

“He Didn’(t) Give Up When Things Got Har(d)”: Examining Barack and Michelle Obama’s Rates of Coronal Stop Deletion

Nicole R. Holliday*

1 Introduction

Word-final Coronal Stop Deletion (CSD) is a well-documented phenomenon in quantitative socio-linguistics (Guy 1980, Guy 1991a, Guy 1991b, Guy and Cutler 2011, Hazen 2011). Several linguists have looked at deletion rates in Appalachian English, Chicano English, and especially in African American English (AAE) in order to study issues such as authenticity, formality, and style-shifting. This study compares deletion rates between Michelle and Barack Obama’s 2012 Democratic National Convention (DNC) speeches and their respective deletion rates in a 2012 joint interview on the American television program, *The View*. As Barack and Michelle Obama are two of the most famous individuals in the world, examining differences in their linguistic behavior may reveal whether or not the style-shifting patterns of public figures differ from style-shifting patterns of private citizens. This project also aims to further explore the phonological and morphological environments that condition deletion for these speakers, and to capture a better picture of how these upper-class black political figures may delete in different registers. Additionally, this work employs the methodologies previously used by Guy (1980, 1991b), Guy and Cutler (2011), and others to compare Barack and Michelle’s rates of CSD in order to describe how it is a feature prone to stylistic variation.

2 Background

Though Coronal Stop Deletion is well-studied in linguistics, it is of particular interest because of the surprising regularity of the manner in which it patterns in several dialects of American English. For example, AAE speakers tend to use considerably higher CSD rates than are commonly found among white vernacular American English speakers (Guy and Cutler 2011). Guy (1991a) showed that young (22-30), male, white speakers of Standard American English (SAE) had deletion rates between 23% and 26%, while Guy and Cutler (2011) observed deletion rates as high as 70-97% in the speech of AAE speaking male rappers. These data indicate that the phenomenon is highly variable across dialects of American English. Additionally, Guy and Cutler (2011) discuss CSD as a variable that is prone to style-shifting, and note that as such, it may work as a marker of authenticity or community membership. This paper will focus especially on describing Michelle and Barack Obama’s rates of CSD through the lens of the stylistic, phonological, and morphological factors that appear to condition their rates of deletion.

Phonologically, CSD is affected by the segment that follows the lexical item containing the deletion target. Guy (1991b) proposes the Following Segment Constraint, which states that because of resyllabification, the characteristics of following segments affect the probability of deletion in a given target. In the current paper, the phonological conditions examined are following Obstruent, Glide, Pause, and Vowel. In this analysis, it will also be useful to bear in mind that the effects of following segment can also be variable by dialect (Guy and Cutler 2011).

Previous studies have also found that rates of CSD are sensitive to the morphological category of the word. Deletion rates are generally highest in monomorphemes (such as “bed”), then in semiweak verbs (defined as irregular past tense verbs, such as “left”), then in regular past tense verbs (Guy 1991a). In fact, this pattern is so well-attested that Guy (1991) proposes an exponential model for predicting the rates of deletion in one category based on rates of deletion in another. Guy (1991a) states:

*I would like to express my gratitude to Greg Guy, Renee Blake, John Singler, Zack Jagers, Livia Oushiro, Marie-Eve Bouchard, Sal Callesano and the entire NYU Sociolinguistics Lab for their support and helpful feedback on this work.

“If we further assume that variable rules have a fixed basic rate of application (an “input” probability; Cedergren and Sankoff 1974:339) regardless of level of operation, then this model predicts that the rates of retention in derivationally differentiated morphological categories should show an exponential relationship ... In the -t,d case, the model predicts that retention in monomorphemic words should be approximately the cube of the retention rate in regular past tense forms, and the retention rate in semiweak verbs (which undergo affix attachment at level one) should be about the square of the regular past tense rate.”

This paper will employ Guy’s (1991a) model of the exponential relationship of deletion rates by morphological category, alongside Guy and Cutler’s (2011) analysis of how style-shifting may affect this exponential model.

3 Methodology

The methodology for this analysis follows the methods previously employed by Guy (1980, 1991a, 1991b), Hazen (2011) and others who have studied Coronal Stop Deletion (CSD). Data was impressionistically coded by the author for deletion or non-deletion in contexts where the phenomenon could appear. Each sample was rated on up to three different occasions in order to provide maximally reliable results.¹ Overall, 733 tokens are analyzed; 468 are from Barack, and 265 are from Michelle. This is mostly due to the relatively fewer number of speech turns from Michelle in the joint interview on *The View*. For the 2012 DNC Speeches, only the first 20 minutes of each speech were analyzed, but the interview on *The View* was considered in its entirety (approximately 20 minutes).

For both speakers, the items analyzed were all lexical items ending in /t/ or /d/, though this analysis excludes tokens of the word “and” since previous literature has noted that the underlying representation for that token may be unclear (Guy 1991b). Additionally, a total of eight tokens (all from the interview on *The View*) were excluded due to background noise and overlapping speech that made it difficult to assess whether deletion had occurred.

Data analysis was performed using the variable rule program in Goldvarb Lion for Mac (Sankoff, Tagliamonte and Smith 2012). Results are reported with number of tokens considered, percent deletion or retention, and the Goldvarb factor weights. Additionally, where appropriate, results of Chi-Square tests for significance are also reported for clarity.

4 Results

4.1 Barack and Michelle Obama: Overall Combined Results

A Goldvarb analysis comparing factors affecting rates of deletion did not select speaker as significant, indicating that overall, Barack and Michelle Obama’s rates of deletion were not significantly different from one another. For the combined dataset with tokens from both speakers, the Goldvarb analysis selected only following phonological element, morphological category, and speech situation as significant factors, and each of these will be discussed in turn. When all tokens are considered, Barack and Michelle’s overall deletion rates are nearly identical.

Speaker	Non-deletion Tokens	Deletion Tokens	Total Tokens	Percent Deletion
Barack	321	147	468	31.4%
Michelle	181	84	265	31.7%

Table 1: Overall Deletion Rates for Barack and Michelle Obama.

¹Reliability for the first two ratings was 96.4%, so only 3.6% of tokens required a third rating.

4.1.1 Speech Situation

Though it is apparent that Barack and Michelle use comparable deletion rates in general, it is more informative to explore the variation in these results when subsets of the larger dataset are considered. Most previous studies of Coronal Stop Deletion have not studied speakers in such formal speech situations, but Barack and Michelle's overall deletion rates are comparable to the deletion rates of the speakers of Standard American English (SAE) in the sociolinguistic interviews analyzed in Guy 1991a, in which the SAE speakers in that study had an overall deletion rate of 29.3%. Given that those participants were white SAE speakers, we may anticipate a lower CSD rate. However, since these rates are from semi-casual speech situations (sociolinguistic interviews), we could expect speakers to use even lower rates in a situation like a formal speech or televised interview, since Guy (1980, 1991a) notes that level of formality of the speech situation is an important conditioning factor for CSD. As a result, the fact that Barack and Michelle are using rates near (in the DNC speeches) and above (on *The View*) the rates obtained for white speakers in sociolinguistic interviews is notable and may be indicative of their use of a variety that differs from SAE.

For this data set, speech situation was selected as a significant factor both when Barack and Michelle were considered separately, and when their data was considered together. When we compare deletion rates in the DNC Speeches to the deletion rates in the interview on *The View*, the results are as anticipated given earlier work (Guy and Cutler 2011). Both Barack and Michelle have significantly higher rates of deletion in *The View* interview than in their DNC Speeches, indicating that there is indeed a stylistic difference between the speech situations. When comparing factor weights, the differences between Barack and Michelle's deletion levels with respect to speech situation are marginal, and thus the analysis does not reveal a significant difference between speakers. Table 2 and Figure 1 show the results for Barack and Michelle by speech situation.

Speaker	Speech Situation	# of Tokens	Percent Deletion	Factor Weight
Barack	<i>The View</i>	156	37.8%	.586
	DNC	312	28.2%	.457
Michelle	<i>The View</i>	108	36.1%	.594
	DNC	157	28.7%	.435

Table 2: Barack and Michelle Obama Deletion Rate by Speech Situation.

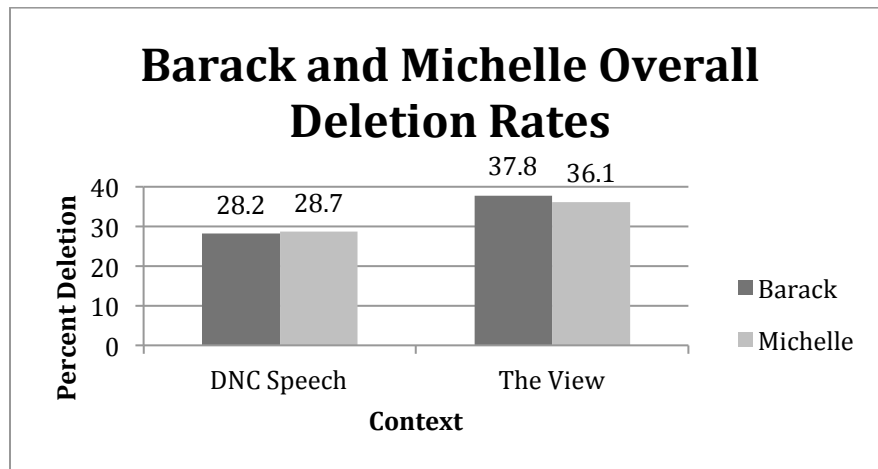


Figure 1: Deletion Rates for Barack and Michelle Obama in the DNC Speeches and on *The View*.

Though there is evidence that CSD is sensitive to formality, the fact that Barack and Michelle are employing CSD at a higher rate than white speakers in a semi-casual situation may still be

surprising, since nationally televised political speeches are almost certainly more formal than sociolinguistic interviews (Guy 1980). However, due to the nature of public office, political figures may have motivation to accommodate to their (silent) audience in speeches such as these (Johnstone 2009). If these rates of deletion are higher than anticipated given the formality of the speech situations, it could be due to the fact that Barack and Michelle are style-shifting towards a more casual register, or that they are employing deletion rates and patterns of a dialect other than SAE.

4.1.2 Phonological Constraints

The overall rates by speech situation present a piece of the picture of the deletion rates of the Obamas, but given that CSD is also both phonologically and morphologically conditioned, it is necessary to analyze these rates by these potential conditioning factors. Guy (1991b) analyzed rates of CSD by phonetic environment and categorized following environments as follows: obstruent, lateral, rhotic, glide, vowel, and pause. In this data set, the categories are divided into obstruent, approximant, vowel, and pause due to relatively few tokens preceding rhotics and laterals.² Table 3 shows Barack and Michelle's deletion rates by following phonological context.

Following Context	N	Percent Deletion	Factor weight
Obstruent	314	42.4%	.634
Approximants	62	40.3%	.595
Pause	122	20.5%	.369
Vowel	209	17.2%	.327

Table 3: Combined Deletion Rates by Following Phonological Environment.

As expected based on previous work, Barack and Michelle have higher rates of deletion when the following context is a word that begins with an obstruent, followed closely by words that begin with approximants, then those that begin with pauses or vowels. These rates of preconsonantal deletion are lower than for Detroit African Americans (79–97%) (Wolfram 1969) or working class white speakers (47–86%) (Labov 1968), but they may be higher than expected given the formality of speech situation and the education and social class of the Obamas.³ Interestingly, these results seem to show that for the Obamas, following pause and following vowel contexts are treated as similar. A Chi-Square test also confirms that these contexts are not significantly different from one another (Chi-square=.547, $p=.4595$).

4.1.3 Morphological Constraints

Guy (1991a) also observes that deletion rates vary by the morphological category of the token (monomorpheme, semiweak past, regular past) and this is concluded to result from the semantic weight attributed to the final coronal stop in each category. Guy (1991a) notes that in the majority of data sets that he considers, deletion is most likely to occur with monomorphemes, followed by semiweak verbs, followed by regular verbs. This data reveals that this does not appear to be the case for the Obamas. When their data is combined, they are most likely to employ deletion in monomorphemes, but have higher rates of deletion in regular verbs than in semiweak past verbs.

² In this data set, deletion rates preceding rhotics and laterals were most comparable to glides (between 30–40 percent), so they were subsumed into the category “Approximants.” Barack and Michelle Obama each had 13 tokens of laterals and rhotics, and the Goldvarb analysis of significant factors does not differ when the model excludes these tokens.

³ Aspects of Barack Obamas's speech patterns and style-shifting behaviors between SAE and AAE, and their relationship with his class and racial identities have been studied in greater detail. See Alim and Smitherman (2012) for a more complete analysis.

Category	N	Percent Deletion	Factor weight
Monomorpheme	589	33.3%	.521
Semiweak Past	54	16.7%	.292
Reg Verb	90	28.9%	.495

Table 4: Barack and Michelle Combined Deletion Rates by Morphological Category.

Wolfram (1969) notes that the deletion rates of his Detroit AAE speakers appear to be less sensitive to morphological category than the deletion rates for white speakers, which would disrupt the relationship between categories described by Guy (1991a). This fact may partially help to explain the failure of these results to fit Guy's description of deletion rates by category, if we posit that Barack and/or Michelle may be using CSD more like speakers of AAE.

4.2 Comparing Barack and Michelle's Deletion Rates

The combined data set reveals that speech situation, following phonological context and morphological category contribute to determining the rate of CSD for the Obamas. Examining the data from Barack and Michelle separately reveals subtle differences between how Barack and Michelle employ the variable. For Barack, a Goldvarb analysis revealed that following context, word category and speech situation were all selected as significant factors. For Michelle, a Goldvarb analysis revealed that following context and speech situation were significant factors, but that morphological category was not selected. Each of the linguistic conditioning factors will be discussed in turn, with additional discussion devoted to the results by morphological context since it is the factor that differs most significantly between Barack and Michelle.

4.2.1. Following Context: Significant for Both Barack and Michelle

The following phonological context results pattern as expected given previous work and the current combined data set (Guy 1991a, Guy 1980 and Guy and Cutler 2011), except that pause and vowel appear to still be treated as the same by both Barack and Michelle. Table 5 shows Barack and Michelle's results by following phonological context.

Speaker	Following Context	# of Tokens	Percent Deletion	Factor weight
Barack	Obstruent	208	41.8%	.624
	Approximant	41	36.6%	.557
	Pause	72	19.4%	.356
	Vowel	134	17.9%	.338
Michelle	Obstruent	106	43.4%	.641
	Approximant	21	47.6%	.679
	Pause	50	22%	.369
	Vowel	88	16%	.307

Table 5: Barack and Michelle Deletion by Following Phonological Context.

Guy (1980, 1991b) shows that the place of pause and vowel on the deletion hierarchy can be dialectically variable, which could partially explain these results. Wolfram (1969) combines pause and vowel within the same category for his AAE speakers, due to the fact that speakers appear to treat them similarly. Due to the statistical insignificance of the present results and potential ambiguity in previous literature, the slight differences between deletion rates prepausally and prevocally will not be discussed in further detail. Figure 2 also shows Barack and Michelle's results by following phonological context in bar graph format for further clarity.

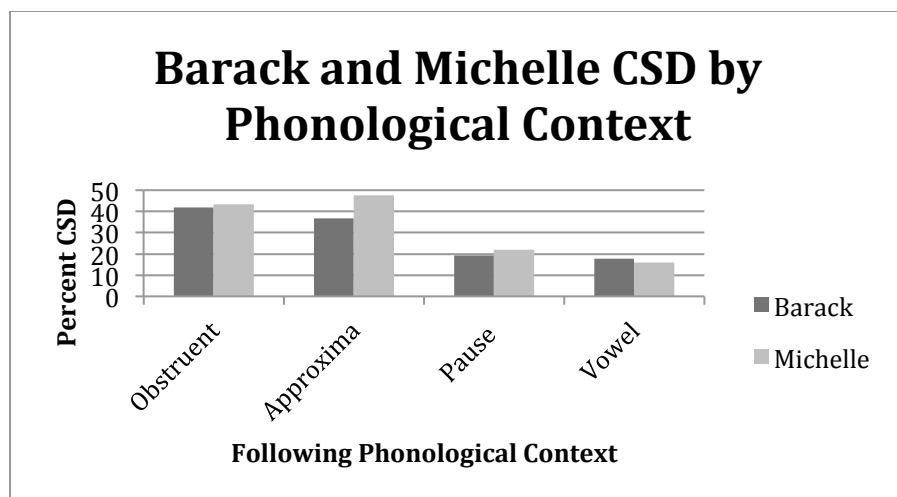


Figure 2: Comparing Barack and Michelle's Deletion Rates by Following Phonological Context.

4.2.2 Morphological Category: Significant for Barack but not Michelle

For Barack, monomorphemes are the most deletion-favoring environment, followed by regular verbs, then semiweak verbs. This opposes the exponential relationship found by Guy (1991a) but could be at least partially attributable to style-shifting, which has been shown to disrupt the exponential function (Guy and Cutler 1991). For Michelle, regular verbs are the most deletion-favoring environment, followed by monomorphemes, then semiweak verbs. This contrasts with Barack, but also does not pattern as expected given previous work and the exponential function. Table 6 compares Barack and Michelle's results by morphological category.

Speaker	Category	N	Percent Deletion	Factor weight
Barack	Monomorpheme	392	34.4%	.548
	Semiweak	32	12.5%	.183
	Reg Past	44	18.2%	.347
Michelle	Monomorpheme	197	31%	.490
	Semiweak	22	22.7%	.421
	Reg Past	46	39.1%	.583

Table 6: Barack and Michelle Obama Deletion Rates by Morphological Category.

Additionally, Guy and Cutler (2011) note that rates of conditioning by morphological category may vary by dialect and may be sensitive to style-shifting, which is an explanation that will be explored later in greater detail. Figure 2 shows Barack and Michelle's deletion rates by morphological category of deletion site.

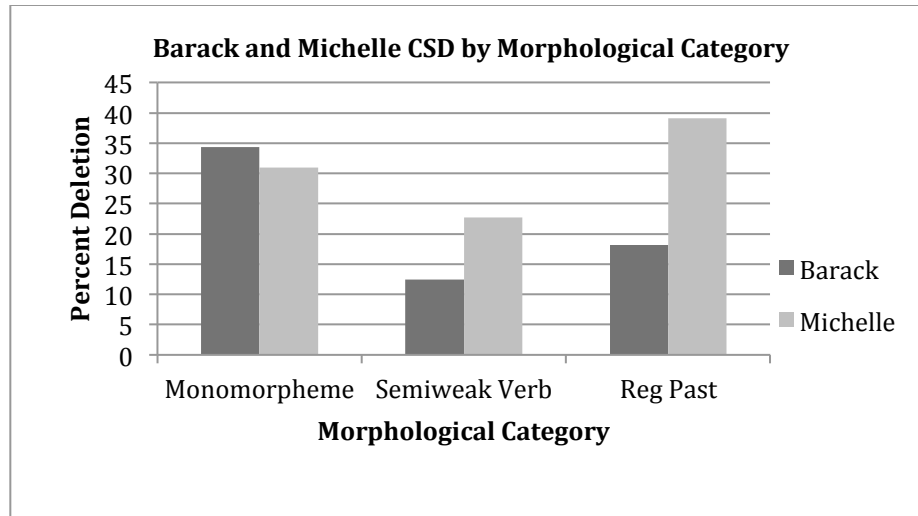


Figure 3: Comparing Barack and Michelle's deletion rates by morphological category of deletion site.

It may also be possible to explain Michelle Obama's high rate of deletion in regular past forms as compared with monomorphemes based on her dialect history. Wolfram (1969) notes that his AAE speakers are less sensitive to the effects of morphological category in their deletion rates. The fact that Michelle Obama is using comparatively high rates of deletion in the regular past could indicate that she employs this feature of AAE more prominently than Barack does, or that she could be style-shifting in the direction of that dialect. The fact that Barack's overall CSD rates are nearly identical to Michelle's, but that his morphological context results pattern more like an SAE speaker's is also important. If Barack is employing CSD to position himself as familiar with AAE or a member of the speech community, he is not doing so in a manner that would be typical of a native AAE speaker, but rather in a manner more predicted for someone who speaks AAE as a second dialect. Like the white hip-hop stars in Guy and Cutler (2011), Barack achieves a CSD rate that looks less like SAE, but his deletion contexts do not pattern as predicted for a speaker of AAE.

5 Discussion

5.1 CSD as an Identity Variable, Style-Shifting, and the Exponential Function of Morphological Category

Guy and Cutler (2011) apply the results of earlier works on the linguistic factors that condition CSD to a diagnostic test of whether a speaker appears to have style-shifted. This model also has utility for the present work, as it may help to explain why Barack and Michelle's results by morphological category do not conform to the exponential model posited in Guy (1991a).

As noted earlier, Guy (1991a) provides a model for predicting CSD that explains the data of several earlier corpora. Essentially, with retention rates lowest in the monomorpheme category, there should be an exponential increase in retention moving to the semiweak past and then the regular past. This means that if the retention rate for regular past is x , the rate for semiweak should be x^2 , and the rate for monomorphemes should be x^3 . Guy and Cutler (2011) assert that this exponential relationship can be disturbed if a speaker is engaging in style-shifting behavior. They note that if a speaker shows a retention rates in monomorphemes that is greater than the cube of the retention rate in regular verbs ($M > R^3$), they have shifted in the direction of marked informality, and if they show the opposite pattern ($M < R^3$), they may have shifted in the direction of formality (Guy and Cutler 2011). Given these criteria, the results by morphological category show that Barack does not necessarily appear style-shifted, but that Michelle may appear shifted in the direction of informality.

Speaker	Morphological Context	Actual Retention rate	Predicted by exponential model (based on Monomorpheme ⁴)
Barack	Monomorpheme	65.6%	65.6%
	Semiweak	87.5%	75.5%
	Reg. verb	81.8%%	86.9%
Michelle	Monomorpheme	69%	69%%
	Semiweak	77.3%	78.1%%
	Reg. verb	60.9%	88.4%

Table 7: Barack and Michelle Obama Predicted Retention Rates versus Actual Retention Rates.

Barack has a higher rate of retention in semiweak verbs, but the model holds relatively well for regular verbs, indicating that his morphological results may not be due to style-shifting. Michelle has a substantially lower retention rate for regular verbs than would be predicted by her retention rates for monomorphemes. Per Guy and Cutler (2011) this may be evidence of use of a markedly more informal register, which indicates that she may be style-shifting more than Barack in order to sound more informal, though it is also important to note that the fact that Michelle does not seem to be as sensitive to morphological category also affects these results. Additionally, both Barack and Michelle's overall deletion rates are still comparatively higher than we may expect from SAE speakers in such formal speech situations. The fact that both Barack and Michelle also delete at similar rates pre-vowel and pre-pause may also hint that certain aspects of the patterns of deletion observed here may also be influenced by African American English or another variety.

5.2 Summary and Future Work

In formal situations, Barack and Michelle use rates of CSD that are higher than those attested for white speakers of SAE in sociolinguistic interview situations. Barack and Michelle seem to be almost equally sensitive to speech situation as a conditioning factor for CSD. Their deletion rates are also both affected by following phonological context, and their deletion by phonological context follows the patterns found in previous works (Guy 1980, Guy 1991a, Guy and Cutler 2011). For both of the Obamas, deletion promotion by following phonological context follows this scale: Obstruents > Glides > Vowel/Pause. For Barack, morphological category is a significant factor, but it is not significant for Michelle, and her results by morphological category could indicate that she is employing a style more similar to African American English. Additionally, both speakers have generally unpredicted morphological category results, which may also be attributable to style-shifting behaviors and/or dialect mixing between SAE and AAE.

Overall, Barack and Michelle Obama's rates of deletion are strikingly similar to each other across these contexts, and they each delete a rate higher than one that would be predicted for white speakers of SAE in a more casual speech situation. It may be informative to compare these speeches to those of a similar white political candidate and his wife in order to see if the Obamas generally delete at a higher rate (or in different contexts) than comparable white speakers due to exposure to AAE, accommodation to black audiences, or other social factors. As the Obamas are public figures, their speech is likely carefully monitored, but it is possible that in a more casual situation, such as when they visit a local school or restaurant, they may employ higher rates of deletion than in these prepared speeches and television interview. Additionally, authors such as Alim and Smitherman (2012) have observed that Barack Obama sometimes employs AAE phonology in order to position himself or to represent a stance indicating that he is a member of the African-American community (Johnstone 2009). This may indicate that studying Barack's CSD rates in a context where he employs higher rates of other AAE features and/or is speaking to a predominately black audience may also yield results that further illuminate how he may employ CSD as a stylistic variable.

⁴ Generally the rate is predicted using the regular verb but because of the limited number of regular verb tokens analyzed, it was more reliable to base the model rate on monomorphemes because there were substantially more tokens of them.

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Department of Linguistics
 New York University
 10 Washington Place
 New York, NY 10003
nicole.holliday@nyu.edu