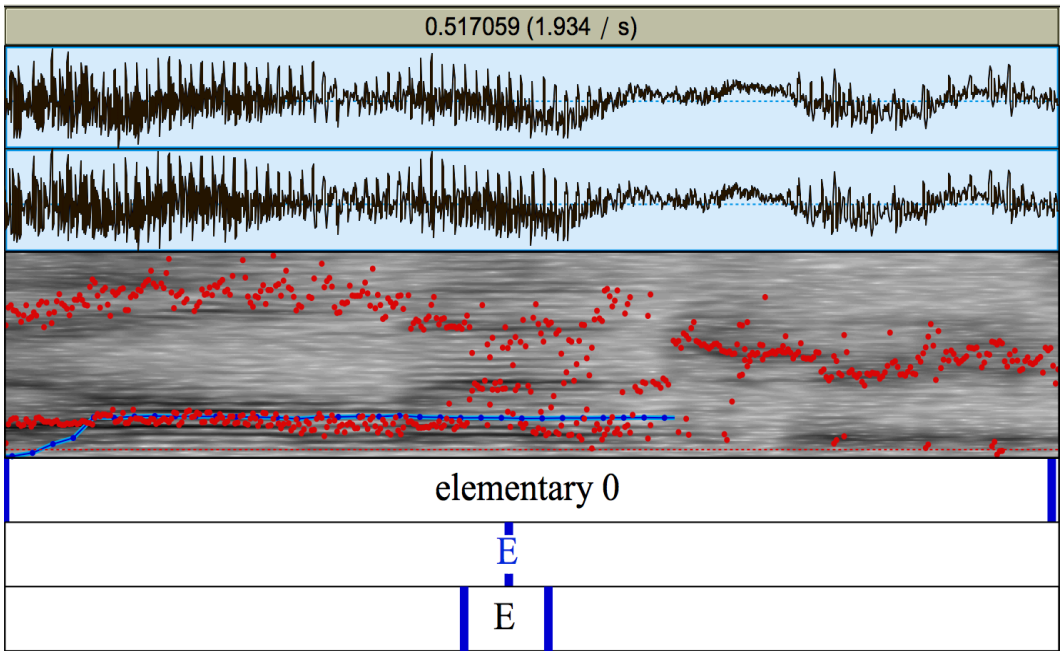

Figure 5: Spectrogram of complete deletion [ˌɛləˈmɛntɹi]

Due to its collapse from a five-syllable to a four-syllable word, each time the token *elementary* showed complete deletion of the penultimate syllable, it was labeled with only a word tier, V1 point tier, and a V2 duration tier. After all tokens from the informal discussion were parsed in Praat, tokens were run through a script to measure word duration and vowel duration (see Appendix D).

By using a script, the Praat *elementary* data results were displayed using box plots to show results of word duration in Figure 6, as well as vowel durations as they pertain to the antepenult vowels in Figure 7 and penult vowel in Figure 8. I hypothesize that categories 0-4 may vary from one another since there are a variety of stress versions for speakers to choose from. The purpose of analyzing these data in box plot form is to measure range of word length and vowel length that directly pertain to syllable count. The time duration correlated with these range durations are in the form of milliseconds. These box plots will be discussed further in the

following results section.

When analyzing -mentary items in the word list reading, I parsed by ear each of the tokens rather than analyzing them in Praat. I listened to each word list reading multiple times to decipher category levels 0-4 for each of the 10 items. Since I am a native to the Syracuse area in which data was collected, my perception of this data may be skewed. Therefore, I decided to conduct an inter-rater reliability test with a peer to compare and solidify these results as valid with at least a 90% acceptance rate. In this test, I asked the peer to listen to each word and mark each for one of the five stress patterns in the same manner that I had marked them. After comparing results, I found a 2.27% difference between my analysis of the word list readings and the results of my peer. This small difference solidified my results as reliable.

After collecting data and organizing category ratings by residence, gender, and age, I utilized statistical measures of one-way analysis of variance (ANOVA) and t-tests to evaluate whether any of these social categories could accurately predict the occurrence of one of the stress categories; the ANOVA tests analyze age and residence for three-way variables, while the t-test analyzes a two-way variable for gender. The ANOVA test for age determines the variance and significance between groups and within groups for young (less than 30), middle (31-50), and old (51-70), as well as rural, urban, and suburban for residence; these level categories are the independent controlled variables. The tests compare the means of the groups in order to conclude how the categories differ from each other. The ANOVA tests provide results for sum of square, standard deviation, means square, and p-value. For all tests, the p-value is the probability that provides conclusive evidence of the

null hypothesis that there is no significant difference between the levels within social categories. The t-test evaluates gender for p-value to assess whether data between variables are significant. For each test, only those results found to be less than .05 are confirmed significant.

At the end of interviews, speakers sometimes questioned if this had been an assessment based on whether New York residents pronounce the word *elementary* in a variety of ways. Although this was not typically the case, and only five people out of the 100 speakers asked this, the fact that speakers asked this question was evidence enough that some are consciously aware of this variation. In Section 4 below, I provide a look at data results from speaker interviews that include informative data.

Section 4: Results

As explained in the previous methods section, I will report on those findings for the -mentary words through two separate analyses: the acoustic analysis of *elementary* tokens from the informal interviews and an auditory analysis of all -mentary words retrieved from the formal word list readings. I present the informal interview findings first and then move on to discuss the formal word list reading results in the order they were conducted in the study and explained throughout Section 3.

In order to review the results of this dialect study, discussion returns to the stress categories originally referred to as the five possible stress categories of Upstate New York in Dinkin and Evanini's (2010) research project. Recall that both

the informal and formal tests were conducted based on those stress categories in Table 1. In Subsection 4.1 below, the informal discussion results pertain to the data only for the lexical item *elementary* and are displayed in the form of box plots. Then in Subsection 4.2, the formal word list results pertain to all accounted -mentary items and are discussed using t-tests and ANOVA tests with accompanying column graphs to present information on significance and variation.

4.1 Informal Interview Results

The following box plots were created in order to analyze the informal interview data results for lexical item *elementary.* The purpose of analyzing these data is to measure word length and vowel length that directly pertain to syllable count. All box plot time lengths are measured in milliseconds. The box plot in Figure 6 below displays those results of word length for all tokens of *elementary* across stress categories 0-3. Speaker tokens for *elementary* from the informal interview data produced examples of only categories 0-3; the speakers in the informal interviews produced no examples of the reduced antepenultimate [ˈɛləmənˌtɛɹi].

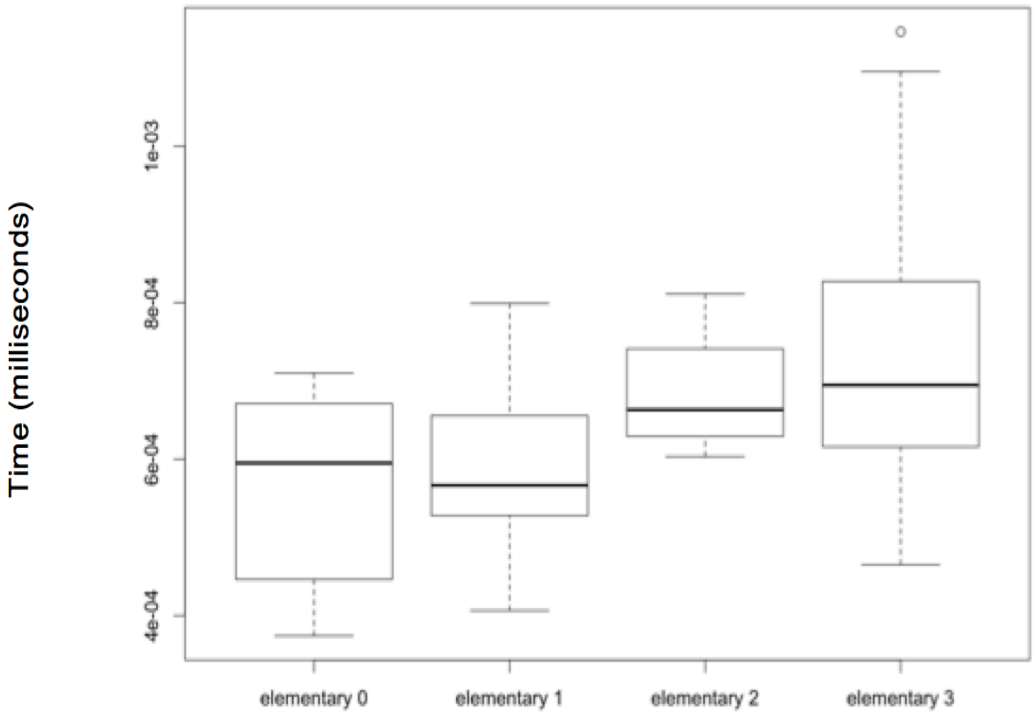

Figure 6: Word duration box plot

In Figure 6, the spread or range of the different data points is seen on the left vertical axis of the box plot in terms of time duration in milliseconds for each of the four stress patterns attested in the data: Elementary 0 [ˌɛləˈmɛntɹi], Elementary 1[ˌɛləˈmɛntəɹi], Elementary 2 [ˌɛləˈmɛnˌtəɹi], and Elementary 3 [ˌɛləˈmɛnˌtɛɹi]. It is important to consider the pattern of the entire distribution of responses. Everything in the chart shows where speaker tokens measure in length of time, the whiskers show where the outer portions of the range are, and the middle line of each box indicates median. Elementary 0 sees a median of 6e-04, meaning that this category averaged 6 milliseconds. In total, those tokens that ranged longer than this median met approximately at 7 milliseconds, and those shortest at 4 milliseconds. Elementary 1 sees its median at approximately 6 milliseconds, and Elementary 2 sees an approximate 7 millisecond duration. Elementary 3 sees an extensive 6-8

millisecond range including outliers. Boxes and whiskers included, Elementary 0 and 4 time ranges are longer in length in comparison to Elementary 1 and 2; although medians for each category fell closely at an approximate 6-7 millisecond range, time ranges for Elementary 0 and 3 depict that speaker tokens at these levels vary in regard to duration of the pronunciation of the overall token and are less predictable.

Figure 7 evaluates the results of the duration of the antepenult or third to last vowel for the lexical item *elementary* in each of the four stress patterns attested in the data. The antepenult vowel being analyzed for categories 0-3 is epsilon [ɛ].

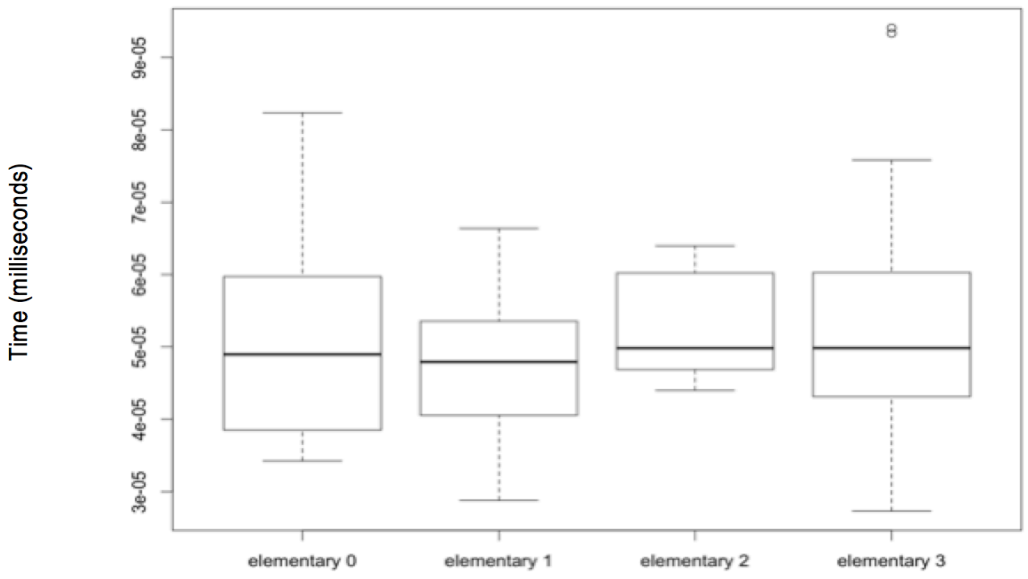

Figure 7: Antepenult vowel duration box plot

In Figure 7, the box for Elementary 0 has a duration of approximately 4-6 milliseconds, similar to Elementary 3 that sees an approximate 4.5-6 duration. The

box of Elementary 1 has duration of approximately 4-5.5 milliseconds, and Elementary 2 with a 5-6 duration. The tallest or most extensive box plot, Elementary 0, appears to vary the most in duration across all quartiles and stress forms; recall that Elementary 0 is the SAE form. Similar to the word duration box plot, Elementary 0 and 3 vary the most based on whiskers.

Figure 8 evaluates the results of the duration of the penult or second to last vowel for the lexical item *elementary* in each of the four stress patterns. The penult vowel analyzed for categories 1 and 2 is schwa [ə] while secondary stress [ˌɛləˈmɛnˌtɛɹi] analyzes [ɛ]. Note that there is no category for Elementary 0 complete deletion [ˌɛləˈmɛntɹi] since this word has collapsed into a four-syllable word.

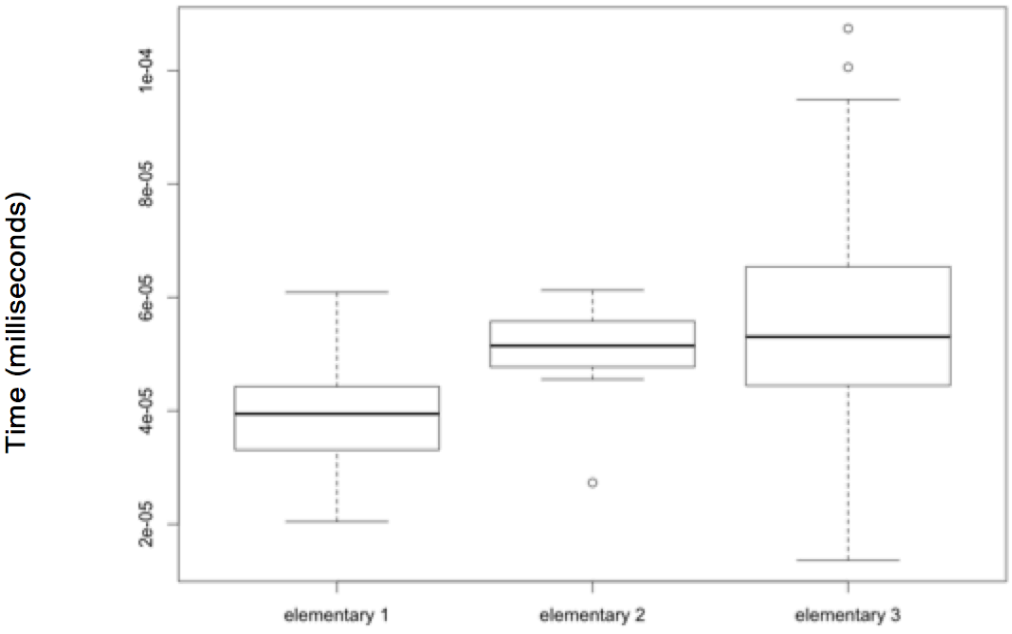

Figure 8: Penult duration box plot

Figure 8 patterns much differently than Figure 6 and 7 with Elementary 1 exhibiting a median of 4 milliseconds and Elementary 2 having a very short range

and an approximate 5.6 millisecond median for schwa with an accompanying outlier. Elementary 3 varies the most with an approximate total range of 1-10 milliseconds for vowel [ɛ] with some outliers; vowel [ə] seems to behave much differently than vowel [ɛ].

In summary of these durations, Elementary 3 ranges or varies the most across all three boxplots. The word duration and antepenult box plot results patterned similarly in that Elementary 0 and 3 varied extensively, while Elementary 1 and 2 did not. The penult box plot results patterned differently with short durations for Elementary 1 and 2 and a wide duration for Elementary 3.

4.2 Formal Word List Results

When analyzing -mentary items in the word list reading, I performed an auditory analysis of each of the tokens. I listened to each word list entry multiple times to determine which category level was appropriate for each of the 10 -mentary items in the word list. For these word list results, I display the findings for each attested word and for each of the analyzed social categories, presenting a detailed report for all ten -mentary items based on their total number of tokens per stress category.

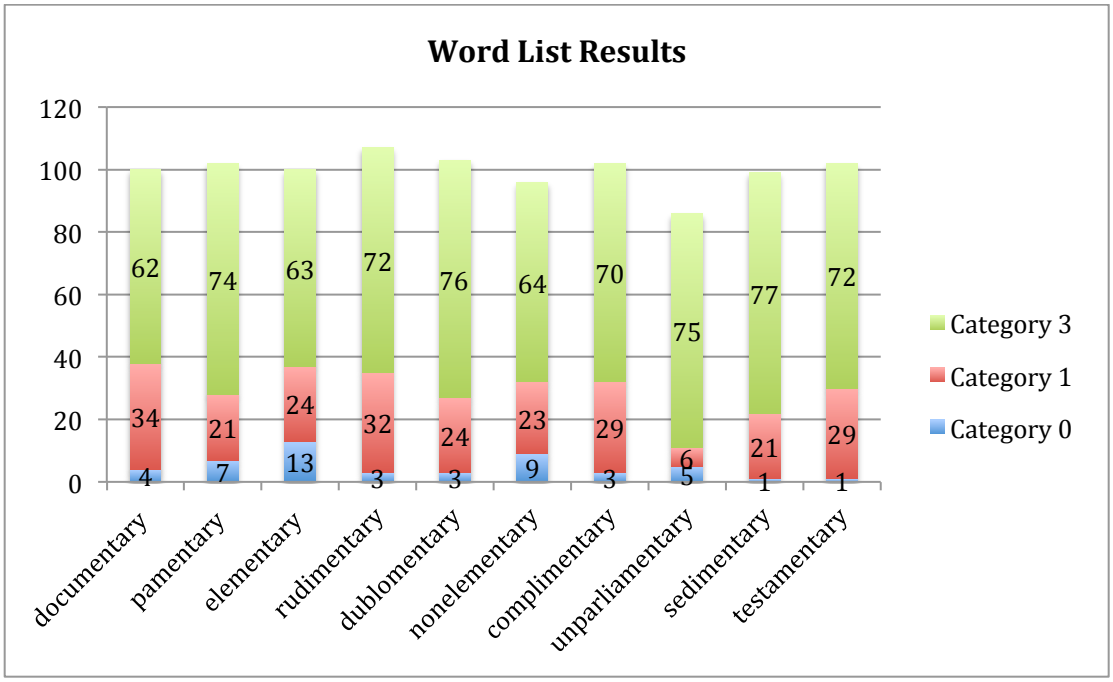

Figure 9: Word list results of lexical items

Figure 9 above displays those tokens accounted for in each of the recorded -mentary words from the word list. A total of 997 tokens[7] were collected altogether. No tokens for category 2 or 4 were found. As expected, based on the initial hypothesis, it is clear that Category 3 secondary stress [ˌɛləˈmɛnˌtɛɹi] accounted for most of the tokens. Following this, Category 1 [ˌɛləˈmɛntəɹi] appears as second highest, and SAE form Category 0 [ˌɛləˈmɛntɹi] as third highest.

In comparison to Figure 9, Figure 10 below displays these tokens as totaled categories separate from their lexical items. The word list results concluded in 705 tokens in Category 3, 243 tokens in Category 1, and 49 tokens in Category 0.

[7] A total of 997 tokens were collected, but others were rejected due to background noise that interfered with the clarity of the recording.

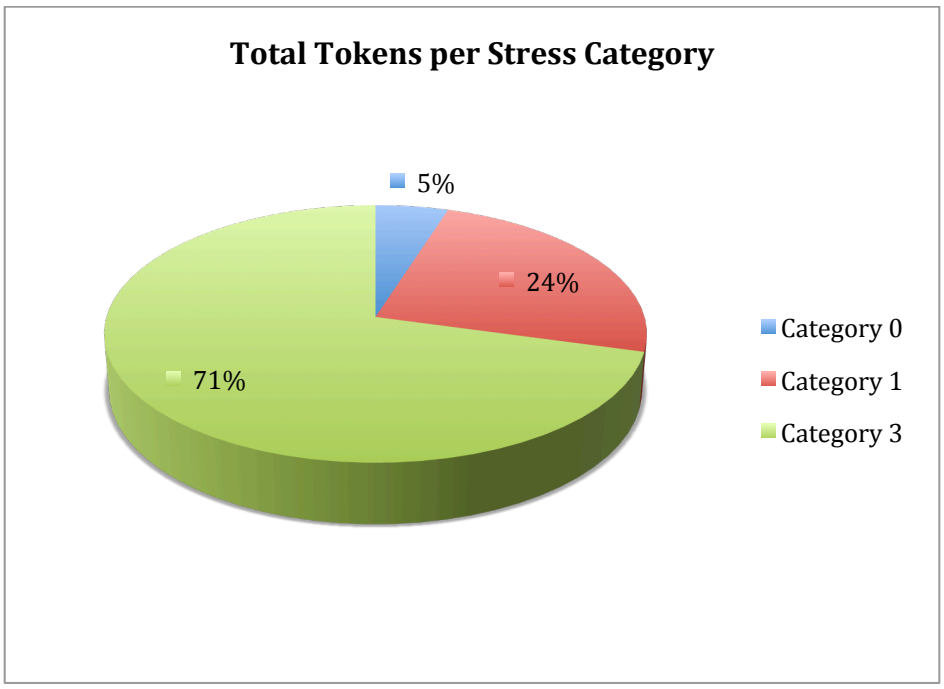

Figure 10: Total tokens per stress category

Tokens collected in the word list for all items found the following results: 71% secondary stress [ˌɛləˈmɛnˌtɛɹi], 24% reduction to schwa [ˌɛləˈmɛntəɹi], and 5% SAE complete deletion. At stated earlier, it appears the speakers from Upstate New York tend to use Category 3 as opposed to other patterns for item *elementary*.

In addition to the overall results for the word list data, I also examine specific results for the three social categories: age, gender, and residence. In order to gauge relevance for age, age groups were divided into three ranges of young (less than 30), middle (31-50), and old (51-70). The token percentages displayed in Figure 11 below derive from 33 young speakers, 24 middle-aged speakers, and 23 old speakers.

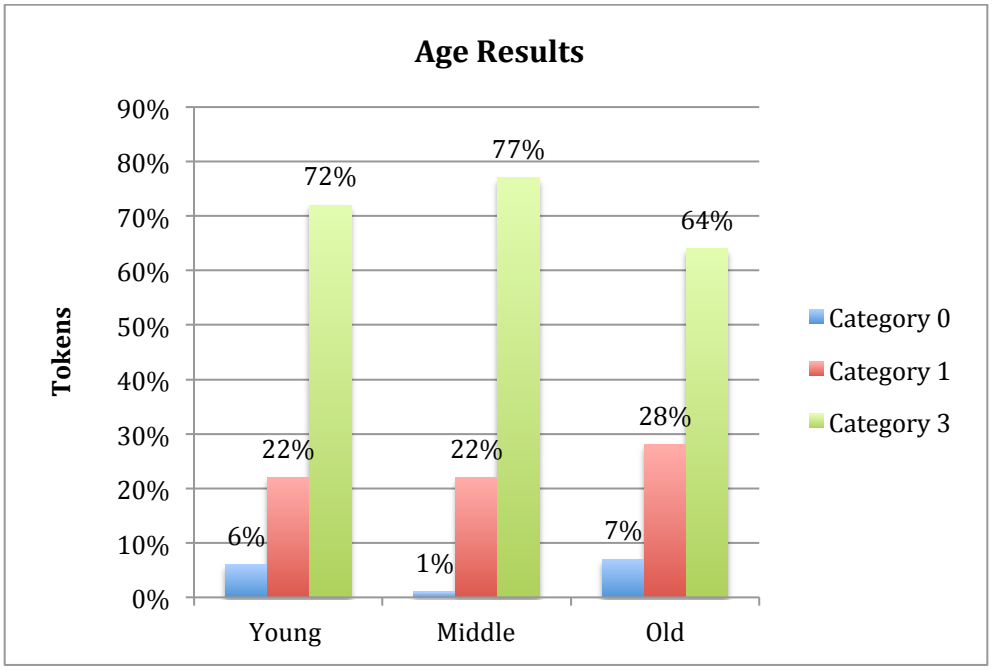

Figure 11: Age results

Figure 11 shows percentages out of the total number of collected tokens per age group. Category 3 was the most frequently used stress form, Category 1 the second most frequent, and Category 0 the least frequent. For Category 3, age group "young" accounted for 72%, 77% for "middle", and 64% for "old". Category 1 behaved consistently across all age groups with 22% "young", 22% for "middle", and 28% for "old". Note that there is a 13% decrease in Category 3 between the "middle" and "old" age group. There is also a decrease in Category 0 in the "middle" age group.

I consider whether the "young" or "middle" age group is pushing this lexical stress change of nonstandard stress. There is one exception to this patterning as the "middle" age group sees strong decrease in Category 0. To test for significant difference between tokens counted for each of these three age categories, an

ANOVA test was conducted to measure variance and significance. As discussed in Section 3, I used statistical tests such as ANOVA and t-tests to decide whether a specific social categorization could accurately predict the occurrence of one of the stress categories. Table 5 outlines the ANOVA results for each of the stress categories.

Table 5: Age variance values (ANOVA)

	Source of Variation	**Sum of Squares**	**df**	**Mean Square**	**F**	**p-value**
Category 0	**Between Groups and Within Groups**	7.9472 187.04	2 97	3.9736 1.9287	2.607	.13290
Category 1	**Between Groups and Within Groups**	9.7738 1104.7	2 97	4.8869 11.389	.42909	.65239
Category 3	**Between Groups and Within Groups**	29.721 1307.0	2 97	14.860 13.474	1.1028	.33603

Table 5 displays results from a one-way ANOVA test that calculates speakers' use of each of the three stress categories by age. The *df* indicates the standardized difference between means, that is, degrees of freedom. P-value measurements depict that the ANOVA test resulted in no values less than .05 for each of the categories, thus finding no significant results between age groups; in approximation, Category 0 = 0.13, Category 1 = 0.65, and Category 3 = 0.33.

Word list data was also parsed in terms of binary gender, given categories

"male" and "female," to account for stress Category usage. Figure 12 displays the word list results by gender. The tokens displayed here derive from 51 female speakers and 49 male speakers.

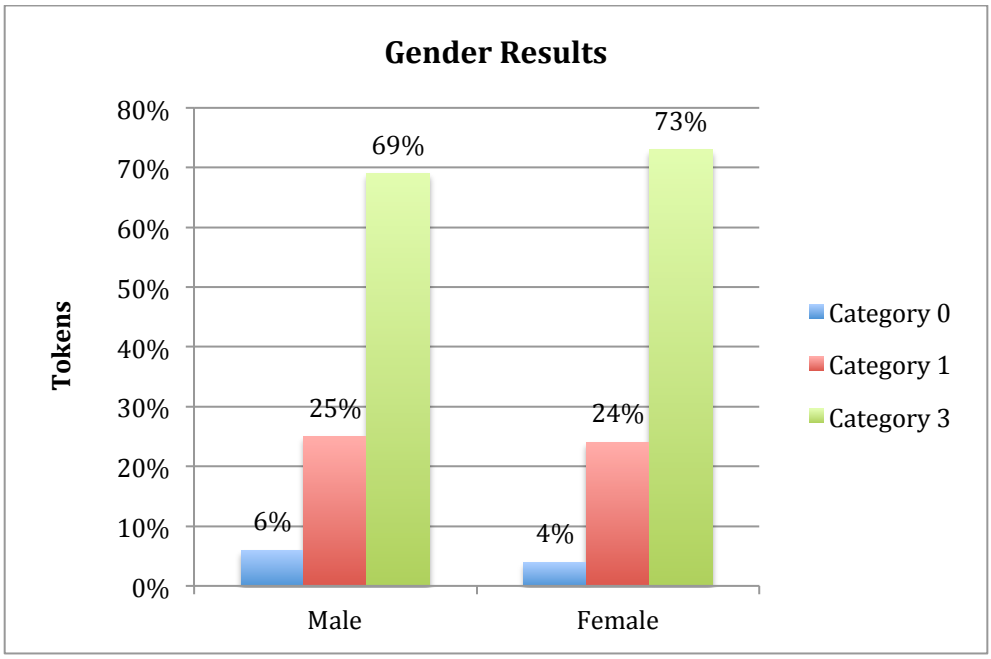

Figure 12: Word list gender results

Figure 12 shows percentages out of the total number of collected tokens per gender. Tokens in Figure 12 are collected from all 10 -mentary words in the formal word list. There is no large difference between male and female usage patterns throughout categories 0, 1, and 3; there are no large gaps in number or variation concerning these categories. There was no more than a 4% difference found between categories across genders.

A t-test was conducted to assess whether the two populations of female and male were statistically different from each other, and the test results deemed these insignificant with no p-values less than .05 in Table 6.

Table 6: Gender t-test p-values

	Male Mean	**Female Mean**	**p-value**
Category 0	0.591836735	0.392156863	0.479714703
Category 1	2.510204082	2.352941176	0.816103983
Category 3	6.836734694	7.254901961	0.572055626

Table 6 shows p-values for Categories 0-3 by gender group. Both mean and p-values are displayed here. By comparing female and male means, the results show that men chose Category 0 and 1 more so than women, though women in turn chose Category 3 more times than men. No p-values resulted in calculations greater than .05 and are thus insignificant; in approximation, Category 0 = 0.479, Category 1 = 0.816, and Category 3 = 0.572.

Results of statistical significance tests for residence saw some similar patterning to age and gender data, as can be seen in Figure 13, accounting for suburban, rural, and urban residences. The percentages derive from 32 rural, 42 suburban, and 26 urban speakers.

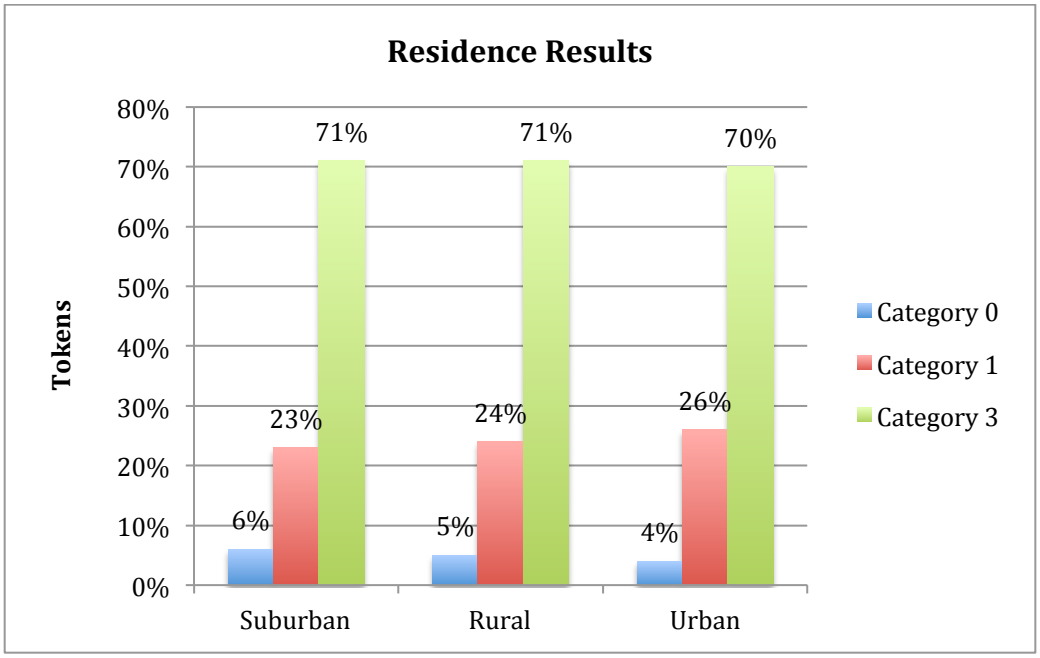

Figure 13: Residence results

Again, Category 3 saw highest percentage of tokens with Categories 1 and 0 proceeding in this order. It appears that all social categories of age, gender, and residence see this same pattern of stress category usage with the nonstandard stress form as most used. Percentages regarding residence are extremely close in number with only 2% resulting as the largest difference. To test for significant difference between tokens collected for each of the three residence categories, an ANOVA test was conducted to measure variance. Table 7 below represents the approximate values for each category.

Table 7: Residence variance values (ANOVA)

	Source of Variation	Sum of Squares	df	Mean Square	F	p-value
Category 0	**Between Groups and Within Groups**	.58168 194.40	2 97	.29084 2.0042	.14511	.86510
Category 1	**Between Groups and Within Groups**	1.3040 1113.2	2 97	.65203 11.476	.05861	.94479
Category 3	**Between Groups and Within Groups**	.08972 1336.6	2 97	.04464 13.780	.00323	.99676

Table 7 above displays results from a one-way ANOVA test that calculates speakers' use of each of the three stress categories by residence. As the information shows under the p-value column, the ANOVA test resulted in no numbers less than .05 for each of the categories, finding no significant differences between the residence results; in approximation, Category 0 = 0.86, Category 1 = 0.94, and Category 3 = 0.99. As these numbers are compared, the results show that the p-values are close in number. Similar to those results from Table 5, Category 3 was the preferable choice by speakers, Category 2 being the second highest result, and Category 0 was used the least. Thus, while there is preference toward Category 3 by all residence types, there are no significant results that prove that any of the residence groups is performing separately from this pattern. In total, each of the social categories of residence, age, and gender saw similar patterning across all

stress categories with no significant results.

Not all of the results concerning these social categories were anticipated and will be discussed in Section 5 below.

Section 5: Discussion

Based on Dinkin and Evanini's (2010) results from a large-scale dialect study across New York and surrounding states, I hypothesized that I might find similar results concerning stress patterns and social factors. Out of 425 tokens, Dinkin and Evanini (2010) found that the nonstandard secondary stress form [ˌɛləˈmɛnˌtɛɹi] accounted for 70% percent of their -mentary words: *elementary*, *rudimentary*, *documentary*, *complimentary*, and *sedimentary*. The word *elementary* also showed surprising differentiation between age groups (Dinkin and Evanini, 2010); speakers born before 1943 tended to have a much lower rate of Category 3. Dinkin and Evanini go on to explain the significance of these results:

> These results support the hypothesis that the stressed penult originated as an analogical change in the pronunciation of the morpheme *-ary*. It is commonplace in historical linguistics that more frequently used lexical items are more likely to resist the effects of analogical change, and therefore we should expect the most common of the -mentary words to be the least advanced in the shift to the stressed penult. Data from the first release of the American National Corpus indicate that *elementary* is by far the most frequent -mentary word in spoken American English: *elementary* appears in the spoken portion of the corpus 99 times, while all other -mentary words combined make a total of

> 21 appearances. This being the case, we would expect *elementary* to show the greatest resistance to the stressed penult—and that is exactly what we find. (Dinkin and Evanini, 2010:37)

Because *elementary* is the most frequent of the -mentary words and sees results of multiple stress variation forms, I focused on this word more so than the other nine accounted for in the word list reading; I dedicated the entire discussion of the informal interviews to analyzing this lexical item.

I explained earlier that some of my interviewees commented that they are aware of the different forms of *elementary* either in their own idiolect or throughout the Upstate New York region, which shows that there is conscious awareness of this dialectal stress feature in the community. Dinkin and Evanini also comment on this, stating that some of his participants commented on regional pronunciation differences and that this evidence "demonstrates that the stress variation in *elementary* occurs above the level of consciousness" (Dinkin and Evanini, 2010:40).

"Changes within a speech community are preceded by linguistic variation", and so it makes sense that there is consistent change from the standard -mentary form to the nonstandard penultimate form (Mesthrie et al. 2010:110). Out of the five stress forms, the penultimate or secondary stress form [ˌɛləˈmɛnˌtɛɹi] is used most often across all age groups, genders, and residences in the Syracuse area. The -mentary stress forms may be witnessing lexical diffusion, that is, the theory that "proposes that sound change occur word by word" but does not necessarily occur simultaneously and may reach certain words before others depending on how

conducive they are to change (Mesthrie et al. 2010:113). Due to lexical diffusion, which Mesthrie et al. (2010) say "proposes that sound change occurs word by word", it is also hypothesized that there is a rate at which sound changes are effected in language, thus the -mentary lexicon of focus in this study may see in the future more nonstandard stress forms across the other nine attested words of focus that are currently using the SAE form since this is a relatively new change (113). It may be the case that a ripple effect occurs, starting with the nonstandard forms of *elementary* and eventually reaching those other -mentary words.

Social factors of age, gender, and residence were assessed, and data figures and graphs for these factors were included for visual analysis. It is understood that social characteristics may guide dialect feature use, and I hypothesized that age, gender, and residence could be impacting stress choice in this study. In discussion of social factors, Mesthrie et al. (2010) explain that we can assume there is change happening in real time when "older age groups show low use of a variant while younger groups show increasingly greater use" (117). Therefore, I analyzed which patterns of stress were being used by each age category, expecting that each age group would differentiate from each other. The older age group used secondary stress [ˌɛləˈmɛnˌtɛɹi] less than the middle and young age groups by at least 11 percent.

The results of the boxplots in Figures 6-8 confirm that Elementary 0 and Elementary 3 durations vary distinctly in range of duration more so than Elementary 1 and 2. Thus, while speakers typically choose Elementary 3, their choice of time duration is less predictable because of this wide duration. If the

secondary stress from [ˌɛləˈmɛnˌtɛɹi] is a new stress pattern to this dialect, this may explain the wide range of duration, although this hypothesis has not been concluded. With respect to the word list data, ANOVA and t-tests provided no significant results between independent social category variables and stress category; all p-values resulted in calculations greater than .05.

I aimed to decipher which direction each of these stress categories are moving throughout three age levels displayed in Figure 11. Most interesting are the results from the middle age group that see a decrease in the SAE stress form with only two tokens. The age results graph also shows the nonstandard secondary stress form [ˌɛləˈmɛnˌtɛɹi] increase from old to middle and young. If this data for the nonstandard form continues to rise, we could hypothesize that younger speakers are pushing for the nonstandard stress form as predicted. More data will have to be collected in order to provide evidence and significance to prove hypotheses.

Women may be using secondary stress [ˌɛləˈmɛnˌtɛɹi] more so than men; Figure 12 showed women using this form 4 percent more than men. It is possible that gender progression is occurring as "women have been found to be ahead of men in their scores for the 'new' variants", in this case, the nonstandard form of [ˌɛləˈmɛnˌtɛɹi] (Mesthrie et al., 2010:113). Again, no significant numbers are currently proving this hypothesis in this study and more gender data will have to be collected in the future to test for greater significance.

In terms of residences, similar stress patterns arose with the secondary stress form [ˌɛləˈmɛnˌtɛɹi] as most consistent. There were no significant data results for each of the social categories that would evidentially prove them as the source of

language change, but this does not necessarily mean that social factors should not continue to be considered as impacting factors for this linguistic phenomenon.

Each of the social categories of residence, age, and gender saw similar patterning across all stress categories with no significant results. The use of the secondary stress form [ˌɛləˈmɛnˌtɛɹi] may be gradually increasing in use across social categories or is already diffused to the point at which no large differences can be currently seen across social categories at this point in time as the form has standardized for the Syracuse dialect. More data will have to be collected in the future with these categories to assess how these stress forms are being used in the geographical location of Syracuse, New York.

Section 6: Conclusion

If social factors of age, gender, and residence are influencing choice among stress forms in the Syracuse dialect, more data will need to be collected and tested for significance. This Upstate New York dialect seems to use the nonstandard form [ˈmɛnˌtɛɹi] more than the SAE form [ˈmɛntɹi]. Even more interesting than this is that the dialect chooses not only Category 3 [ˈmɛnˌtɛɹi] before the SAE form, but also Category 1 reduction to schwa [ˈmɛntəɹi]; that is, speakers typically choose one of these two stress patterns rather than the SAE form. This pattern resulted in each of the three assessed social categories and there were no significant results across these categories.

I would like to see this study replicated using a larger sample size with more participants as it had its limitations. This would provide more evidence of these

speaker choices by social factors. Collected data from the Syracuse area should be compared to another locality to determine whether these patterns are specific to this geographical area. Additionally, future research inquiries could include gathering more natural data from interviewees to further analyze those factors of gender and age since there appears some type variation and diffusion in these areas. Once this data is collected, it would also be interesting to analyze whether or not education or prestige is effecting this change to the popular nonstandard penultimate form, especially since nonstandard features are consistently associated with less education and lower social status (Mesthrie et al., 2010). An increased collection of data could potentially provide further evidence and reinforcement for those theories discussed by Dinkin and Evanini (2010) and myself.

Appendix A: Demographic Survey

Demographic Information

Please answer the following questions to the best of your ability. You may leave questions blank if you do not feel comfortable providing an answer. If you select "other" as an answer, please provide more specific information in the blank provided.

Name: _____

Age: _____ Gender (check one): □ Male □ Female

Highest level of education (check one):

□ Less than high school □ High School/GED □ Some college

□ Two-year degree □ Four-year degree □ Some post-graduate

□ Post-graduate degree (master's, doctoral, professional)

□ Other: _____

Race/ethnicity (check one):

□White □ Hispanic □ African American □ Native American □ Other:

_____

Birthplace (city and county): _____

Place of residence (city and county) _____

Development of place of residence: □ Rural □ Suburban □ Urban

Year of arrival in place of residence: _____

Number of years lived in place of residence: _____

Other places lived (include number of years lived in each location):

_____

Native language(s):

□ English □ Other: _____

Appendix B: Informal Interview Questions

Each interviewee answered the following questions:

1. If you had to star in a musical, which one would it be?
2. Can you tell me about the school you went to when you were in third grade?
3. As a child, what did you consider to be the most valuable thing you owned?
4. Can you tell me how to get to your town's school?
5. How would you describe your town?
6. Was your school divided up into different buildings or was it contained to one building?
7. What was your favorite children's story?
8. Can you tell me about the surrounding schools in your area?
9. If I was looking to enroll my 7 year old in a good music or arts program, which school might I go to?
10. Which grades were considered to be primary school, middle school, and high school?
11. Did you ever switch to a different school or district?

Appendix C: Formal Word List

Each interviewee read the following words in order from top to bottom:

mechanism
accelerator
documentary
journalism
refrigerator
pamentary
cannibalism
incinerator
elementary
jingoism
annotator
rudimentary
albinism
collector
dublomentary
echoism
aspirator
nonelementary
helotism
bioterror
complimentary
rigorism
liberator
unparliamentary
rheumatism
suspensor
sedimentary
revisionism
testator
testamentary

Appendix D: Vowel and Word Duration Script

```
# nestedLoops.praat : read TextGrid files from a directory and
# report some attributes

form Process TextGrids to measure intervals
   comment Read files from directory:
   sentence directory /Users/clunis/Desktop/sound files/
   comment Name for data file:
   sentence logfile vowels.txt
   comment Look for labels on tier name:
   sentence tierName V3
endform

# delete previous measurements
filedelete 'directory$'/'logfile$'

# Header Row: MUST be kept in sync with data row
writeFileLine: directory$ + "/" + logfile$, "file", tab$, "intervalLabel", tab$, "wordType",
tab$, "start_time", tab$, "end_time", tab$, "duration"

# get list of TextGrid files (we'll assume wav files exist for these)
Create Strings as file list... files 'directory$'/*.TextGrid

numberOfFiles = Get number of strings
writeInfoLine: "Working on ", numberOfFiles, " TextGrid files from ", directory$

for i to numberOfFiles
   select Strings files
   fileName$ = Get string... i

   # file$ will hold the name of the TextGrid file, with the extension removed
   file$ = fileName$ - ".TextGrid"

   # appendInfoLine: "Getting measurements for: ", file$

   snd$ = "'directory$'/'file$'.wav"
   grid$ = "'directory$'/'file$'.TextGrid"

   Read from file... 'grid$'

   if fileReadable ( snd$ )
      # open the sound file if it exists and is readable
      Read from file... 'snd$'
   else
         # sound is missing!  complain in logfile and info window
```

```
        errorMsg$ = "Error: missing sound file for 'grid$'"
        appendInfoLine: errorMsg$
        appendFileLine: directory$ + "/" + logfile$, errorMsg$

        # now skip to the next sound
        goto END_OF_FILES_LOOP
endif

# we have a textgrid and a sound, walk through tiers
select TextGrid 'file$'
nTiers = Get number of tiers

# this bit of code looks through all of the tiers of the TextGrid
# for the tierName given at the beginning
for tier from 1 to 'nTiers'
   tname$ = Get tier name... 'tier'

   if tname$ = tierName$
      # first we need to get the label on the word tier
      # word is always on tier 1 and we've already checked that
      # those tiers are well-formed so we can just do this:
      wordType$ = do$ ( "Get label of interval...", 1, 2 )

      nInterv = Get number of intervals... 'tier'

      if nInterv != 3
            # wrong number of intervals, something's wrong
            errorMsg$ = "Error: wrong numbner of intervals for 'file$'"
            appendInfoLine: errorMsg$
            appendFileLine: directory$ + "/" + logfile$, errorMsg$

            # now skip to the next sound
            goto END_OF_FILES_LOOP
      endif

      # now we'll extract our measurements
      for interval from 1 to nInterv
         intervalName$ = do$ ( "Get label of interval...", tier, interval )

         if intervalName$ <> ""
            start = do ( "Get start point...", tier, interval )
            end = do ( "Get end point...", tier, interval )

            # convert to ms
            start_ms = start / 1000
            end_ms = end / 1000
```

```
                # calculate the duration
                duration = end_ms - start_ms

                appendInfoLine: file$, tab$, intervalName$, tab$, duration

                # Data Row: this writes to the log file BE SURE TO CHANGE THE
HEADER ROW TO MATCH!!!!!
                appendFileLine: directory$ + "/" + logfile$, file$, tab$, intervalName$, tab$,
wordType$, tab$, start_ms, tab$, end_ms, tab$, duration
                        endif
          endfor

            label END_OF_TIER_LOOP
       endif
   endfor

   select Sound 'file$'
   plus TextGrid 'file$'
   Remove

   label END_OF_FILES_LOOP
endfor

select Strings files
Remove

appendInfoLine ( "finished!" )
```

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