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Has Barack Obama Changed his Language in Later Life? A Case Study of *-ing/-in* Variation and the MOUTH Vowel

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Abstract

This paper aims to explore whether individual speakers can change their language at the phonological level across their lifespan, especially after the critical period, by conducting a longitudinal study on U.S. President Barack Obama at three time points in his middle years: 1995 (aged 34), 2008 (aged 47), and 2014 (aged 53). The two phonological variants *-ing/-in* and the /aw/ vowel were investigated. Our data were collected from three formal TV interviews with Barack Obama, available on YouTube. We transcribed the first 14–17 minutes of each interview as our research samples. A quantitative analysis was conducted on word-final *-ing/-in* and the F1 and F2 of /aw/ by employing multivariate analysis and a Fisher's exact test. As Obama identifies with being an African American, he is expected to use the alveolar variant at a higher rate than the velar nasal. However, according to our results for *-ing/-in*, Obama shows almost no change in our data. This could be accounted for by his occupations, including that of lecturer and president, requiring the use of the standard language, as well as by the stability of the variables *-ing/-in* themselves. However, in contrast to previous findings that *-ing* tends to be favoured in nouns, while *-in* is preferred in verbs (Wagner 2012b), our research showed no such preference, possibly because of the relatively formal speech style. As for Obama's /aw/ vowel, the data reveal a dramatic change in both lowering and fronting from age 34 to 47, while no difference is found between the ages of 47 and 53. Geographical relocation and social mobility could account for this linguistic change. To conclude, these patterns indicate the possibilities of individuals changing their language across their lifespan, and several motivating factors such as geographical and social class mobility, style of speech, and accommodation tend to affect the courses of the change.

Has Barack Obama Changed his Language in Later Life? A Case Study of *-ing/-in* Variation and the MOUTH Vowel

Xinyun Lei and Siqu Liu

1 Introduction

After Lenneberg et al. (1967) introduced the critical period hypothesis from neurology,¹ Labov (1978:275–312) drew on it to conceive and pioneer the apparent-time methodology of using “the present to explain the past” in order to observe language change. Since then, a multitude of studies have proven the continuing viability of the apparent-time hypothesis (e.g., Bailey et al. 1991) and thus indirectly verified the critical period hypothesis. However, some studies have observed individuals’ language changes after adolescence, which are beyond the critical period (e.g., Wagner 2012a, Payne 1976, Sankoff 2004). This contrast motivates the main question of the current paper, that is, whether individuals’ speech can change later in life (after the critical period) and what might cause this change to happen.

When it comes to research methods, previous studies prove that real-time studies can test what has been deduced from apparent-time study (Wagner 2012a). Within real-time studies, two study methods may be employed: a panel study, which uses materials retrieved from the same group of subjects at different time points, and a trend study, which has different but comparable sample groups at different time points (Wagner 2012a). Due to both the fact that individual language patterns can substantially differ from those of the community (Labov 1994, Sankoff 2005) and the lack of evidence for the later-life language change of a whole community, it is not unreasonable to adopt the method of the panel study, in which a small number of people or even a single individual is sampled at multiple times throughout their life, as is the case with our study.

According to Eckert (1997:165), the middle years remain as “a wasteland in the study of variation”, yet they are a time when important transitions like job change or promotion, geographical relocation, or a change in social status may take place, all of which may condition one’s language to some extent. Under this circumstance, more studies focusing on an individual’s middle years are needed in the study of later-life language change. This paper is a longitudinal study focusing on two linguistic variables produced by a single speaker at three time points in his middle years, during which geographical relocation and social mobility were involved. If any later-life change can be found in this study, it may, to some extent, add evidence to the argument that individuals’ language can change after the critical period. And by further analysing the factors that tend to stimulate such change, this paper aims to give more insights into understanding an individual’s language change, especially in later life.

2 Background

2.1 The Speaker

The key speaker in this paper is the current president of the United States, Barack Obama.² Obama was born in Hawaii and spent most of his childhood and adolescence there. From 1979, Obama studied for 2 years at Occidental College in Los Angeles and for 4 years at Columbia University in New York City. In 1985, he moved to Chicago, and from 1988 to 1991, he attended Harvard Law School in Cambridge, Massachusetts. After his graduation, he went back to Chicago, and from 1992 to 1996, he worked as a lecturer at Chicago University. From 1996, he started his political career. Then, in 2008, he was elected president of the U.S. and re-elected to office in 2012. As at the time of writing this paper, he is serving his second term as president.

The materials chosen for the present research are three television interviews from 1995, 2008, and 2014. The 1995 interview is the earliest available online, dating from before the start of Obama’s political career, in which he talks about his book *Dreams from My Father*. This was a time when he was working as a lecturer at the University of Chicago Law School. The 2008 interview took place together with his wife after his first election as president (before inauguration) with CBS channel on the programme *60 Minutes*. This time was chosen because it may reasonably be called the first significant point of his political career when he rose to its apex. The 2014 interview stems from the same show, *60 minutes*, which was selected to determine whether 6 years of presidential life had had any impact on Obama’s language. The topics in these three interviews are books/personal life, after-election feelings, and political content (more specifically, the current strategy in the

¹ This was first elaborated by Canadian neurologist Wilder Penfield and Lamar Roberts in their 1959 book *Speech and Brain Mechanisms*.

Middle East to combat ISIS), respectively; in general, all three events are formal interviews aiming at a nationwide audience.

With respect to his history of geographical relocation, we focus on the linguistic variation of Hawaii and Chicago, the two places where he has acquired his English and spent most of his time. Hawaii is located outside of mainland North America and we have found few studies on the English accent of Hawaii, other than Hawaiian Pidgin English. This, together with the lack of detailed information about Obama's early life experience, make it difficult to know the patterns of linguistic variation used by him at the time of being resident there. Chicago English is more easily recognizable, as it is one of the central cities in Inland North that has featured the Northern Cities Shift (Labov et al. 2005), which includes a conservative pronunciation of /aw/, or the vowel in the MOUTH lexical set (Wells 1982). Thus, in this study, we focus on linguistic features in Chicago as a point of departure for our research. Since Obama moved to the Midwestern U.S. in his later life, his MOUTH vowel may have become more standard in Chicago through accommodation. Moreover, becoming the president of the United States might also have motivated him to speak in a more standard way. We more explicitly test these ideas by looking at his pronunciation of the *-ing/-in* variable.

2.2 The *-ing/-in* Variable

The first variable we chose to examine was the *-ing/-in* variable, which represents the alternation between the velar nasal [ŋ], as in *running*, and the alveolar nasal [n], as in *runnin'*. The *-ing/-in* variable is the first stable sociolinguistic variable to have been studied quantitatively (Fischer 1958, Labov 2006[1996]) and has shown a universally stable and uniform pattern in numerous studies carried out across various English-speaking communities worldwide (Labov 2001, Wagner 2012b, Huston 1985, Nevalainen 1998). It is hitherto known that social constraints include social status, sex, speech styles, and ethnicity. However, some linguistic constraints, like the grammatical category of variants and the phonological environment, have further been found to show noticeable patterns.

A number of previous apparent-time studies as well as real-time studies have shown that stable sociolinguistic variables are age-graded (Wagner 2012b); the *-ing/-in* variable is no exception. It has been reported to show a curvilinear pattern in terms of age, with the use of the non-standard alveolar nasal peaking during adolescence (Labov 2001). It is also noteworthy that age-grading and style-shifting are often not fully differentiated (Wagner 2012b). Not only have studies shown that most people from all social strata raise their use of the standard form as the speech style becomes more formal (Labov 2001), but in the specific case of Obama, Labov (2012) showed that he consistently raised the use of standard *-ing* as his speech style changed from "casual" to "careful", and then to "formal".

Previous studies show that there is a positive correlation between the use of the *-ing* variant and higher social status (Wagner 2012b, Cofer 1972, Labov 2001, Labov 2006[1996], Trudgill 1974, Woods 1978, Houston 1985). That is, with a rise in socioeconomic status an increasing rate of *-ing* variant can usually be observed. With regard to the speaker and materials chosen, the first interview was carried out before Obama embarked upon politics, and the latter two afterwards; consequently, his use of *-ing* variant is expected to rise with the year.

Apart from the factors mentioned above, the ethnicity and sex of a speaker also play a role in conditioning the *-ing/-in* variable. Males and Black speakers have typically been shown to use more of the *-in* variant relative to females and whites (Anshen 1969, Cofer 1972, Trudgill 1972, Labov 2006[1966]). Obama is male and of mixed-race heritage, identifying himself as Black or African American. We therefore expect his rate of use of the alveolar variant to be somewhat higher overall than might otherwise be the case with subjects from different backgrounds.

In terms of linguistic factors, studies have consistently demonstrated that verbs favour the *-in* variant, while nouns favour the velar variant (Wagner 2012b). However, the definition of "noun" and "verb" is not straightforward, and sociolinguists often employ different and additional distinctions (e.g., Houston 1985, Labov 2001). In the present study, we will categorise words based on the eight-part classification used in Labov (2001:87–88): future, progressive, participle, complements, gerund, gerundive nominal, nouns, and adjectives. Among these categories, the first five (future, progressive, participle, complements, and gerund) are claimed to have "verbal characteristics", while the last three (gerundive nominal, nouns, and adjectives) do not. We will combine the first four (future, progressive, participle, and complements) as "VERB" in this study and a combination of gerundive nominal and nouns will be designated as "NOUN". Adjectives, which tend not to vary, and incomplete *-ing* phrases that cannot be judged will not be considered. The category of "GERUND" will be maintained. As Labov (2001:88) illustrated the gerund with examples like "just by guiding her hand", this study will follow this trend, including examples like "be successful in/serious about doing something" and "thinking about doing something".

Overall, the *-ing* variant as a standard form tends to be used by people with higher social status and in formal speech, and the *-in* variant is more likely to be used by people who are from lower social classes and in

casual contexts. Additionally, the *-ing/-in* variant is found as a stable variable in many vernacular English varieties, including African American English (Kohn 2014). Thus, concerning Obama's background, it is assumed that his use of *-in* should be relatively high at the earlier time of his life. However, Obama's living environment and working experience have gone through a great change, which might be an important influence on his use of *-ing/-in*, encouraging him to adopt the more standard form of *-ing*. Furthermore, the formal context of the interviews predicts that the rate of the standard form might be expected to be much higher than that of the non-standard form across all three interviews.

2.3 The MOUTH Lexical Set

Historically, and in a few currently used conservative dialects, the vowel in the MOUTH lexical set (as in mouth, doubt, etc., Wells 1982) is a back vowel, with a nucleus back of centre in the majority of American English dialects. Today, the vowel has undergone considerable fronting and raising overall (Labov 2011). The fronting of MOUTH has received great attention from linguists as a change in progress (Labov 2001, Baranowski 2008). However, it is difficult to generalise the pattern of this linguistic variation across communities because of various social evaluations in the different speech communities where it occurs.

Labov's (2001) study of a Philadelphia neighbourhood investigated the fronting and rising of MOUTH, a linguistic variant considered as "new and vigorous change" (Labov 2001:149). The results of this "new change" displayed a curvilinear pattern, which features a change from below (Labov 2001). However, Baranowski's (2008) study of Charleston on the fronting of back upgliding vowels appears not to conform to the generalisation of the curvilinear principle;² instead, it shows characteristics of a change from above. More evidently, in Labov's (1972) Martha's Vineyard study, he states that the fronting and rising of MOUTH is predicted by people's social attitudes to the island. People with a positive attitude towards Martha's Vineyard showed more fronting and rising of MOUTH than otherwise (Labov 1972).

Within the context of various social evaluations of the variant, social factors like age, gender, ethnicity, and socioeconomic status show different effects in different communities. Labov's (1972) study of Martha's Vineyard found that the rate of fronting of the MOUTH vowel nucleus increased with successive age levels, reaching a peak in the 31 to 45 age group. However, Labov's (2001) Philadelphia neighbourhood study showed that the community was embracing this new linguistic change of the fronting of MOUTH, with young people playing a leading role. Context differences can also be found to be related to gender. The fronting of MOUTH in the Martha's Vineyard study was led by men (Labov 1963), with women leading in the Philadelphia study (Labov 1972). As for social class, Labov (2001) states that change from below permitted the change to begin in the interior social class of Philadelphia, while Baranowski (2008) reveals that higher social classes led the change of the fronting of back upgliding vowels in Charleston. As for ethnicity, which also plays a significant role in sound change, Labov's (2014) Philadelphia study on African Americans surrounded by white communities indicates that African American Vernacular English is characteristic of a backing MOUTH vowel. Moreover, the locality regards this phonological feature as a way to distinguish the Black from the White. Considering that Obama acquired African American Vernacular English during his growing-up period, his MOUTH vowel might have been located towards the back position before starting his political career. Since the fronting of MOUTH presents different patterns in different speech communities, it is unclear what the class implications might have been for Obama. However, it is not unreasonable to hypothesize that his production of MOUTH might have been affected in some way by his social mobility.

Regionally, *The Atlas of North American English* (ANAE) (Labov et al. 2005) shows a division between the North and the Midland together with the South. In the North, MOUTH is in a rather conservative back position, while in the South and the Midland, /aw/ is greatly advanced, shifting to the centre of front (Labov et al. 2005). Again, the predictions are not straightforward for Obama's personal geographic mobility, but we might expect to see some kind of longitudinal variation: specifically, a fronting and raising over time.

3. Methodology

3.1 Data Resources

Three TV interviews of Barack Obama, recorded in 1995, 2008, and 2014, were chosen as samples for the present study. These three interviews were re-recorded using *Audacity* from YouTube, and we chose the beginning 14–17 minutes as samples for analysis from each interview.

² The curvilinear principle is defined by Labov (2001), who claims that linguistic change from below initiates from the intermediate social group, rather than from the highest or lowest social class.

3.2 Data Coding

We transcribed the data with ELAN (n.d.) and performed forced alignment using FAVE (n.d.). The *-ing/-in* variables were coded with HandCoder Praat (Fruehwald 2011), a script for doing phonetics by computers. Only words with *-ing* appearing in the word-final position were considered. Based on Labov's (2011:88) grammatical conditioning of *-ing* variables, we labeled the words ending in *-ing/-in* as NOUN, VERB, and GERUND, respectively, coding 158 tokens in total: 47 tokens from 1995 (age 34), 71 tokens from 2008 (age 47), and 40 tokens from 2014 (age 53). The tokens of the MOUTH lexical set numbered 109, of which 26 tokens were from 1995 (age 34), 45 tokens from 2008 (age 47), and 38 tokens from 2014 (age 53). For a continuous measure of variation in the MOUTH vowel, F1 and F2 were taken as indexes of measuring vowel location. In the current study, we have used FAVE-extract to produce normalized formant measurements. Since MOUTH is a diphthong, how to measure its location matters a lot for its representation. In the current study, the defaults of FAVE were used and the measurement was taken at the position of one third of the way into the vowel, allowing us to focus on the quality of the nucleus (which varies socially) rather than the glide (which varies to a lesser extent).

3.3 Data Analysis

For *-ing/-in*, we ran a Fisher's exact test between the dependent variable and independent variables including ages and word classes. MOUTH's formant measurements were subjected to multivariate analysis with Rbrul (Johnson 2015) and t-tests. Values of F1 and F2 were entered into separate models as dependent variables, while the ages and words were entered as independent variables.

4. Results

4.1 The *-ing/-in* Variable

The results for *-ing/-in* (Table 1) show little change between the time periods under study ($p = 0.62$). In general, no influence of age on the choice between *-ing/-in* variants was found from 1995 to 2008, even when looking only within "VERB" ($p = 0.46$). In terms of the preferred classes of words used with each variant, this finding disagrees with the usual finding about the role of word class.

Table 1: Percentages of *-ing/-in* variants used by Obama from three interviews at age 34, 47, and 53

	1995	2008		2014
<i>ing</i> (0)	80.9%	80.3%		87.5%
<i>in</i> (1)	19.1%	19.7%		12.5%

Apart from the above, a phenomenon different from that revealed by previous studies can be noticed in our data. As shown in Figure 1, among all the three categories of words, the rates of *-ing* variant exceeded 60%. In 2008 and 2014, the rates of *-ing* used in gerunds even surpassed those of verbs, which differs from previous findings that "nouns" generally favour the *-ing* variant, "verbs" strongly favour the *-in* variant, and other classes fall in between (Wagner 2012b). However, since the number of tokens is quite limited, the results may not be solid enough to make generalisations.

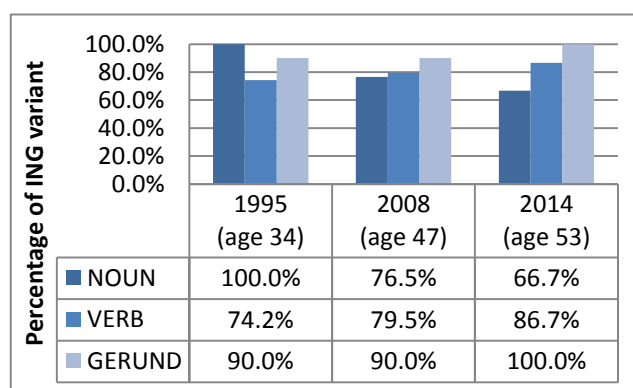


Figure 1: Rates of Barack Obama's *-ing/-in* variation across different word classes in three interviews.

4.2 MOUTH

Table 2 shows the results of Barack Obama's MOUTH vowel at the three different sampled ages. The mean value of F1, indicating the height of the vowel, suggests that Obama is lowering MOUTH over time: F1 increases steadily from age 34 to 53. The mean value of F2, which represents the fronting of MOUTH, exhibits a rather complex pattern. From age 34 to 47, the MOUTH vowel appears to front, with a large increase in F2. However, from age 47 to 53, the MOUTH vowel either does not change or is slightly backed. Based on univariate and multivariate tests for both formants, statistical significance is only found between ages 34 and 47 and between ages 34 and 53 ($p < 0.01$ in all cases), while no significant differences are found between ages 47 and 53.

Table 2: F1 and F2 for Barack Obama's MOUTH at three ages

Vowel	Formant	Mean Hertz by Age		
		34	47	53
MOUTH	F1	814.15	879.76	898.39
	F2	1591.62	1701.16	1694.26
	Tokens	26	45	38

The overall pattern is presented in Figure 2, which shows a clear difference between age 34 on the one hand and ages 47 and 53 on the other. The results, to some extent, support our hypotheses that Obama's /aw/ vowel has undergone fronting, although not steadily between all time points.

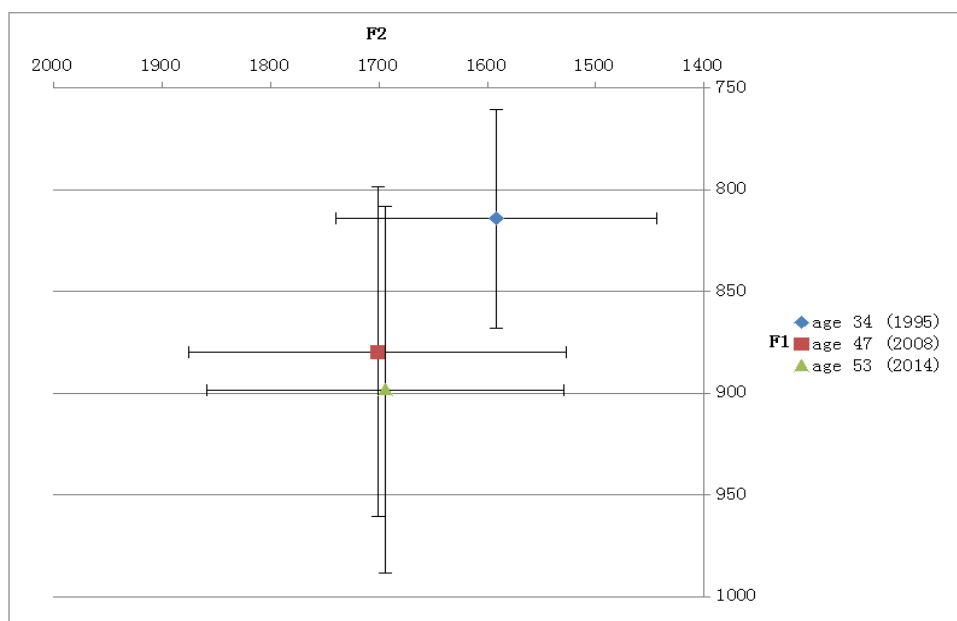


Figure 2: Means and standard deviations of Barack Obama's MOUTH lexical set at ages 34, 47, and 53.

5. Discussion

5.1 The *-ing/-in* Results

The invariance in *-ing/-in* across the materials under study may be considered from at least two aspects: speech style and educational background/career. First, we consider the role of speech style. In this study, since formal interviews are used, the effect of style is the same throughout. However, this control of style does not mean that Obama's use of *-ing/-in* variation as a whole is irrelevant to his age or life stage. It is still possible that he has changed his use of this variable over time, but only in other styles of speech, such as "casual" or even less informal ones.

The second explanation has to take his educational background and career into account. By the time of the first interview, he had attended renowned universities and already begun working as a professional law school lecturer—a profession with demanding requirements for the use of standard language. Although his African American background may indicate that he tends to use more *-in*, both his profession, from the point of view of being part of a “linguistic market” (Bourdieu and Boltanski 1975, Chambers 2003), and his education experience at a “nationally oriented” (Wagner 2012b) university may have already standardised his use of *-in* to a great extent. As for the age range of 47 to 53, Obama’s living and working environment was, to a large extent, the same, i.e., one in which the majority of people with whom he connected were celebrities and politicians, who are generally highly educated and professional, and who tend to use high rates of the standard form. Consequently, the combined effect of environment and profession may provide little chance for him to vary his use of the standard form.

As for the preference for nouns and verbs used with different variants, from the limited information known to us, we suggest that confining our data to a formal speech style led us to see an unusually high and consistent use of the *-ing* variant, and this shaped the conditions for our unusual findings. However, we do not suggest making any generalisations on the basis of the results of just one speaker and the small token counts. Other linguistic factors, including following/preceding segments, have also been found to be conditioning. However, some have suggested that the effects are not very substantial (e.g., Houston 1985, Labov 2001, Schlee et al. 2011). Whether or not phonological constraints play any role in Obama’s production of *-ing* variables therefore needs further investigation.

5.2 The MOUTH Results

The results for the MOUTH lexical set show a fronting and lowering during the time period from age 34 to 47, with no significant change between ages 47 and 53. This result could be explained by several social factors, including geographical and social mobility. Obama experienced great geographical mobility during the time period from 1995 to 2008. In 1995, he worked as a lecturer at the University of Chicago Law School. During this time period, his social network mostly comprised working-class and Black speakers. As African American Vernacular English shows rare fronting of the MOUTH vowel (Labov 2014), it is reasonable for Obama to have shown a relatively conservative position of MOUTH vowel. Also, according to ANAE (Labov et al. 2005), the dialect of Chicago is characteristic of the Northern Cities Shift, in which back upgliding MOUTH is located in a rather back position. Obama’s MOUTH at that time might, to a large degree, have followed the pattern of Northern Cities Shift.

In 2008, Obama was elected as president and relocated to Washington, D.C. Although it is a rather Black city in terms of the population, Obama has limited contact with the Black community; instead, he has spent most of his time in the White House with White people, whose position of MOUTH is more fronted (Labov et al. 2005). Also, his living and working environment forces him to sound more like the White; thus, he may consciously have increased his MOUTH vowel. At the same time, Obama is identified as the first Black president of the U.S., which is part of his personal image. Thus, he might need to sustain some African American features, and this may explain the limited extent of forwarding of his MOUTH vowel. Moreover, during the months and years leading up to 2008, he travelled around the country quite extensively to canvass districts for votes, coming into contact with many different people, which might also have been a contributing factor.

In contrast, in 2014, Obama was in his second term of office, and during the period from 2008 to 2014, he had been living in the White House. His social and geographical mobility was relatively minimal. This might be able to explain, to some extent, the relatively steady pattern of MOUTH vowel during this time period.

Furthermore, social mobility might also play a role. Obama experienced tremendous social mobility from 1995 to 2008, from a lecturer at a university to the president of America. However, the lesser experience of social mobility for Obama from 2008 to 2014 might be what is reflected in the lack of change in the MOUTH vowel.

However, the lack of difference might also be accounted for by our relatively small sample, since only short clips from formal interviews were taken into consideration. Further studies involving more data might also show a backward movement of the vowel from 2008 to 2014, of which we saw some suggestion in our results.

As for the lowering of the MOUTH vowel, considerably less literature has identified this feature, and so it is difficult to conclude that geographical mobility and social mobility are the cause. More investigation is needed in further studies.

6. Conclusion

In summary, our study is intended to contribute to the investigation of an individual’s linguistic change across the lifespan. We carried out a study of phonological variation in the speech of Barack Obama at three time

points: 1995, 2008, and 2014. This “panel” study addressed the research question of whether people could change some of their linguistic features after the critical period, and if so, what the reasons might be.

For the stable variable *-ing/-in*, Obama shows almost no change from 1995 to 2014. There are several factors that may have limited this change, including a lack of variation in the speech styles sampled and his occupations, which consistently favoured the use of the standard language and associated phonological variants. However, the vowel of Obama’s MOUTH lexical set shows lowering and fronting from 1995 to 2008, which we attribute to geographical relocation and social mobility. From 2008 to 2014, no significant change is found, which may be due to the stability of his social life.

Certain limitations remain in this study. Not only did we not control for speech style, which is known to predict *-ing/-in* variation, but other confounds such as familiarity with the interlocutor and being accompanied by another person are also excluded from this paper. These factors may be essential to fully account for these and other patterns in the data. Secondly, the data size in the present study is relatively small, containing only 14–17 minutes from each chosen interview. More data need to be collected to substantiate our current results. Finally, the lack of data from Obama’s earlier ages leaves open the question of whether the fronting and lowering of MOUTH is steadily increasing over time or only apparent across the period covered in this study.

We suggest that our results do show that people can change their linguistic patterns after the critical period. However, in order to answer this question more fully, more individuals should be tracked in real time. This research is essential if we are to make any generalisations about the processes of community language change, individuals’ linguistic change across the lifespan, and the motivating factors behind these changes.

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