

Race, Gender, and /u/: Social Perceptions of a Non-Stereotype Feature

Thesis

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Abstract

Research on sociolinguistic evaluation has under-examined how listeners judge linguistic variants that evoke a low degree of introspective awareness. The current study seeks to fill this gap by investigating sociolinguistic perceptions of a feature that cannot be classified as a Labovian stereotype: the fronting and backing of the back upgliding vowel /u/. To do this, a matched guise test with 12 talkers, equally and orthogonally divided by race (Black and White) and gender (male and female) was conducted. Recordings were manipulated for /u/ and then played to ninety-four listeners, who rated the recordings along a variety of scales, including how Black, masculine, and trendy each recording sounded. The results showed that evaluations of /u/ were neither fixed nor uniform—while listeners overall rated front /u/ guises as more feminine and White sounding, they also rated front /u/ guises as more trendy sounding in White voices, but not in Black voices. The study concludes by discussing implications for newer models of person perception within sociolinguistics.

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1.0 Introduction

At least since Labov (1966), sociolinguists have been interested in how linguistic variation contributes to social evaluation. Recently, scholars have been interested in how people make use of variation when forming social impressions, showing that context often shapes how particular variants are evaluated (Campbell-Kibler 2009, Pharao et al. 2014, Levon 2014, *inter alia*). While work in sociolinguistic production has found that both large-scale macro-social categories and smaller, locally relevant identities correlate with higher or lower use of different linguistic variants (Eckert 2012), work in sociolinguistic perception has yet to address how listeners extrapolate and integrate both large and small-scale identities with regards to a single linguistic variable. Additionally, most of the recent work in sociolinguistic perception has yet to investigate more subtle linguistic features, instead focusing on features that can evoke a high degree of introspective awareness among listeners. In other words, much of the current perception work has focused on “stereotypes” or the features that can be the “overt topic of social comment” using Labov’s (1972) classic definition. The present study thus seeks to fill these gaps in the literature by asking: what is the social meaning of a linguistic variable that is not a sociolinguistic stereotype among listeners and how, if at all, does it vary depending on talker race and gender?

1.1 Indicators, Markers, and Stereotypes

One of the most widely used classification schemes of linguistic features comes from Labov (1972), who describes features as belonging to one of three different categories. First, variables can be *social indicators* or features that show social stratification, but not stratification according to different levels of attention paid to speech. Indicators are considered to be below the level of conscious awareness. In contrast, *social markers* are subject both to stratification based on social group and attention paid to speech. Speakers are at some level aware of the feature, but they cannot explicitly comment on the features themselves. Lastly, if a feature is stratified by social group and speech style and can be commented on directly, it is a social *stereotype*. While some sociolinguists have criticized this model as overly simplistic (see, for example Carmichael (2016) on how awareness and control are presupposed in this schema), the fundamental idea that listeners hold varying levels of *implicit and explicit knowledge* (Squires 2016) about different features has been worthwhile to the field, such as explaining large-scale language change in Pittsburgh (Johnstone, Andrus, & Danielson 2006). Nevertheless, this notion of varying awareness has yet to be explicitly invoked in studies of social perception of linguistic variables. Below, I describe several different studies involving social evaluation of linguistic variation, but focus on participant awareness of the studied linguistic features within each survey.¹

¹ It should be noted that I do not necessarily endorse any particular model of linguistic awareness, including Labov's. Instead, I merely wish to point out the varying levels of awareness and explicit knowledge associated with different features, which is one aspect captured by Labov's model.

1.2 Variation and Social Perception

Labov's (1966) study represents one of the first studies looking at the social perception of linguistic variation. In Labov's New York City study, participants were unable to respond articulately about their own social perceptions of particular phonological features. As such, he devises a "subjective reaction test" in order to understand listeners' reactions to these features. Using the natural speech of several different women from New York City as stimuli, Labov investigates what occupation is considered appropriate for a given talker based on their use of several different variables, such as deletion of post-vocalic /r/, th-stopping, and /ɔ/ raising. He finds that greater use of these variants results in a "negative" rating in regards to occupation, such that talkers are considered less likely to be hired as a television personality, and more likely as a secretary, salesgirl, or factory worker. While Labov discovers some listener effects, showing that more affluent listeners rate tensed /æ/ speech more negatively compared to working-class listeners, even with them, the direction is the same regardless of the particular talker being listened to.

At the same time as Labov, work operating from within communication accommodation theory (CAT) began an over 40-year-long tradition of studying how listeners perceive talkers based on a variety of language-specific aspects (Giles and Billings 2004). This work in particular was focused on how larger varieties, such as particular languages like French and English (Lambert et al. 1960) or dialects, like Received Pronunciation and South Welsh English (Giles 1973), are evaluated by listeners. That being said, this research often neglects the study of how single linguistic variables, such as /t/ deletion, are viewed. It was not until the early 2000's that work in

sociolinguistic perception started filling in this gap in the literature first started by Labov's seminal work in New York City (see, for example, Campbell-Kibler 2005).

In these more recent years, researchers have investigated how context shapes evaluation of particular linguistic variants. Campbell-Kibler (2009) looks at the social perception of alveolar [n] vs. velar [ŋ] in –ING words in American English. After doing interviews where people commented on what talkers sounded like (for example, friendly, compassionate, intelligent, etc.), Campbell-Kibler had her participants comment specifically on the –IN/-ING tokens. Using a matched guise technique, she also creates stimuli that contained two to six instances of the ING variable and manipulates them to create guises with either only -IN or -ING variants. Campbell-Kibler then plays these recordings to a separate set of participants. Listeners rate –ING as more intelligent-sounding and rated –IN as less intelligent-sounding, but the evaluations of the variants were neither mirror opposites nor uniform. For example, for one talker, -IN guises are seen as friendly, but for another talker, the –IN tokens were rated as annoying or condescending, showing that the evaluation of different variants changes depending on a particular talker's speaking style.

This finding that listeners evaluate linguistic forms differently between talkers is further exemplified by Podesva et al. (2015), who study both the sociolinguistic production and perception of /t/ release in American English. In their study, Podesva and colleagues splice different tokens of flapped or released medial /t/ and released or unreleased word-final /t/ into the speech of several familiar politicians and ask participants to rate recordings on different scales like sincerity and accented-ness. They

find not only that the meaning of /t/ is constrained by the linguistic system (word-medial vs. word-final /t/), but that the specific talker speaking also changes the meaning. For example, word-medial flapped /t/ compared to word-medial released /t/ for US Speaker of the House Nancy Pelosi sounds less accented and more sincere, while for then-Senator Barack Obama, it simply sounds more passionate, showing that particular familiar talkers influence social evaluation of linguistic variation.

Looking at how social evaluation of variables relates to the context of different registers, Pharao et al. (2014) find that the meaning of a linguistic variant can change depending upon the prosodic frame. They examine these registers in relation to fronted and alveolar /s/ (otherwise known as “gay /s/”) in Danish. Within Danish, there exist two widely-recognized language varieties among the general public: “street” Danish, which is associated with toughness and “gangster” behavior and “modern” Danish, which is associated with coolness and liveliness. These varieties differ linguistically in a number of ways; however, one of the primary differences between these two varieties lies within prosody. While “modern” Danish is less staccato than “street” Danish, it also maintains a distinction between long and short vowels which “street” Danish does not. After splicing two different /s/ variants into these two prosodic frames of Danish and playing clips to listeners, Pharao and colleagues find that the effect of /s/ is modulated by a particular register that the variable lies within. For example, a fronted /s/ when placed in “modern” speech sounds more feminine and gay and less “gangster”-like, but sounds more “gangster”-like when the same fronted /s/ is put into street Danish.

Within Pharao et al.'s study, the “street” and “modern” frames additionally affect accurate classification of fronted vs. alveolar /s/. In the recognition task, participants listened to one fronted /s/ token, one alveolar /s/ token, and then an audio recording of a “modern” or “street” speaker with either the fronted or alveolar /s/ spliced in. They were then asked whether they heard the first /s/ or the second /s/. Alveolar and front /s/ were more correctly recognized when presented in modern Danish than in street Danish. The authors suggest this may be due to the relative amount of social work /s/ can do within each context. Because /s/ carries more meaning potential within a “modern” guise, they argue /s/ within “modern” Danish is more likely to be habitually paid attention to, and thus more prone to accurate recognition compared to /s/ in “street” Danish. From these results, Pharao and colleagues reason that /s/ carries two separate indexical fields (Eckert 2008a) of meaning, and that listeners invoke different ideological structures in order to interpret /s/, one for street Danish and one for modern Danish. In other words, listeners simultaneously hold different views of how to interpret variation and that those views are dependent upon context.

In another study looking at how context interacts with social evaluation, Levon (2014) examines how meaning is shaped by three different linguistic variables in British English male speech, viz, higher or lower pitch, /s/-fronting, and th-fronting. He finds that the effects of different variants are not simply additive. For example, while higher pitch and fronted /s/ are stereotypically associated with gayness and femininity in men, listeners who support traditional masculine norms (for example, believing that men should be physically tough), do not rate guises with both higher pitch and fronted /s/ as

more effeminate-sounding compared to guises with only higher pitch or fronted /s/. In explaining this finding, Levon relies on the idea of *contextual nonattention* (Macrae and Bodenhausen 2001), whereby only the meaning associated with the more prominent linguistic feature is activated due to cognitive economy. In this case, he argues that only the meaning associated with fronted /s/ is activated when both higher pitch and fronted /s/ are present. While Levon concedes that listeners can attend to combinations of features (citing Campbell-Kibler 2011), he contends that sociocognitive processing can constrain meaning when multiple features are present.

The literature thus far has examined ways in which context, broadly construed, affects social evaluation of linguistic features. The studies presented here have shown, in some form or another, that evaluation of linguistic forms varies depending on what else is presented in the signal. Most of these studies, however, focus on features that could be labelled as stereotypes since they can be the “overt topic of social comment” according to Labov (1972). These studies include Campbell-Kibler’s examination of –ING and its relation to individual talkers, Phrao et al.’s examination of fronted /s/ and its relation to ethnolect, and Levon’s examination of multiple Labovian stereotypes and their relation to each other in different male talkers. One exception, however, is Podesva et al.’s study of /t/ release and its relation to individual talkers. Yet the field has yet to address how people evaluate non-Labovian stereotype linguistic features in relation to larger, macro-social categories. One might argue, for example, that these features may not behave the same way as Labovian stereotypes and may be less likely to vary, as metalinguistic

discourse is unable to mediate different meanings in different contexts. The present study bridges this gap in the literature.

1.3 Objectives

The current study asks the following overarching questions.

- 1) Does social evaluation of non-Labovian stereotype linguistic features (i.e. a “marker” or “indicator”) mirror social meaning found in production data?
- 2) Does social evaluation of non-stereotype linguistic features vary by macro-social categories, like race and gender?
- 3) If so, what implications might the results have for modeling sociolinguistic cognition?

1.4 The Variable

To address these questions, we must first find a suitable linguistic feature, i.e. a feature that is not subject to explicit awareness. The present study turns its attention towards the back vowel upgliding vowel /u/, which shows fronting in a variety of English dialects in North America (Labov, Ash, and Boberg 2006), the United Kingdom (Haddican et al. 2013) and New Zealand (MacLagan et al. 2009). We hypothesize here that /u/ is not a Labovian stereotype and that it can be classified as either an indicator or a marker. This hypothesis is partly supported by previous studies (California Style Collective 1993, Hall-Lew 2004, Fridland and Bartlett 2005), which do not report any

folk descriptions of /u/. For example, among the sociolinguistic production studies of /u/ fronting listed above, none mention any laymen's terms for or folk descriptions of the phenomenon. Additionally, Haddican et al. (2013) show that within York, United Kingdom, participants linked /o/ fronting to "chav² speech" but did not associate /u/ fronting (without giving any label for the feature itself) with any local sociolinguistic practice, suggesting that /u/ is not a stereotype at least in that particular community. This claim was later confirmed with this study's set of participants in the post-task interview portion of the experiment (see section 3.7).

The most comprehensive study of the sociolinguistic production of the back upgliding vowel /u/ in North American English comes from *The Atlas of North American English* (ANAE). In their study of over 400 telephone conversations, Labov, Ash, and Boberg (2006) find that geographically, the regions with the most fronted variants are the St. Louis, Toronto, and Indianapolis metropolitan areas while the most conservative areas include eastern New England, Minnesota, and Wisconsin. However, the authors also notice that fronting is highly dependent on the linguistic context; in their data, tokens of /u/ before /l/ are not as front as tokens found before other sounds. They also notice that /u/ is fronted more following most coronal consonants, in words like *too*, *do*, and *soon* (but not *room*). The authors also correlate social factors other than geography to the fronting of /u/. In particular, they find that younger high-school and college-educated women are the most likely to front the vowel. Following Labov (1990), who argues that

² A chav is a disparaging stereotype of White working class youth in the United Kingdom. It is often associated with flashy jewelry and violent behavior, somewhat similar to stereotypes of "thugs" in the United States.

young women are most often the leaders of linguistic change, the authors argue that the fronting of /u/ is a current change in progress in North America being led by young, educated women in large Midwestern urban areas. Hall-Lew (2011) confirms this in her small sample of California speakers of different age groups, but further argues that the change is nearing completion.

Other authors have found that /u/ is associated with young, White, and stylish people. Fridland and Bartlett (2005), for example, look at the distribution of /u/ in Memphis, Tennessee in regards to race and find that among the 32 speakers in their sample, White speakers in their study front /u/ more compared to Black speakers. Similarly, California Style Collective (1993) find /u/ fronting in one white teenager in order to mark herself as prototypically Californian, upper middle class, and trendy while Bucholtz (1996, 1999) argues that within one California high school, nerd girls back /u/ as part of negative identity practice to mark themselves as “not trendy.” Additional evidence of this social meaning in production comes from Podesva (2011), who observes that one California gay man fronts /u/, along with other California Vowel Shift features, as the situation becomes more informal in order to perform a “partier” persona. However, Hall-Lew (2004) bucks this trend, showing that in Flagstaff, Arizona, both younger and older “ranchers” front /u/, in contrast to older “non-ranchers”, who do not.

Koops (2010) explains Hall-Lew’s seemingly anomalous results by undertaking an in-depth acoustic analysis of /u/ in younger and older speakers in Houston, Texas. He finds that there are not one, but two types of /u/ fronting in Houston which have resulted from demographic shifts. Older speakers in Houston retain a more Southern

pronunciation of /u/, with /u/ fronted in most contexts. In Koops' sample, older speakers monophthongize and front /u/ when the vowel is word-final. However, younger Houston speakers front /u/ as well, but their pronunciations are more diphthongal in words like *too* or *do*. This distinction, however, goes away if /u/ is before coronal consonants, because in words like *dude* or *boots*, both the younger and older generations use variants that lack a backglide. This pronunciation has similarly been found in California productions of *dude* among "surfer stereotypes" (Eckert 2008b).

While there has been much research done on the production of /u/, relatively little work has been done on the social perception of this vowel. Torbert (2004) remains one exception. In his study, he tries to determine how "salient" three different features of the Southern Shift are. Looking at the fronting of /o/, the fronting of /u/ and /aɪ/ monophthongization, Torbert asks how reliably each feature is rated as Southern by undergraduates at a Southern university. With regards to /u/, he plays a series of stimuli consisting of unmodified tokens, monotonized tokens, and low-pass filtered tokens of single words containing the vowel to participants and asks them to rate how Southern the talkers sound, as well as to identify the talkers' ethnicities. He finds that front /u/ is not reliably evaluated as Southern, but that there is an interaction between listener background and "Southern-ness" sounding, such that listeners from the South believe that front /u/ tokens sound non-Southern and listeners from elsewhere believe that front /u/ tokens sound Southern, suggesting that /u/ fronting sounds foreign to one's own region.

There are, however, several limitations to Torbert's study. First, from the design, the effect of /u/ is uncertain, as there is no F2 manipulation of the /u/ tokens. Instead,

Torbert uses a verbal guise paradigm (Garrett, Coupland & Williams, 2003), meaning that as the /u/ changes across stimuli, so do the talkers. Because there were only six talkers of undisclosed geographic origin for this particular experiment, one cannot be sure that the effects seen were not due either to each talker's particular speaking style or to /u/ itself. Second, there is no mention of the particular words or linguistic environment or of the exact F2 measurements of the tokens used in this experiment, meaning that the degree of /u/ fronting was most likely not held constant across talkers. And last, Torbert uses a weaker threshold for significance, forgoing the usual alpha value of 0.05 or lower normally used for quantitative studies of sociolinguistic variation, and instead choosing 0.10, which increases the likelihood the effect may be due to error, especially given that he uses multiple t-tests without correction throughout the study to test for significance (for further discussion on statistical matters, see Johnson 2009). As such, caution should be exercised when taking the results of this study into consideration.

Thus far, the literature has provided an account of /u/ in production, showing that /u/ can be used to signal large-scale demographic identities (i.e. social class), in addition to smaller, 'local' identities ("nerd girl"). However, what is still unknown is how aware listeners are of /u/, whether /u/ carries meanings in perception other than "Southern", and how /u/ contributes to these different types of identities. In addition to answering the overarching questions above, the current study expands upon Torbert's findings of /u/ in perception, by asking a more diverse set of questions from a larger set of listeners. In particular, it seeks to understand whether the social evaluation of /u/ largely reflects what

other scholars have said about /u/ in production and whether that social meaning varies depending on talker demographics, such as race and gender.

2.0 Methods

2.1 Participants

Participants were native English speakers currently attending the Ohio State University. They were recruited from the Linguistics Outside the Classroom (LOC) pool, which consists of students taking beginning linguistics classes. As an incentive for participating in the experiment, they were given partial class credit. In total, 104 participants took the experiment, but ten were disqualified either because they were non-native English speakers or for reporting having had a hearing disorder. The 94 remaining subjects were about evenly split in terms of gender, with 56% identifying as female, 41% identifying as male. The rest either did not disclose their gender or identified as another gender. Of all the participants, 83% were from Ohio, with 6% from the South, and another 4% from elsewhere in the Midwest. Other regions of the United States represented in the sample include Pennsylvania (2%), New York (2%), California (1%), and Florida (1%). Additionally, of all the participants in the experiment, 22% came from the Inland North dialect region as defined by Labov, Ash, and Boberg (2006), with a very strong majority from the Cleveland and Akron, Ohio areas³. Eighty-two percent

³ The Inland North including parts of northern Ohio fronts /u/ less after non-coronals compared to most of the US and Canada (Labov, Ash, and Boberg 2006). However, after coronals, such as in the word

identified as White, 7% identified as more than one race, 3% identified as Black, 1% identified as Asian, 1% identified as Native American, and the rest did not disclose their race. Eighty-six percent had at least one parent with a college degree. The mean age of participants was 20.4 years with the range between 17 and 29.

2.2 Stimulus Materials

In order to test the research questions above, a matched guise experiment (Lambert et al. 1960) with digitally manipulated tokens (Campbell-Kibler 2007, Plichta and Preston 2005) of /u/ was designed. In a matched guise test, listeners are presented with the “same” voice, but with only one aspect changed, for example, the dialect spoken by the talker. Listeners are then asked to evaluate the voice based on different scales such as intelligence or attractiveness.

To test the questions given, 12 different talkers from the Sociolinguistic Archive and Analysis Project (SLAAP) corpus were selected (Kendall 2007). All talkers were from various parts of the Southern United States⁴ and college-aged at the time of recording. They were also equally and orthogonally divided by race (Black and White) and by gender (male and female). The SLAAP corpus was chosen in part because it contains a number of high quality recordings that are suitable for manipulation. All

“dude,” there is little, if any, distinction between northern versus central and southern Ohio pronunciations of /u/. The *ANAE* shows two data points with a lower normalized F2 in production for /u/ after coronals in the northern Ohio region, but does not draw an isogloss around this region. As such, while evidence from the *ANAE* is itself somewhat mixed, within the dataset, northern and central/southern Ohio are statistically indistinguishable with regards to /u/ fronting after coronals.

⁴ Although not a fundamental part of the analysis, only one of the 12 talkers (a White female) was reliably heard as Southern, defined as being rated as from the South over 60 percent of the time. With regards to /u/ in the matched guise test, however, this talker patterns just like the other White female talkers.

talkers read the same phrase later heard by participants: “Man, that dude knows how to disappear.” This phrase was chosen in part because it contains the word “dude.” As noted by Koops (2010), there are articulatory and acoustic differences in how Southern speakers will front /u/, either with a more monophthongal or diphthongal pronunciation. By using the word “dude,” this eliminates these linguistic differences, because “dude” is only pronounced using a monophthongal variant. As such, only the effect of fronting or backing is tested in the word “dude.” Additionally, this sentence only contained one instance of the vowel; in all cases, the vowel in “to” was reduced to [ə].

The vowel in “dude” was then manipulated; however, to ensure the effect of /u/ fronting or backing was even across talkers, this manipulation was sensitive to each individual talker’s vowel space. Because the recordings came from a corpus that included excerpts of long, read speech by the same talkers, four tokens of ten different vowels /a, ɪ, ε, o, æ, i, u, e, ɔ, ʊ/⁵ were obtained and analyzed for F2. The measurement was taken at each vowel’s steady state, defined as being the midpoint between where the F2 measurement was stable. The formant measurements across all the vowels were then normalized using Lobanov’s (1971) technique (Adank, Smits, and van Hout 2004). Using Lobanov, an F2 mean and F2 standard deviation were determined for each particular talker from their set of these ten different vowels. From there, it was decided that the target front /u/ F2 would be 1.0 standard deviations higher than the talker’s mean F2 and the target back /u/ F2 would be 1.5 standard deviations lower. The manipulation was then

⁵ A post-hoc speaker normalization analysis shows minor differences to the approach used in the current task and one without the /u/ vowel. On average, the mean value difference between these approaches shifts the center of the vowel space by 22.0 Hz and the standard deviation by 11.2 Hz. The manipulation itself resulted in an average difference between back and front /u/ of 1034.1 Hz.

carried out using the Akustyk extension for Praat (Plichta 2012), with only the F2 of the /u/ vowel in the recorded phrase raised or lowered. Although Akustyk relies on a rather simplistic model of speech (namely, source-filter theory), it is well suited for the variable listed here, given that the major articulatory difference between front and back /u/ is the position of the tongue (a difference in the filter). In Akustyk, a natural token is resynthesized through the use of linear-predictive coding (LPC) analysis. Akustyk estimates a spectrogram using this algorithm and then uses the resulting spectrogram to inverse filter the natural token. What remains then is the glottal contribution to the natural token (the “source”). The spectral peaks of the LPC spectrogram are then manipulated to get desired formant values and recombined with the glottal contribution to get the resynthesized token.

2.3 Procedure

As part of the experiment, listeners were asked to rate all 24 of the recordings (12 talkers x 2 guises), which consisted of each talker phrase, “Man, that dude knows how to disappear,” broken into two blocks with a break in between. Listeners could skip a rating at any time. The first block (Block A) always contained one recording of each of the 12 talkers, while the second block (Block B) contained the other guises in a different order. The order of the recordings within each block was also reversed, such that the 12th recording in the “original Block A” could be played first in the “reversed Block A”, the 11th recording played second, the 10th recording played third, etc. This was done in order to check whether the order radically affected listeners’ social judgments. Additionally,

either Block A or Block B could be played first before the break, which gives a total of eight possible combinations when counterbalancing, with each cell containing between 10-13 participants. See Table 1 for a schematic of the experiment.

	List 1	List 2	List 3	List 4	List 5	List 6	List 7	List 8
First Block Rated	Block A	Block A-Reversed	Block A	Block A-Reversed	Block B	Block B - Reversed	Block B	Block B - Reversed
Second Block Rated	Block B	Block B	Block B-Reversed	Block B-Reversed	Block A	Block A	Block A-Reversed	Block A - Reversed

Table 1. Counterbalanced Design of the Experiment.

Each recording was also presented with one of 24 gender-neutral pseudonyms, following similar experiments in sociolinguistics (Purnell, Idsardi, and Baugh 1999; Campbell-Kibler 2007), in order to distract listeners from remembering having heard the same voices. These pseudonyms were randomly picked across the experiment without replacement, such that each listener saw all 24 pseudonyms. See the appendix for a list of pseudonyms.

All listeners were asked to rate each talker on a variety of six-point scales including how masculine, educated, and trendy each talker sounded (see Table 2 for a list) with “1” representing “not at all X” and 6 representing “very X” or “definitely X.” Attributes here were selected based on previous studies on the social production of /u/ (Hinton et al. 1987; Bucholtz 1996; Hall-Lew 2004, Fridland and Bartlett 2006; Labov,

Ash, and Boberg 2006; Podesva 2011). For example, since Bucholtz (1996) argues that trendy and nerdy girls use /u/ fronting or backing respectively as part of stance-taking, a trendy attribute was selected for rating. This was similarly true of the other attributes chosen, such as masculine and feminine representing gender (Labov, Ash, and Boberg 2006), gay representing sexual orientation (Podesva 2011), educated and intelligent representing social class, (Labov, Ash, and Boberg 2006), from the city/country representing geographic location (Labov, Ash, and Boberg 2006; Hinton et al. 1987; Hall-Lew 2004), and Black and White representing race (Fridland and Bartlett 2006).

Additionally, listeners were asked to identify where they believed the talker was from. They were also told that the listener was currently attending school in Ohio and asked to rate how likely the talker would “move away” once they were done with their studies. These two questions taken together were designed to get at both geographic location and perceived talker similarity and are analyzed separately from the current study. All of these questions were presented in the same order across recordings, starting with “masculine,” first, then “feminine,” and ending with “White.” These questions were presented one at a time and listeners could not go back and change their responses once they answered a question.

<i>Attributes</i>
masculine
feminine
gay
trendy
educated
intelligent
from the city
from the country
Black
White

Table 2. List of Attributes for the Matched Guise Test.

The experiment was coded in Eprime. Listeners took the experiment on a Windows desktop computer in a quiet room while wearing Bose QuietComfort 2 noise cancelling headphones. Listeners were also allowed to listen to the audio file as many times as they wished and could replay the recording until they finished rating a particular recording. The number of times a participant listened to a particular audio file was not recorded. Afterwards, participants were asked post-task questions individually in order to get some greater understanding of their own social perception of /u/. The questions were heavily focused on trendiness, given the ambiguity of the term and the potential for trendiness to be interpreted differently by participants, especially in comparison to the other rating scales. The questions are listed below.

1) When you were doing the task, what did you most notice about the recordings?

- 2) Can you tell me about a time a person said a word less like [dud] and more like [dʌd]?
What did you think of that person?
- 3) Where do you think people most say [dud]? What about [dʌd]?
- 4) Where do trendy people live? In your view, what does a trendy guy/gal now do for a living?
- 5) Do you think that Columbus is trendy? What about Ohio as a whole? Why or why not?

Productions of [dud] and [dʌd] were produced on the fly by the interviewer. Because of this, tokens of [u] and [ʌ] were not identical across or within interviews though effort was put in to to keep the tokens relatively consistent. In total, the experiment along with the post-task interview lasted no longer than one hour.

2.4 Analysis

After gathering all of the data, ratings were normalized by question and participant using the z-score transform. This was done so that scores reflected not absolute values on a continuum, but scores relative to each participant. Since participants had different ways of taking the survey (some being more or less willing to use the whole scale), this normalization process matches one participant's actual use of the scale to another participant's. Factor analyses for each talker were then conducted in order to reduce the number of variables to be modeled. These analyses were done for each talker, following Campbell-Kibler (2009), who shows that individual talkers often evoke different evaluative responses to particular attributes (for example, based on the data she

presents, “annoying” might correlate with “unintelligent” for one female talker, but it may load with “masculine” for a male talker, and this difference may not be seen once the number of dependent variables has been reduced). If questions loaded together consistently across factor analyses (defined as having a factor weight of 0.65 or greater for nine or more data subsets), the scores were averaged into a single, non-weighted measure. This non-weighted measure was used instead of scores directly from a single factor analysis in an effort to be more transparent about the dependent variables being modeled.

From there, mixed effects models were built with each of the ratings as a dependent variable using the lme4 package in R (Bates et al. 2015). The full model containing maximal design-driven structure (Barr et al. 2013) was stepped down using log-likelihood model comparison in order to get the best model. The full model contained fixed effects for gender, race, /u/ variant, and their interactions plus talker list (one of eight from Table 1) and block (first block heard vs. second block heard). It also contained random intercepts for talker, listener, and pseudonym and random slopes for gender, race, and /u/ over listener. A random slope for /u/ over talker would have been added, but models with this slope did not converge. Sum contrast coding was used and p-values were generated using lmerTest.

3.0 Results

The results show that front /u/ in perception is generally associated with similar attributes as found in previous literature. However, there are also significant interactions when modeling different ratings, such that evaluation of /u/ varies depending on perceived or actual talker background.

3.1 Masculinity/Femininity

The masculinity and femininity questions consistently loaded together in a factor analysis and as such, their ratings were combined into a single score with the femininity ratings “flipped” (so “6” becomes “1”, “5” becomes “2”, etc.), and then averaged with the masculinity ratings. These scores were then modeled. The distribution for this score was heavily bimodal. Unsurprisingly, results show that female talkers were rated as more feminine sounding and less masculine sounding than male talkers. However, there was also a significant effect of /u/, such that front /u/ was rated as more feminine-sounding than back /u/. See Figure 1 and Table 3, which show among both male talkers and female talkers, front /u/ is rated as less masculine and more feminine.

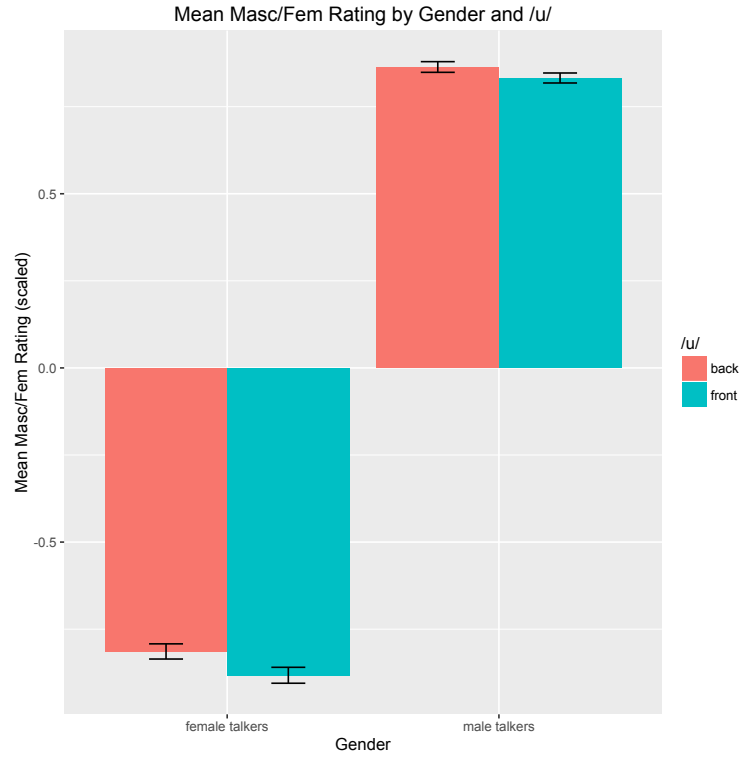


Figure 1. Mean Masculine/Feminine Ratings by Gender and /u/. A higher rating means the group was thought as more masculine and less feminine.

Fixed effects	Estimate	Std. Error	t-value	p-value
Intercept	3.384e-04	7.137e-02	0.005	0.99630
Gender (f)	-8.480e-01	7.151e-02	-11.858	5.6e-08 ***
/u/ (back)	2.464e-02	7.731e-03	3.187	0.00146 **

*significant at $p < 0.05$; **significant at $p < 0.01$; ***significant at $p < 0.001$

Table 3. Linear Mixed-Effects Model Results for Perceived Masculinity/Femininity.

3.2 Blackness/Whiteness

Like the masculinity and femininity questions, the Black and White ratings loaded together in a factor analysis and were combined after the White ratings were flipped. The distribution for this score was heavily bimodal. Results show that Black talkers were rated as more Black-sounding than White talkers. There was also a significant effect of /u/, such that front /u/ was rated as more White-sounding than back /u/. See Figure 2 and Table 4, showing both of these effects.

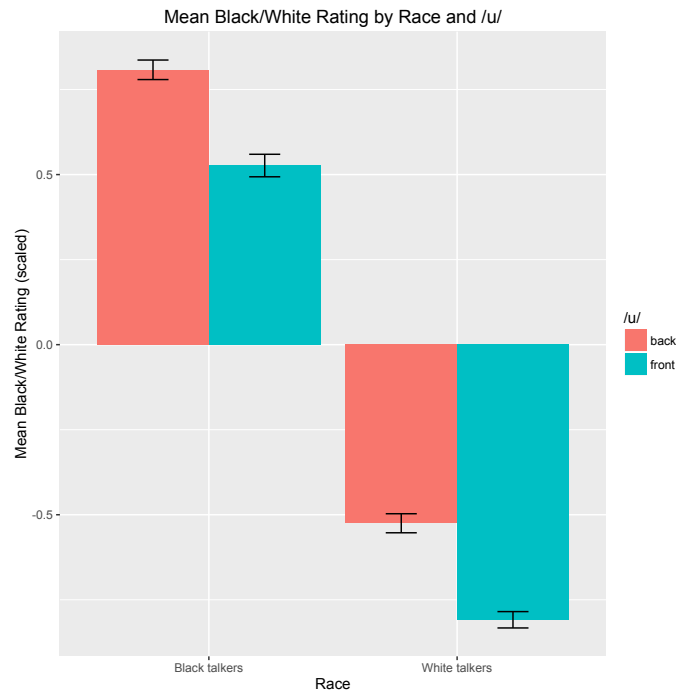


Figure 2. Mean Black/White ratings by Race and /u/. A higher rating means the group was thought as more Black and less White.

Fixed effects	Estimate	Std. Error	t-value	p-value
Intercept	5.787e-04	1.017e-01	0.006	0.996
Race (Black)	6.680e-01	1.011e-01	6.606	2.45e-05 ***
/u/ (back)	1.400e-01	1.182e-02	11.846	< 2e-16 ***

*significant at $p < 0.05$; **significant at $p < 0.01$; ***significant at $p < 0.001$

Table 4. Linear Mixed-Effects Model Results for Perceived Blackness/Whiteness.

3.3 Competence

The educated and intelligence ratings loaded together in a factor analysis and were combined. The scores for competence were normally distributed. The best model contained fixed effects for race, /u/, and a two-way race-/u/ interaction. Results show that there is a significant main effect for /u/, such that front /u/ is rated as more educated and intelligent sounding overall. However, there was also a significant two-way race-/u/ interaction. Although both White talkers and Black talkers were rated as sounding more competent in their front /u/ guises compared to their back /u/ guises, this effect was greater for the White talkers than the Black talkers. In other words, Black talkers were rated as being more intelligent-sounding in the front /u/ condition compared to the back /u/ condition, but not as much compared to the White talkers, as shown in Figure 3 and in Table 5. Qualitatively, this effect seems to be driven primarily by the Black males, who show little to no effect of /u/ (see Figure 4).

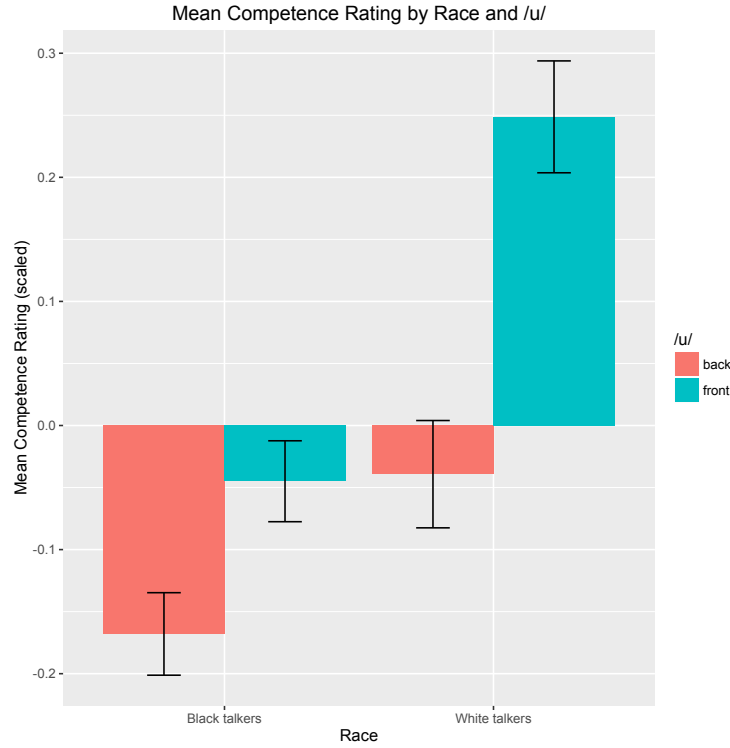


Figure 3. Mean Competence Ratings by Race and /u/. A higher rating means the group was thought of as more educated and intelligent.

Fixed effects	Estimate	Std. Error	t-value	p-value
Intercept	-9.203e-04	1.482e-01	-0.006	0.99515
Race (Black)	-1.054e-01	1.487e-01	-0.708	0.49193
/u/ (back)	-1.028e-01	1.643e-02	-6.260	1.29e-08 ***
Race (Black): /u/ (back)	4.185e-02	1.566e-02	2.673	0.00759 **

*significant at $p < 0.05$; **significant at $p < 0.01$; ***significant at $p < 0.001$

Table 5. Linear Mixed-Effects Model Results for Perceived Competence.

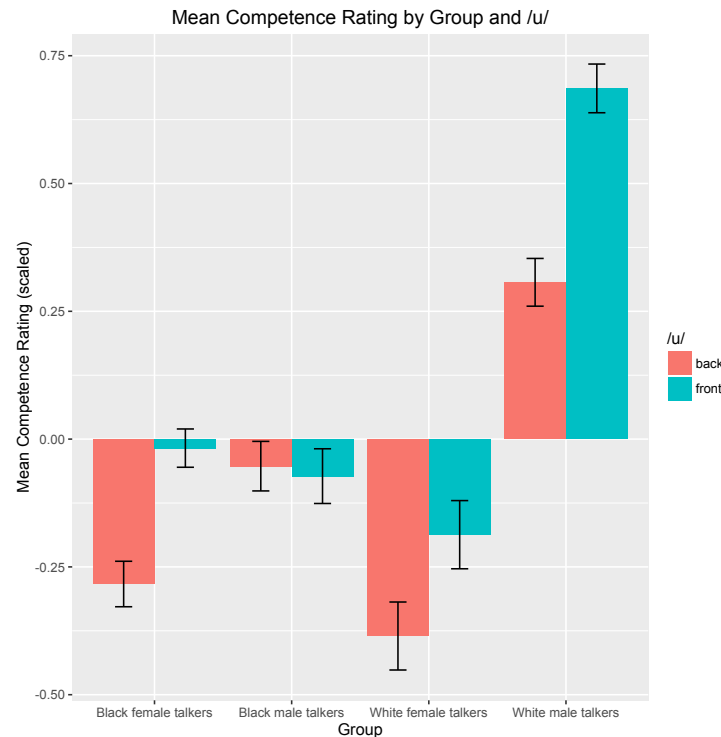


Figure 4. Mean Competence Rating by Gender, Race, and /u/. A higher rating means the group was thought of as more educated and intelligent.

3.4 Gayness

Listeners barely varied their responses as to how “gay-sounding” each recording was. The distribution for the “gay” scores was very heavily right (positively) skewed with very few people varying their ratings throughout the experiment; in other words, the listeners believed that few, if any, of the recordings “sounded gay.” No fixed effect was significant in the model.

3.5 Trendiness

Trendy ratings were fairly normally distributed. The best model contained significant fixed effects for race, /u/, and a two-way interaction between race and /u/. As a whole, there was a significant effect of /u/, such that front /u/ was rated as more trendy sounding than back /u/, but there was also significant race-/u/ interaction, such that for White talkers, a front /u/ made them sound trendier, but for Black talkers, there was no effect (see Figure 5 and Table 6, which show this significant effect).

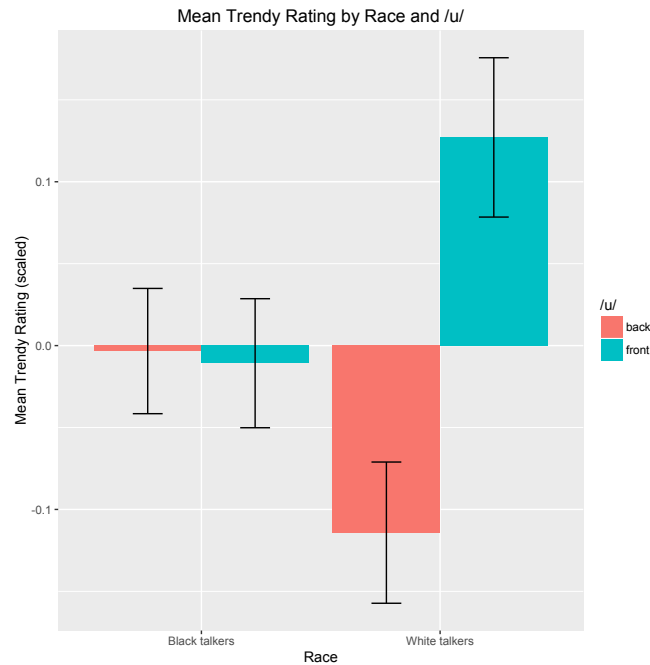


Figure 5. Mean Trendy Ratings by Race and /u/.

Fixed effects	Estimate	Std. Error	t-value	p-value
Intercept	3.789e-04	1.017e-01	0.004	0.99709
Race (Black)	-6.877e-03	1.032e-01	-0.067	0.94790
/u/ (back)	-5.799e-02	1.918e-02	-3.023	0.00254 **
Race (Black): /u/ (back)	6.169e-02	1.918e-02	3.216	0.00132 **

*significant at $p < 0.05$; **significant at $p < 0.01$; ***significant at $p < 0.001$

Table 6. Linear Mixed-Effects Model Results for Perceived Trendiness.

3.6 City/Country

The ratings for “from the city” and “from the country” loaded together in a factor analysis. After flipping the scale for the country ratings, they were combined with the city ratings, which were then modeled. The best model contained fixed effects for /u/ and block. Front /u/ was rated as more country and less urban sounding than back /u/ (as shown in Figure 6 and Table 7). There was also a significant effect of block, such that listeners rated recordings as more urban sounding in the second block compared to in the first block (also shown in Table 7).

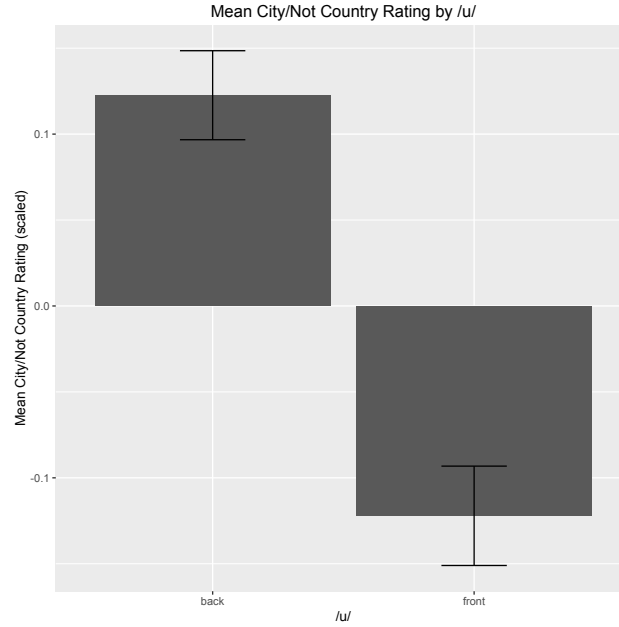


Figure 6. Mean City/Country Ratings by /u/. A higher rating means the group was thought of as more likely to be from the city and less likely to be from the country.

Fixed effects	Estimate	Std. Error	t-value	p-value
Intercept	-0.05059	0.15761	-0.321	0.753667
/u/ (back)	0.12225	0.01482	8.247	4.44e-16 ***
Block (2 nd)	0.10148	0.02965	3.423	0.000631 ***

*significant at $p < 0.05$; **significant at $p < 0.01$; ***significant at $p < 0.001$

Table 7. Linear Mixed-Effects Model Results for City/Not Country Ratings.

3.7 Results of Post-Task Interview

Most participants did not explicitly report paying attention to the word “dude” in the recordings; instead, they focused much of their attention on the race or gender of the talker (for example, higher and lower pitch was a common answer.) While this may

suggest that participants did not rate the recordings within the task according to the pronunciation of *dude*, it is important to note that there was still a robust effect of /u/ in social evaluation. Thus, regardless of whether the participant explicitly noticed and brought up /u/ in the post-task interview, /u/ still affected talker ratings. Often, participants would say that they paid attention to whether a talker had an “accent.” The interviewer would then probe the subject, asking them questions like “how did you know someone had an accent?” or “which words told you someone had an accent?” to which participants would then respond. In total, only one-third of participants reported having paid attention to the word “dude” in the recordings. Of the people that did report having paid attention to the word “dude”, most commented on vowel length or the pragmatic use of the word “dude”, rather than vowel quality. The word *dude* itself was never the first feature brought up by participants.

Very few participants had narratives or stories about /u/. Although many of the participants were able to discuss whether a talker had an “accent”, they were often unable to talk directly about the different /u/ variants, even when directly presented with different pronunciations. Frequently, after being asked the question, subjects would look puzzled and then say they could not remember thinking about [dud] vs. [dʌd] or say they never noticed the variation. If participants could recount a story, the interviewer often had to disambiguate whether the subject talked about the front or back variant of /u/ in *dude*, such as by producing the two variants on the fly again, and asking which of the variants the participant was talking about. During the course of the entire post-talk interview, no native or layman’s terms for the difference between these variants appeared.

When asked where they thought people used the front or the back variants, participants were similarly puzzled and answers varied greatly. Participants tended towards associating the front variant with the West Coast or California, some pointing to a “valley girl” style. In total, 39 of the participants singled out either the West Coast or California as where people use the front variant. The second most reported answer was New England, the East Coast, Boston, or some combination thereof, with 14. Ten attributed this variant to “the North,” with some specifically pointing to Canada. However, if participants were confused about where people use the front variant, they were much less confused about where the back variant was used: either the Midwest or anywhere, with some saying that the back variant was “normal.” 38 specifically pointed to the Midwest, with another 19 saying it could be spoken “anywhere.”

4.0 Discussion

It was hypothesized that /u/ is not a linguistic stereotype, that is, it cannot be the overt topic of social comment. In comparison to the features mentioned in the background section, such as –IN/–ING, /u/ was not subject to this level of explicit knowledge. Although it is evident that some participants were *aware* of this feature and when explicitly asked, able to associate the feature with different regions, it is clear that this was only through a professional linguist’s intervention and a lack of layman’s terms and metalinguistic discourse surrounding the variable made discussing the variable difficult for participants. Thus, I argue that /u/ represents either an indicator or a marker in the Labovian trichotomy, given that participants were not able to easily talk about the variable⁶.

The results show that in general, the social perception of /u/ generally follows the sociolinguistic production of the variable, especially when there were ready associations with particularly imaginable groups of people. Front /u/ was rated as more feminine, less masculine, more “White”-sounding and less “Black” sounding across all talkers. However, when looking more closely at potentially less visible, identifiable or institutionally mandated ‘traits’, Black talkers showed a smaller effect or no effect at all.

⁶ Because Labov (1972) defines the difference between indicators and markers solely in terms of production (i.e. whether there is intra-speaker variation during a sociolinguistic interview type setting), it is impossible from this study alone to determine which of the two /u/ is.

For example, White talkers were rated as more competent and trendy in the front /u/ condition, but Black talkers did not get the same boost. Regardless, the general meaning described within production studies matches the listener results from this experiment well, even if evaluation was uneven across talkers.

There was, however, one exception to this trend: the city/country ratings. Labov, Ash, and Boberg (2006) notice that large, Midwestern cities and their surrounding areas exhibit greater /u/ fronting than the more rural areas within these same states. Listeners, however, rated front /u/ as *more country-* and *less city-* sounding. There are two possible explanations for this: first, that listeners assign social meaning that is contrary to the expected social pattern in production or second, that the question was asked in such a way that oversimplifies or is not interpreted as a city/country divide. I argue for the latter.

To make this point, I first show a trend for perceived Black voices to also be perceived as from the city as opposed to from the country. Figure 7 shows a scatterplot of this correlation. Although White speakers (labels 1 and 2 at the bottom of the graph) showed a considerable amount of variation in whether they were perceived as from the city or from the country, more “Black”-sounding voices were highly perceived as from the city. It should also be noted that there are only a small number of points towards the top in the “3” and “4” Blackness rating. This data is, in part, an artifact of the strongly bimodal distribution of “Black” ratings. Two talkers (one Black male and one Black female) were rated as somewhat more racially ambiguous. These two alone, however, are heard of as less city-sounding compared to the other Black voices in the experiment. Additionally, recall that front /u/ was rated as being more intelligent-sounding (at least

among White talkers). Although it is possible that front /u/ may make a talker sound both more rural and more educated and intelligent, this is ideologically incompatible (in fact, the one speaker who was overwhelmingly labeled as “from the country” was also labeled as highly uneducated and unintelligent.) Taken together, these data suggest that listeners use the “city” and “country” questions as stand-ins for race.

One objection to this analysis comes from the results of the post-task interview, where a majority associated back /u/ with the Midwest or “anywhere,” and almost half associated front /u/ with California and the West Coast. Note also the similarities to Torbert’s (2004) findings showing an association of fronted /u/ with “not my region.” Like the city/country ratings, this result was surprising, as Labov, Ash, and Boberg (2006) point out that large, Midwestern cities exhibit more /u/ fronting compared to California cities. However, unlike the city/country ratings within the task, subjects could respond freely in the interview, so potential responses were not constrained. From these results, it seems as if social perception of /u/ does not match how /u/ is produced large-scale geographically within North America, whether the division be between dialect regions or a rural-urban divide. However, I argue that unlike the city/country ratings, this post-task interview result is mediated by larger ideologies of Ohio and the Midwest dialect region of being or sounding “normal” (Campbell-Kibler 2012). Since several participants labeled back /u/ as being more “normal” or “neutral” than front /u/, to be ideologically consistent, participants need also espouse the view that the average Ohioan uses back /u/. This result is in spite of front /u/’s association with more socially desirable characteristics (competence and trendiness), which could still be read as marked.

Unfortunately, there is no way to disentangle a marked vs. unmarked form in this dataset as participants were only given two variants instead of three or more.

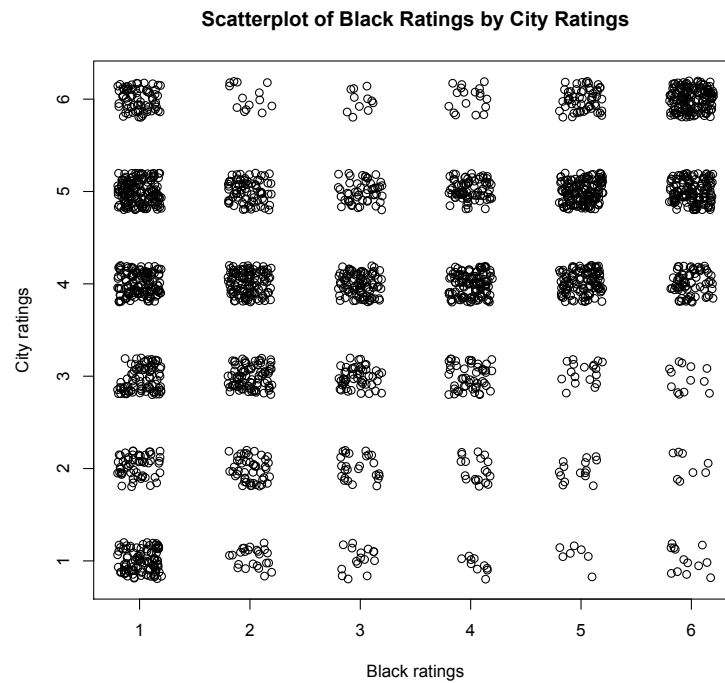


Figure 7. Scatterplot of Unnormalized Black Ratings by Unnormalized City Ratings. The data have had small amounts of random noise (jitter) added to visualize the effect. Note the small number of data points in the bottom right quadrant, showing that the talkers that were rated as Black-sounding were less likely to be rated as “from the country.”

The results of this study reaffirm that as part of person perception (Fiske and Neuberg 1990), listeners make use of both categories and style when evaluating unfamiliar voices. While there are different models of person perception, the basic architecture remains the same: that people initially and rapidly categorize others in larger

groups, such as “female”, and then, if needed, allocate more cognitive resources to focus on attributes of a person (“strong female”). Recently, sociolinguists have argued for integrating theories of person perception into the evaluation of linguistic variation (Levon 2014), claiming that stereotypes, in the more colloquial sense of the word, help facilitate the space between rapid categorization and thoughtful evaluation by activating attributes conventionally associated with these categories (e.g. “Asian” might cue “intelligent.”) Thus, ideologies about particular types of people limit the space of available styles. We see this within the dataset presented here, as listeners easily classify talkers by race and gender, as evidenced by the strong bimodal distributions for the Black/White ratings and the masculine/feminine ratings. However, we also see that within this experiment, listeners rely on sets of styles nested within these categories and their relation to /u/ variants. While different /u/ variants do not initiate dramatic reclassification of White talkers into Black talkers or vice-versa, they do slightly, but significantly, shift the perceived style of Black or White talkers. With this information, I argue here that perceivers can associate a variety of sociolinguistic styles with a certain social category or group, but store or compare them hierarchically, such that one or some styles are considered more prototypical or canonical along a particular dimension. For the listeners within this experiment, a front /u/ forms part of the sociolinguistic imagination of what it means to be stereotypically or prototypically White, trendy and female (perhaps a “valley girl”⁷), and similarly, back /u/ helps create a prototypical Black, untrendy male⁸.

⁷ It should be noted that valley girl stereotypes are usually not associated with intelligence, which front /u/ also marks. However, within this experiment, education and intelligence load together, and thus, it is likely the participants interpret these questions as underlyingly about social class.

So far, we have seen that /u/, as a Labovian indicator or marker, does behave like a stereotype feature. Its social meaning generally follows, but does not necessarily fall out from, its use among certain social groups and its meaning also varies between different macro-social categories, like race and gender, but how might we explain the difference in evaluation between White and Black speakers? Two ways to interpret how and why listeners evaluate /u/ differently in these different contexts come from Pharao et al. (2014) and Levon (2014). Recall that Pharao et al. explained differences in evaluation of /s/ variants across registers by arguing that listeners incorporate different ideological schemes when interpreting /s/. Further recall that in interpreting his findings on fronting, pitch, and /s/, Levon argued for *contextual nonattention*, whereby ideologically opposite meanings are both activated, but incompatibility causes one to be inhibited. In such a case, the meaning associated with the more salient linguistic feature “wins” and the less salient feature is effectively ignored. I argue below for an interpretation of different ideological schemes, similar to Pharao et al.

A case of contextual non-attention cannot be applied consistently across the different results presented in this study. Contextual non-attention could, for example, explain the trendy ratings in this experiment. For the majority White listeners within the study, it is possible that the category “Black” and the attribute “educated/intelligent” are incompatible, so the more prominent ‘category’ and the associated linguistic features cuing race win out. In this case, the general meaning of a front /u/ cuing intelligence

⁸ One may notice that the majority of “trendy youth” slang is appropriated from this exact group, which suggests that Black males should be read as “the trendiest.” However, I would argue that missing from this assumption are imbalances of power between people and how context often transforms meaning of resources. To that end, “trendiness” originates not with the resources themselves, but with those empowered to transform “untrendy” or “foreign” material into “fresh.”

within a Black voice would be masked⁹. However, contextual non-attention fails at explaining the White/Black ratings. The category “Black” and the attribute “less Black-like” are fundamentally at odds. Yet, listeners integrated both the more “salient” linguistic features cuing Blackness (e.g. nasalization of /æ/ in *man*, r-lessness in *disappear*, among others) and the less “salient” front /u/ cuing less Black into their evaluations. This result makes an argument for contextual non-attention difficult in this circumstance, especially given that an alternative argument for different ideological schemes can explain both the Black/White ratings and the educated/intelligent ratings.

An argument for different ideological schemes can more appropriately be invoked here. Not only does this interpretation capture all of the data presented here, it is almost certainly transparent through White ideologies of Blackness. Not only are Blacks disproportionately more likely to live in poverty in the United States, but the majority White American public also substantially overestimates what percentage of poor are Black (Gilens 1996), displaying a sizeable link between lack of education and Blackness. Indeed, speaker evaluation studies have shown that Black voices are readily evaluated as less intelligent and employable than White voices (see, for example, Kushins 2014). Additionally, results from the post-task interviews reveal that the listeners within this study eagerly associate trendiness to fashion, an industry with historically low rates of African-American involvement (Friedman 2015). Although one person displayed an overtly Black understanding of trendiness, naming “hip-hop artist” as a trendy job, 34

⁹ It is worth pointing out that there is no reason why more prominent linguistic information need have a greater effect on perceived Black talkers than perceived White talkers. However, it is possible that for the majority White participants in this study, a larger number and greater availability of White styles compared to Black styles allow for greater differentiation and thus, less incompatibility between the category “White” and different attributes.

participants pointed specifically to jobs within the fashion industry (models, designers) as “trendy”, with another 17 who more generally named careers within “the arts.” While figures can contest these racist stereotypes (for example, Cornel West and Tyra Banks), these figures are likely ideologically erased (Irvine and Gal 2000), especially when participants are forced to evaluate a new, disembodied voice. It is thus unsurprising that /u/ and its general association of “trendiness” in Whites may not ‘translate’ to Black voices given that these racial stereotypes can limit the available stylistic space.

Although I do not argue here for an interpretation of contextual nonattention with regards to /u/, I do however wish to point out a potential problem of including it in a model of person perception in sociolinguistics, namely that it must simultaneously account for both Levon’s results and the results from this study. Recall that Levon’s (2014) study show that listeners do not necessarily attend to all of the features in a voice; instead, only the meaning associated with one feature can “win out” in social evaluation. However, it is readily apparent listeners can attend to bundles of features, even when features are ideologically opposed (see, for example, Campbell-Kibler 2011). If contextual nonattention is integrated into person perception, one would highly expect to find a significant talker race-/u/ interaction for the White/Black ratings in this experiment, yet this was not the case. The question then is when does contextual nonattention apply and when does it not? One could speculate that the trigger lies in one of numerous differences between the current study and Levon’s study. The trigger may

be, for example, the relative phonetic or phonological “salience”¹⁰ of the features under examination or a product of the relative metalinguistic discourse surrounding the features themselves. It could also be due to differences in the focal points of investigation. While Levon relates the social meaning of one individual feature to another’s, this study relates the meaning captured by a bundle of features (captured crudely through “Black voices” and “White voices”) to that of an individual feature. Whatever the case, it is clear that a sociolinguistic model of person perception containing contextual nonattention ought to explain where, when, and why it applies in some cases and not in others.

¹⁰ What exactly constitutes salience is not defined by Levon and is still an open question in the literature (for an overview, see Rácz 2013).

5.0 Conclusion

This paper has examined the effect of /u/ fronting in the speech of Black and White and male and female talkers. In particular, it asked what the sociolinguistic status of /u/ is in terms of awareness, whether social evaluation of /u/ in perception is similar to those found in production, and whether the evaluation of /u/ varies depending on talker race and gender. Results show that despite not being a Labovian stereotype, listeners generally associate front and back /u/ with the social groups that more frequently produce each variant. Additionally, the social meaning of /u/ is not uniform across contexts; in particular, perceived talker race, and not gender, greatly affected how listeners evaluated /u/, and different ideological schemes are at least partly responsible for the inconsistency. As such, central findings by Phrao et al. (2014) are reaffirmed. This study has additionally presented problems in integrating contextual nonattention into a sociolinguistic model of person perception, namely when contextual nonattention applies and when it does not. Further research on how context shapes meaning of sociolinguistic variants will be useful in solving this and other questions.

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Appendix A: Order of Recordings

Block A		Block B	
<i>Talker</i>	<i>/u/ guise</i>	<i>Talker</i>	<i>/u/ guise</i>
1. Black male A	front	13. Black female B	back
2. Black female A	back	14. White female B	front
3. White male A	back	15. White female A	back
4. White female A	front	16. Black male C	back
5. White male B	front	17. White female C	front
6. Black male B	back	18. White male C	back
7. White female B	back	19. Black female A	front
8. Black female B	front	20. Black male A	back
9. Black female C	back	21. White male A	front
10. Black male C	front	22. Black female C	front
11. White male C	front	23. White male B	back
12. White female C	back	24. Black male B	front

Table 8. Order of Recordings Presented to One Set of Participants. Note that the order shown here corresponds to Group 1 in Table 1.

Appendix B: List of Pseudonyms

<i>List of pseudonyms</i>	
Alex	Pat
Cameron	Peyton
Casey	Riley
Charlie	Robin
Chris	Rory
Cody	Sam
Jamie	Sandy
Jordan	Sasha
Kelly	Shawn
Lee	Skyler
Morgan	Taylor
Nicky	Terry

Table 9. List of Gender-Neutral Pseudonyms used in the Experiment.