PROJECT MUSE®

Testifying while black: An experimental study of court reporter accuracy in transcription of African American English

Taylor Jones, Jessica Rose Kalbfeld, Ryan Hancock, Robin Clark

➡ *For additional information about this article*
https://muse.jhu.edu/article/727848

LANGUAGE AND PUBLIC POLICY

Testifying while black: An experimental study of court reporter accuracy in transcription of African American English

TAYLOR JONES

University of Pennsylvania

RYAN HANCOCK

Philadelphia Lawyers for Social Equity

JESSICA ROSE KALBFELD

New York University

ROBIN CLARK

University of Pennsylvania

Court reporters are certified at either 95% or 98% accuracy, depending on their certifying organization; however, the measure of accuracy is not one that evaluates their ability to transcribe nonstandard dialects. Here, we demonstrate that Philadelphia court reporters consistently fail to meet this level of transcription accuracy when confronted with mundane examples of spoken African American English (AAE). Furthermore, we show that they often cannot demonstrate understanding of what is being said. We show that the different morphosyntax of AAE, the different phonological patterns of AAE, and the different accents in Philadelphia related to residential segregation all conspire to produce transcriptions that not only are inaccurate, but also change the official record of who performed what actions under which circumstances, with potentially dramatic legal repercussions for everyday speakers of AAE.*

Keywords: African American English, comprehension, criminal justice, inequality

'I hereby certify that the proceedings and evidence are contained fully and accurately in the notes taken by me on the trial of the above cause, and that this copy is a correct transcript of the same.'
—standard court transcript boilerplate

1. INTRODUCTION. The criminal justice system of the United States rests on the idea that every criminal defendant has the right to a speedy and fair trial (per the sixth amendment of the US Constitution). Every defendant is assured representation, promised a jury of his or her peers, and given the opportunity to appeal. Every trial is recorded by a highly trained court reporter so that a verbatim official record will be available. But what happens when the verbatim official record is not so verbatim? What happens to the right to a fair trial when the words of the defendant, or the witnesses, are misunderstood and inaccurately inscribed in the official court record?

This study is an experimental investigation of court reporter transcription accuracy and comprehension of African American English (alternately, African American Language (AAL), African American Vernacular English (AAVE), Black English Vernacular (BEV), among others). In order to work in the courts, court reporters must be certified

by one of the field's main certifying bodies at an accuracy of 95% or greater. However, court reporters are neither trained nor tested on their transcription of nonstandard dialects, but are rather tested for speed, spelling, punctuation, and arcane medical and legal jargon spoken in Standard American English (SAE). As we demonstrate below, court reporters in Philadelphia fall far short of 95% accuracy when confronted with everyday examples of African American English.

The only academic study of the role of African American English (AAE) in a legal or judicial context, to our knowledge, is Rickford & King 2016, which takes as its starting point the treatment of Rachel Jeantel during the highly publicized murder trial of George Zimmerman. Rickford and King discuss Jeantel's treatment both by lawyers and by the members of the jury before expanding their focus to examine the ways in which 'vernacular speakers' (here including speakers of nonstandard dialects as well as English-lexifier creoles) have been misunderstood or intentionally misrepresented in a legal setting. Following Eades 2010, they note that there has been 'almost no linguistic research which examines African American interactions in the legal process' (Eades 2010:89, cited in Rickford & King 2016:954). This article is an attempt to begin to rectify that situation, with a quantitative companion to Rickford and King's qualitative study.

For this study, we gave a transcription-and-paraphrase task to a sample of twenty-seven court reporters currently working in the Philadelphia courts. Court reporters were given naturalistic speech with representative features of AAE morphosyntax that are different from those of 'standard' English. Using their own stenotype machines, as they would in the courtroom, they were asked to transcribe after multiple listens and to paraphrase what they heard as best they could. They were given unlimited time to revise and 'clean up' their transcriptions before submission. They were also administered a brief demographic survey, and they participated in informal, participant-directed post-study interviews about their views on transcription, nonstandard speech, and African Americans. We found that participants fell well below their certified 95–98% transcription accuracy, could not accurately paraphrase what they had heard, and generally held negative beliefs about 'Ebonics' and about African Americans. These negative attitudes were not limited to African Americans on trial, but in some cases extended to police and judges as well.

The organization of the article is as follows: we first discuss relevant background information about the structure of AAE, the relationship between AAE speakers and the criminal justice system in the United States, how court reporting works, and the importance of the court record in legal proceedings (§2). We next turn to the experimental study (§3), beginning with a discussion of the study materials and a description of a pilot study conducted with non-AAE-speaking laymen and lawyers, which we used to validate our experimental stimuli, and then discuss the design, participants, and analysis of our quantitative study of court reporter accuracy and comprehension. We present the results of the study in §4 and discuss them in §5, with an eye to understanding the types of misunderstandings and mistranscriptions we find, as well as the relationship between court reporters and language attitudes about nonstandard dialects and about African Americans. Finally, we discuss policy suggestions (§6) and conclude (§7).

2. Background.

2.1. African american english. AAE is the language variety spoken primarily but not exclusively by black Americans. It is the language variety associated with the descendants of enslaved people of African descent (as opposed to recent immigrants from

Africa) (Baugh 1999). It is increasingly referred to as African American Language to avoid taking a contested theoretical stance on the origin of the variety (Lanehart 2015),[1] and has also been referred to as African American Vernacular English (e.g. Bailey & Thomas 1998, Labov 1998, Pullum 1999, Rickford 1999, Labov 2010), as Black English Vernacular (Labov 1972), and with various other names that have now fallen out of favor.

   For our purposes, the linguistic research around AAE can be grouped into broad approaches: explanation that while not widely considered 'standard', it is still coherent, rule-governed, and valid; and description of the linguistic structure of the language variety. For instance, both 'The logic of nonstandard English' (Labov 1970) and 'African American Vernacular English is not standard English with mistakes' (Pullum 1999) thirty years later, following the Oakland 'Ebonics' controversy, aim to disabuse readers of negative language attitudes about AAE by demonstrating that, while its rules are different from those of 'standard' American English, it is rule-governed. There is, to our knowledge, no quantitative measure of the success of this approach. It should be noted that there is an implicit assumption in this line of research that we wish to make explicit: non-speakers of AAE generally do not know the rules of AAE and often fail to understand it. The socially rehabilitative (also called 'vindicationist') line of research is of value in part because non-AAE speakers stigmatize AAE as 'broken' precisely because they do not understand it. Otherwise, pointing out that it is in fact logical, rule-governed, and coherent would have little value. As Arthur Spears (p.c.) notes, though, this is not, nor can it be, the only reason, as other poorly understood varieties (e.g. Scottish English) do not suffer the same stigma in this context; the stigma is 'due primarily to its connection to African Americans, and to blackness in general'.

   Descriptions of this language variety, as with any other, cover a broad range of topics. Of particular interest in the last fifty years have been cataloging and describing morphosyntactic patterns that differ from those of SAE, such as habitual *be* or preterite *had* (Rickford & Rafal 1996, Rickford 1999, Ross et al. 2004), explaining variation in morphophonological patterns such as the (variable) deletion of possessive /s/ (Labov 1972, Mufwene et al. 1998, Cukor-Avila & Lanehart 2001, Green 2002), and investigating local sound changes, especially with reference to local white norms (Wolfram et al. 2000, Mallinson & Wolfram 2002, Labov et al. 2006, Blake & Shousterman 2010, Labov & Fisher 2015, King 2016). There has also been a fair amount of research into what Spears calls CAMOUFLAGE CONSTRUCTIONS[2]—constructions in AAE that, at first glance, appear to be the same as corresponding constructions in SAE, but that actually have very different meanings in AAE (Spears 1982, 2015, Wolfram 1994, Cuckor-Avila 2002, Collins et al. 2008, Collins & Postal 2012, Jones 2015, 2016, Jones & Hall 2019).[3] And indeed, AAE is highly systematic and rule-governed, but differs signifi-

---

[1] That is, whether it is essentially (i) a dialect of English with West African language features, creole features, or both, or (ii) a former English-lexifier creole that has undergone decreolization. The debate about the origins of AAE is not pursued here, and our use of African American **English** is not intended to suggest a theoretical orientation toward the so-called 'Anglicist hypothesis'. We chose not to use African American **Language** because doing so implicitly takes a legal procedural stance we do not agree with—namely, treating AAE as a distinct language, which would then require official testimony to be the speech of a translator.

[2] These are alternately referred to as 'masked Africanisms', for example, by Rickford and Rickford (1976).

[3] It is important to note that Collins and colleagues define camouflage constructions differently from Spears: Collins et al. focus on determiner phrases and agreement within the same variety, whereas Spears is interested in different meanings across two varieties of what at first glance appears to be the same construction. Both are relevant to this article, and the use of *a nigga* for first-person singular reference discussed below is in fact an instance of both kinds of camouflage construction.

cantly from SAE. In the next subsections, we give a brief overview of relevant features of AAE phonology and morphosyntax.

2.2. PHONOLOGY. The phonology of AAE is still understudied, though the literature on regional variation in the sound system of AAE has begun to blossom in the last few years. For decades, the consensus was that AAE phonology was 'relatively homogenous' (Labov et al. 2006) and that the early studies performed in the late 1960s and early 1970s in Harlem, Philadelphia, and Detroit were representative of AAE everywhere. Recent studies have begun to challenge this orthodoxy (e.g. Blake & Shousterman 2010, King 2016), but it is still generally accepted that there are a number of 'typically' AAE features that distinguish most varieties of AAE from other varieties of English. Here, we paint a 'broad strokes' picture of AAE phonology, following Bailey & Thomas 1998, Thomas 2007, and Kohn 2013, as well as what is standardly assumed in the broader literature. Readers interested in an exhaustive description of AAE phonology are referred to Thomas 2007 as a starting point.

The vocalic system shares many features with Southern American English, making it not completely foreign even for northerners, but it diverges in other respects. Our focus here is on aspects of the AAE sound system that differ from white Philadelphia English. Generally, AAE speakers exhibit the PIN-PEN merger, in which KIT and DRESS vowels (see Wells 1982) are merged before nasals,[4] as well as monophthongization of the PRICE vowel (e.g. [pɹɑːs] 'price'). In many locations, AAE speakers exhibit vocalic merger before /l/, both the FEEL-FILL merger and the POOL-PULL-POLE merger. Most importantly, there is a growing body of research suggesting that African Americans only partially participate in regional 'white' sound changes like the California Vowel Shift (King 2016), the Northern Cities Vowel Shift (Bailey & Thomas 1998, Labov et al. 2006, Labov 2011), or the Southern Vowel Shift (Fridland 2003, Labov et al. 2006, Thomas 2007, Labov 2011), and in some cases either do not participate at all (Kohn 2013, Labov & Fisher 2015) or participate in opposite sound shifts (e.g. raising and laxing of /æ/ instead of raising and tensing) (Labov & Fisher 2015). As is discussed in §5.2, Philadelphia AAE speakers generally do not exhibit fronting of the back vowels /o/ and /u/, nor do they exhibit raising of the diphthong nucleus in the PRICE vowel before voiceless obstruents or fronting of the diphthong nucleus in the MOUTH vowel, as in (white Philadelphian) [fʌɪt] 'fight' and [hæʊs] ~ [heʊs] 'house'.[5]

The consonants of spoken AAE are also significantly different from those of other varieties of English, due to the application of a number of well-studied phonological rules. AAE speakers often exhibit so-called TH-stopping or TH-fronting, in which /θ/ and /ð/ are made either coronal stops [t] and [d], as in [tɹi ə doʊz] 'three of those', or labial fricatives [f] and [v], as in [bæf] 'bath' and [bævz] 'baths'. The liquids /ɹ/ and /l/ are often vocalized ([foʊə] 'four', [fɪʷ]'feel') or deleted ([foʊ] 'four', [fɪ] 'feel'). Postvocalic consonant clusters are often reduced (*asks* → [æsk], [æsʔ], or [æs]). Word- and syllable-final stops are debuccalized (replaced with a glottal stop) or deleted in a process generally referred to as T/D-deletion,[6] so *creep* becomes [kɹiʔ], and *bleeding* can become [bliʔĩ]. This process occurs even more in consonant clusters in which the preceding consonant shares the same voicing specification, so *hand* can become [hæ̃]

---

[4] This is not always the case in the Northeast, especially in Philadelphia and New York, and variation in merged/unmerged status among our speakers seemed to contribute to court reporter confusion.

[5] The exact pronunciation of the MOUTH vowel depends on a number of factors, most importantly age, as there was a shift from [æʊ] to [eo] or [ɛɔ] that has subsequently reversed (Labov 2011).

[6] Although note that it does not apply just to coronal stops.

and *just* can become [d͡ʒʌs]. While there is not much literature dedicated specifically to the phenomenon, there is agreement among sociolinguists that AAE allows postvocalic nasals to be realized as nasalization on the vowel, so *he wins* can be realized as [hi wĩːz]. Similarly, while this process is understudied, postvocalic /v/ can be deleted, as in [bəliː mi] 'believe me' or [ɑː lʌː dæʔ] 'I love that'. Word-final /s/, including plural /s/ and possessive /s/, can be deleted, as in 'both his **hands**' [hæ̃].

It should be borne in mind that while sociolinguists researching AAE often focus on one or another of the above phenomena, all of these vocalic and consonantal phenomena can potentially apply in the same utterance, along with normal fast-speech phenomena we expect to encounter across dialects.

2.3. Morphosyntax. AAE also possesses a number of morphosyntactic features that differ from those of other North American varieties of English. AAE allows deletion of the verbal copula in the same contexts in which SAE allows phonological reduction, demonstrated in example 1.[7] AAE allows for negative concord, in which a negation triggers morphological agreement with negative polarity items (NPIs) (see Labov 1972, Martin & Wolfram 1998, Green 2002 for discussion), and for deletion of third-person singular present-tense /s/, both shown in example 2 (Fasold 1972, Labov 1972, Loflin et al. 1973, Green 1998, Mufwene et al. 1998). Many varieties of AAE make use of expletive *it* instead of expletive *there*, as in example 3 (Labov 1972, Martin & Wolfram 1998).

(1) He Ø workin'.
    'He is working.'
(2) Nobody never say nothin'.
    'Nobody ever says anything.'
(3) It's a man here to see you.
    'There's a man here to see you.'

AAE also has a number of morphosyntactic markers of tense, aspect, and mood that other varieties of English lack. For instance, AAE makes use of habitual *be*, an invariant form that marks habitual action (Labov 1972, Green 1998, 2002, Martin & Wolfram 1998),[8] perfect *done*,[9] which marks (thoroughly) completed action (Labov 1972, 1998, Green 1998, 2002), and a phonologically stressed *been* (alternately 'stressed BIN') that marks an action or situation as having been completed in the remote past and still obtaining in the present (Labov 1972, Dayton 1996, Rickford & Rickford 2000),[10] each shown in example 4.

---

[7] The status of null copula in AAE is somewhat more controversial than we have presented here, as various researchers have argued for no underlying copula (Stewart 1966) or for contraction and deletion (Labov 1969, 1972). It is central to arguments about the nature of AAE. (Is it essentially a dialect of English? A different language? A de-creolized variety?) For an overview, the reader is referred to Rickford et al. 1991 and Labov 1998. For our purposes, all that is relevant is that in the present tense, in some sentence structures, there is no overt verbal copula.

[8] This, too, is the subject of a number of different analyses, but the existence of a habitual marker pronounced invariably as *be* is not controversial.

[9] Here we follow standard usage in the tense/aspect/mood literature, which, it should be noted, differs somewhat from variationist usage, which would label this a perfective.

[10] In this article we choose to follow the way AAE speakers tend to write stressed *been* (as <been>, not <bin>) and how our speakers pronounced it. As discussed further in §5.2, while the pin-pen merger is often described as a feature of AAE and stressed *been* is often written as <BIN>, AAE speakers from Philadelphia and New York City are often not pin-pen merged, and they write and pronounce it as *been*. We thus represent stressed *been* in examples throughout as *been*.

(4) a. He **be** workin'.
        'He usually works/He's often working.'
   b. He **done** left the city.
        'He moved away from the city.'
   c. I BEEN did my homework.
        'I completed my homework a long time ago.'

Some speakers make use of a *be done* construction that either can indicate habitual or future completion of an action (Labov 1972, 1998, Green 1998, 2002) or can function as a resultative marker (Baugh 1983), as in the following.

(5) a. When I be getting off work, he be done gone to bed.
        'Usually, when I get off work, he has already gone to bed.'
   b. I'll be done seen most everything when I seen an elephant fly.
        'I'll have seen nearly everything when I have seen an elephant fly.'

AAE also allows for the deletion of possessive /s/, as previously noted, and for the construction of long strings of nouns in genitive relations with no overt marking, as shown in example 6 (Labov 1998, Mufwene et al. 1998).

(6) His uncle baby mama friend house front porch just got repainted.
       'His uncle's baby's mother's friend's house's front porch just got repainted.'

As demonstrated in example 7, questions in subordinate clauses can undergo the same subject-auxiliary inversion as main clause questions in SAE, with the same prosody (Labov 1972, Green 1998, 2002).

(7) I was wondering do it take you long.
       'I was wondering whether it takes you long.'

More importantly, as noted above, AAE has a number of constructions that are referred to as camouflage constructions, which look similar to constructions in SAE but have different meanings. Stressed *been*, above, is potentially one such construction, where *she BEEN married* means 'she has been married for a long time (and still is)' and not 'she has been married (before)' (Labov 1972, 1998, Rickford 1975, Green 1998, 2002, Martin & Wolfram 1998, Rickford & Rickford 2000).[11] Others include preterite rather than pluperfect use of *had* (preterite *had*) (Rickford & Rafal 1996, Rickford 1999, Ross et al. 2004), shown in 8a; what Spears (1982) calls 'indignant' *come*, shown in 8b; *talkin' 'bout* as a verb of quotation (first described in Jones 2016, but examples are present in Spears 1982, Labov 1998, and Ross et al. 2004), shown in 8c; auxiliary inversion (Green 1998), shown in 8d; first-person singular use of *a nigga* (Jones & Hall 2019), as in 8e; and modal *tryna* (Lane 2014), as in 8f.

(8) a. We had went to the store when I got a text.
        'We went to the store and then I got a text (while there).'
        NOT: 'We went to the store (and returned) and then I got a text.'
   b. He come tryin' to hit on me.
        'He tried to hit on me (and I'm indignant about it).'
        NOT: 'He came (here) and tried to hit on me.'
   c. He talkin' 'bout 'Who dat?!'.
        'He's asking "Who is that?".'
        NOT: 'He's talking about who that is.'

---

[11] Note also the existence of a distinct AAE-specific 'unstressed *bin*' (see Spears 2017), which we do not discuss here.

    d. Don't nobody say nothing to them.
        'Nobody says anything to them.'
        NOT: 'Do not say anything to them.'

    e. What a nigga told you?
        'What did I tell you?'
        NOT: 'What did [someone else] tell you?'

    f. They was tryna arrest me, but they didn't.
        'They were going to arrest me, but they didn't (after all).'
        NOT: 'They were attempting to arrest me but failed at it.'

It is important to remember that most parts of the United States are highly segregated, and Philadelphia is no exception (Charles 2003, Massey 2004, O'Sullivan & Wong 2007). While the population is roughly equally split between black and white residents, these residents do not generally live together, attend school together, or interact socially. According to the American Communities Project (Logan 2013), as of 2010 Philadelphia had a black-white DISSIMILARITY INDEX of 73.4, a black ISOLATION INDEX of 72.5, and a black-white EXPOSURE INDEX of 14.2.[12] This means that white Philadelphians have limited opportunity to interact with native AAE speakers in real life, especially during their early language acquisition, and it would not be unreasonable to expect white Philadelphians to misanalyze camouflage constructions in speech. Furthermore, given little meaningful exposure to AAE morphosyntax and to differences in AAE phonology, we may expect them to struggle with AAE more broadly.

2.4. AFRICAN AMERICAN ENGLISH AND THE CRIMINAL JUSTICE SYSTEM. The relationship between AAE and the criminal justice system is a complex one. There is not a clear and direct link between dialect, contact with the criminal justice system, and ultimate outcomes. Rather, there is a web of correlations and complicated relationships.

Dialect is known to be correlated with socioeconomic status, race, and education (Labov 1994). Race is correlated with socioeconomic status and lesser access to quality education (and therefore with speaking prestigious 'classroom' English) (Lewis 2003, Lin & Harris 2008, Shapiro et al. 2017). Socioeconomic status and education are correlated with involvement in the criminal justice system (Shaw & McKay 1942, 1969, Sampson & Groves 1989, Rekker et al. 2015, Sharkey et al. 2016, Swisher & Dennison 2016).

There are documented racial disparities at all levels of the criminal justice system. African Americans are more likely to be stopped by the police, more likely to receive longer sentences in federal court, and less likely to receive reduced charges in plea bargaining (Harris 1996, Fagan et al. 2010, Rehavi & Starr 2014, Yang 2015, Fagan et al. 2016, Metcalfe & Chiricos 2018). In Philadelphia, African Americans are subjected to highly disproportionate rates of invasive personal searches. For example, in 2009,

---

[12] The dissimilarity index (Massey & Denton 1988) is a measure of segregation that represents the evenness with which two groups are distributed across an area of study. Dissimilarity measures the percentage of a group's population that would need to move for each neighborhood to have the same percentage of that group as the overall metropolitan area. This index ranges from 0 to 1, with 1 being complete segregation. Here, we multiply by 100 for ease of interpretation. The isolation index measures 'the extent to which minority members are exposed only to one another' (Massey & Denton 1988:288) and also ranges from 0 to 1 (with 1 being complete isolation). Again, we have multiplied by 100 here for ease of interpretation. Exposure (also called 'interaction') 'measures the degree of potential contact, or the possibility of interaction, between minority and majority group members' (Massey & Denton 1988:287) and also ranges from 0 to 1. When there are only two groups, exposure and isolation sum to 1, but when looking at black/white differences in Philadelphia we have to take into account other racial groups, so the exposure index is slightly lower than 100 minus the isolation index.

253,333 individuals were searched by the Philadelphia police, and over 72.7% of those searched were African American (Hancock 2012). African American men are about six times more likely than white men to be incarcerated (Carson 2018). As of 2008, Philadelphia had the fourth highest incarceration rate in the United States (Hancock 2012).

Not only are African Americans more likely to come into contact with the criminal justice system, especially those with less education and lower socioeconomic status (and therefore those who are most likely to speak more divergent, basilectal varieties of AAE), but AAE has also been demonstrated to be stigmatized in the courtroom, and to have been poorly understood and transcribed on some occasions. Rickford and King (2016) found that Rachel Jeantel's depositions and testimony were not fully understood or correctly transcribed in the murder trial of George Zimmerman over the death of Trayvon Martin (*State of Florida v. George Zimmerman*). And in *United States of America v. Joseph Arnold*, an appeal in the sixth circuit hinged entirely on two features of AAE: the meaning of the word *finna* and its relationship to *fixing to*, and AAE copula deletion, with lawyers arguing that *he finna shoot me* was not the same as *he's finna shoot me*.[13] The dissenting circuit judge, evidently unfamiliar with AAE, claims:

> the statement contains no auxiliary verb (e.g. 'is' or 'was') connected to 'finna', which I understand to be a slang contraction for 'fixing to', much as 'gonna' serves as a contraction for 'going to'. … The lack of an auxiliary verb renders determination of whether Gordon intended to imply the past or present tense an exercise in sheer guesswork. (United States v. Arnold 2007)

Copula deletion in AAE occurs in only the present tense (see Labov 1972, Rickford et al. 1991, Blake 1997, Green 2002, inter alia), and the judge's justifications for her false claims were an appeal to material gleaned from the unreliable, crowd-sourced website *Urban Dictionary*.[14] We refer the reader to Rickford & King 2016 for a more complete picture of historical examples of the relevance of nonstandard varieties of English to the court record.

2.5. Court reporting and the importance of the court record. The court reporter's job is to transcribe what is said fully and accurately. The court reporter must certify that their transcription is a correct record of what was actually said, and court reporters are, in turn, certified by the state and by their professional agencies as capable of accuracy. What the court reporter writes, in effect, becomes officially what was said. While it is true that, for the vast majority of AAE-speaking Philadelphians, cases may never go to trial,[15] the court reporter is present for depositions, witness statements, testimony before a grand jury (that is, for the decision to indict), and of course for an actual trial. Since what the court reporter writes is taken to be what is said, if there is an error in the transcription of a deposition, for instance, an entirely honest witness can be accused of perjury for contradicting a prior statement. And should an AAE-speaking defendant make it to trial, the transcript may play an essential role not just in the initial court proceedings but in any subsequent appeals as well.

It should be clear from the above that AAE is different from 'standard' varieties of English in both phonology and morphosyntax, that speakers of the most different varieties are more likely than others to come into contact with the criminal justice system, that dialect differences have played a role in previous cases, and that one possible place

---

[13] The relevant passage finds judges and lawyers arguing about whether *finna* indicates unspecified future action or impending action, with both lawyers and judges erroneously interpreting copula deletion as having some bearing on the imminence of the action.

[14] We know this because the judge explains in her dissent that she consulted *Urban Dictionary*.

[15] More than 90% of both state and federal cases end with plea bargains rather than trial (Devers 2011).

where cross-dialect comprehension may play a role is the court record—which is directly related to judicial outcomes. We turn now to an experimental study of court reporter comprehension of AAE.

3. THE STUDY. To investigate the potential for miscomprehension and mistranscription in the court record, we performed a study in which we gave Philadelphia court reporters naturalistic speech in AAE to transcribe. For this study, we constructed stimuli with representative morphosyntactic features of African American English spoken by native AAE speakers in order to quantitatively test (potentially cross-dialect) comprehension of AAE. We used a three-part pilot study to evaluate the stimuli and make sure that there was no individual voice, recording, or stimulus that was too difficult for all listeners. Participants in the pilot study were a convenience sample of non-AAE-speaking white Americans, AAE-speaking black Americans from Philadelphia and Harlem, and a sample of lawyers working in Philadelphia courts (who identified as white or as black). Once we were confident that the study materials were valid and not too difficult, we performed the full study on a sample of twenty-seven court reporters currently working in the Philadelphia courts.

3.1. THE STUDY MATERIALS. The study was designed to include naturalistic speech in AAE that had representative morphosyntactic features, as well as representative pronunciations appropriate for the Philadelphia courts. To that end, nine native AAE speakers were recruited from West Philadelphia, North Philadelphia, Jersey City, and Harlem. Speakers were balanced by gender (four women, five men) and were between the ages of twenty-five and sixty. All speakers had had contact with the criminal justice system. Utterances were not conceived by the researchers, but were rather taken from interviews with the participants, from things actually said by other AAE speakers in a natural environment, or from utterances cited in the literature on AAE as representative of particular features. We first selected utterances that contained one, and only one, of each of the morphosyntactic features, and then added utterances that included combinations of features. So, for example, the study contains utterances with just habitual *be* (e.g. *He be angry* 'He's often angry'), as well as combinations of features, such as habitual *be* and quotative *talkin' 'bout* and copula deletion (e.g. *She be talkin' 'bout 'Why your door always locked?'* 'She often asks "Why is your door always locked?"').

All speakers recorded the utterances for the experiment, and the set of experimental stimuli consisted of random speakers performing the utterances in a random order.[16] One sentence that was not recorded by all speakers was also included in the set, as it occurred during informal conversation following stimulus recording, but exemplified features we sought to test (*My baby father used to be like 'She tweakin!'* 'My baby's father used to say "She's tweaking [acting crazy]"!'). The speakers 'performed' the stimuli, rather than simply reading them. We conferred with linguists, native AAE speakers, and linguists who are native AAE speakers to confirm that the recorded utterances used as stimuli did not suffer from any 'reading effect'. Both lawyers in the pilot study and the court reporters in the main study indicated that they believed the utterances to have been recorded during court proceedings, and they inquired about how the researchers acquired such high-quality audio in court. The morphosyntactic features included in the test stimuli are listed in Table 1, but the table is not an exhaustive list of all stimuli.

3.2. PILOT STUDY. For the pilot studies, participants did not have stenotype machines or stenography training. First, we conducted a pre-pilot wherein the initial thirty stimuli

---

[16] Randomization was done with a simple Python script.

FEATURE	ANALYSIS	EXAMPLE	STANDARD ENGLISH
null copula	deletion of verbal copula	*he a delivery man*	he's a delivery man
negative concord	NPIs agree with negation	*nobody never say nothing*	nobody ever says anything
negative inversion	auxiliary raises; interpretation is the same	*don't nobody never say nothing to them*	nobody ever says anything to them
deletion of possessive /s/	arbitrarily many nouns; analysis is the same as if each had possessive /s/	*his baby mama brother friend was there*	his baby's mother's brother's friend was there
habitual *be*	marks habitual action	*he don't be in this neighborhood*	he isn't usually in this neighborhood
stressed *been*	remote perfect marker— action was done in the remote past and the situation continues to obtain	*I BEEN went there*	I went there a long time ago
preterite *had*	interpretation is preterite, not pluperfect—discourse marker	*we had went to the store then I got a text*	we went to the store then I got a text (while still at the store)
question inversion in subordinate clauses	subordinate clauses invert just as main clauses do in standard English	*I was wondering did his white friend call?*	I was wondering whether his white friend called
first-person *a nigga*	functions as *I, me*	*what a nigga told you?*	what did I tell you?
reduction of negation	*ain't even → ain'eem* [ēɪnim] or *eem* [ĭː]	*I ain't even be feeling that*	I don't much care for that
quotative *talkin' 'bout*	verb of quotation, often reduced to [tɔːmaʊ̃ʔ]	*she talkin' 'bout he don't live here no more*	she's saying he doesn't live here anymore
modal *tryna*	meaning 'want' or 'intend to'	*I was tryna go to the store*	I was planning on going to the store
perfect *done*	combination of habitual and completive markers	*when they acting wild, I be done went home*	I've usually already gone home by the time they start acting wild
expletive *it*	used in the same place as *there* in standard English	*it's a lot of money out there*	there's a lot of money out there
combination of the above		*he BEEN told a nigga about that*	he told me about that a long time ago
		he talkin' 'bout 'who dat?'	he asked 'who is that?'
		it be that way sometimes	sometimes things are like that

TABLE 1. AAE morphosyntactic features in the test stimuli.

were tested on three native AAE-speaking volunteers, two from Philadelphia and one from Brooklyn, who were asked to transcribe and paraphrase or dictate a transcription and paraphrase to one of the researchers. The pre-pilot with these volunteers was used to ensure that there was nothing in either the voices used or the sentence structure that was confusing to native AAE speakers. These AAE-speaking volunteers all transcribed and paraphrased at 100% accuracy.[17]

In pilot 1, a sample of laymen, we played the same sample of the thirty initial stimuli one time each for nine participants, all of whom identify as white and do not speak AAE. Either the participant transcribed what they heard in a Word document, or one of the researchers typed as the participant dictated (and confirmed that what was written

---

[17] We also ran many of the stimuli by native AAE-speaking linguists, although somewhat unsystematically. All of them also accurately heard and paraphrased what was said.

was what they intended), as with the pre-pilot volunteers. Participants were allowed to request to hear any sentence a second time and had unlimited time between sentences to create their transcription.

In pilot 2, a sample of lawyers, we played eighty-six stimuli once for seven lawyers who currently work in the Philadelphia courts, and we asked them to listen to and transcribe the stimuli, and to paraphrase them.[18] All lawyers did so on their own computers and had unlimited time between utterances to transcribe. They were allowed to ask to hear the utterance again. Three of the lawyers self-identified as AAE speakers.

3.3. Pilot results. For pilot 1, there were a total of 270 (30 sentences × 9 participants) sentence/speaker observations. There were 155 observations (57.4%) in which both the transcription and paraphrase were incorrect. Only one was mistranscribed but retained the same meaning (*what had happened was* transcribed as <What happened was>). Of the 270 total observations, 176 observations (65.2%) were paraphrased incorrectly (34.8% were accurate), twenty-six (9.6%) were transcribed incorrectly but correctly paraphrased, and only eighty-nine (32.9%) were accurately transcribed, regardless of paraphrase accuracy. No individual utterance or speaker was universally misunderstood, and all participants evaluated the speakers to be speaking loudly and clearly, even when the participant could not necessarily understand what was said.

For pilot 2, there were 602 (86 stimuli × 7 participants) sentence/speaker observations. The speakers of SAE were 64.2% accurate in their transcriptions, and 63.2% accurate in their paraphrasing. The best performance was 73% transcription accuracy and 79% paraphrase accuracy, and the worst was 53.5% transcription accuracy and 42% paraphrase accuracy. The general sentiment among the white SAE-speaking lawyers was given voice by one participant: 'Wow, that was really hard!'. The three lawyers who identified themselves as AAE speakers, however, performed noticeably better, with 90% overall transcription accuracy and 93.5% overall paraphrase accuracy. The best performance was 92% transcription accuracy and 95.5% paraphrase accuracy. All of their errors were phonetically motivated (e.g. *wish she'd* transcribed as <wish you'd>). One of the black lawyers who self-identified as an AAE speaker remarked afterward, 'That was really easy. What was the point of it?'.

Neither the laymen in pilot 1 nor the lawyers in pilot 2 had any clearly stated professional expectation of comprehension or transcription accuracy, nor specific training relevant to this task. While the goal of the pilot studies was primarily to evaluate and refine the stimuli, we suspect that the results can be taken as suggestive of the top range of what one might find in a study of AAE comprehension among the general population, although to our knowledge no such study has yet been performed. The sources of miscomprehension in the pilot studies did not differ significantly from those in the full experiment, so we leave discussion of miscomprehension of AAE for §5.[19] It is possible that the lawyers were positioned to do better than the general population given their professionally driven exposure to AAE and their (possible) positive affect toward AAE speakers as defense lawyers who are often called upon to defend such speakers in court.

3.4. The experimental study. Having validated the study materials through the pilot studies, we performed the full study on court reporters currently working in the Philadelphia courts. With the support of the Philadelphia courts' official court reporters

---

[18] That is, to put the utterance into 'classroom' English. We consider a paraphrase correct if it communicates the same information, but in the syntax of 'standard English'.

[19] For instance, subjects had a hard time hearing initial /h/s in unstressed syllables and voiceless stops in word-initial clusters with initial /s/, and this was consistent between the pilot and full studies.

pool, we solicited volunteer participation, with the incentive of $50 pay. Court reporters were told that we were interested both in how court reporters transcribe and in the role of 'accents' in their day-to-day work.

We obtained a sample of twenty-seven participants, who completed the study over a period of three consecutive weeks. Participants were given a transcription-and-paraphrase task, in which they heard eighty-three utterances and were asked to transcribe what they heard as they would in court,[20] and then paraphrase the meaning of the utterance in 'classroom' English (most participants volunteered the term 'proper' English).[21] Each utterance was preceded by a one-second 220 Hz tone and one second of silence, played once, and then repeated after one second of silence. This was followed by ten seconds of silence to allow participants time to paraphrase or to revise. That is, for each utterance, participants were given a warning tone and time to prepare, and then the utterance was played twice. The test was performed in a quiet conference room in either a judicial building or the court reporters' offices (approximately 40 dB ambient noise), and utterances were played at a volume of 70 to 80 dB at ten feet. No participants were hard of hearing (as is a professional requirement), and none expressed difficulty with audition during the experiment (on the contrary, one even declared about the study environment, 'If we can't hear in this room, then we shouldn't be in the courtroom'). Participants used their own stenotype machines, or machines they borrowed from others in the office but routinely use in their day-to-day work. With two exceptions, all were modern stenotype machines that interface directly with a laptop and an industry-standard software program (e.g. Eclipse) to output a PDF. The exceptional cases were participants who used an older machine that required participants to first transfer their transcriptions via an 8-inch floppy disk to a computer, and which returned a standard text file.

Participants were then given unlimited time to revise their transcriptions, reflecting their normal workflow. Participants whose stenotype machines record audio were asked not to listen again to the test stimulus when revising their transcriptions; however, participants nearly unilaterally indicated that they felt no need or desire to do so.[22] Audio files recorded by the stenotype machines and participant transcriptions on their own machines were destroyed at the end of each session. Participants signed nondisclosure agreements, and by all evidence they did not discuss the content of the study with one another beyond telling court reporters who were undecided about participation that it was not a surprise speed test (in fact, nearly all of the participants expressed relief that

---

[20] These are the same stimuli as those used in the second pilot study, but with three removed, since they were the same utterance spoken by different speakers. Interestingly, none of the pilot participants noticed the repetitions, and some of the participants correctly transcribed one of the duplicated sentences but not another, though there was no apparent pattern to their errors.

[21] We know that paraphrasing is not part of a court reporter's normal job, but as we discuss in §3.6, we were curious if lack of understanding was related to mistranscription. It is possible that the cognitive strain of changing gears reduced the accuracy of subsequent transcriptions, but in posttest discussion, court reporters indicated that they did not feel this was the case.

[22] We recognize that court reporters usually transcribe live speech and not recordings. We opted to use recordings rather than live speech in order to better control the experimental conditions. We recognize that in their normal work conditions court reporters have the ability to stop court proceedings to ask for clarification from the speaker, whereas they cannot do that with a recording (although, as discussed in §5.4, they indicated that they do not often ask for clarification in court, as they felt it was discouraged by lawyers and judges, and that they rarely make use of the recordings from their machines when preparing official transcripts after the fact). To account for this difference, we ensured that the recordings were of high audio quality, they were played at a high volume in a quiet test room, the speech was clear and relatively slow, and the court reporters heard each recording twice in a row.

it was not a test of transcription speed, and many said they thought the pace was, if anything, too generously slow).

3.5. THE PARTICIPANTS. The participants were majority white and overwhelmingly female, which is consistent with the field as a whole, and we had a proportion of African American court reporters (29.5%) approximately consistent with what can be expected nationally, based on the racial breakdown of people with court reporting degrees as of the 2016 American Community Survey. Among all of the court reporters in the study, three had completed college and one had some graduate study. All had heard of, and had strong opinions about, 'Ebonics', but 70% of them had never heard the term 'African American English'. On average, they had just over three years of professional training and eighteen years of work experience. The participants' work experience is summarized in Table 2, and their demographics are summarized in Table 3. Note that a sample of twenty-seven court reporters is approximately one third of the total pool of official court reporters employed directly by the city (as opposed to freelancers).

	MEAN	SD	MIN	MAX
Work years	17.77	12.01	2	43
Training years	3.25	1.07	2	6

TABLE 2. Training and work experience of the court reporters who participated in the experiment.

	N	%
SEX		
Male	3	11.11%
Female	24	88.89%
RACE		
white	15	55.56%
black	7	25.93%
Hispanic	4	14.81%
Asian	1	3.70%
EDUCATION		
some high school	0	0.00%
high school	13	48.15%
some college	10	37.04%
college	3	11.11%
graduate school	1	3.70%
HEARD OF EBONICS		
no	0	0.00%
yes	27	100.00%
HEARD OF AAE		
no	19	70.37%
yes	8	29.63%

TABLE 3. Summary of participant demographics.

Unsurprisingly, none assessed themselves as having poor or extremely poor comprehension of AAE, and twenty-one of the twenty-seven court reporters said that they believed they comprehended AAE either 'somewhat well' or 'very well'.

3.6. DATA ANALYSIS. All 2,241 transcriptions along with their paraphrases were evaluated by hand and double-checked for researcher agreement. In evaluating whether a transcription was correct, we checked only whether the correct words were transcribed in the correct order. That is, we did not care about capitalization, punctuation, or spelling. We accepted <we had went to the store, then, I got a text> as a correct transcription of *We had went to the store then I got a text*. We also did not consider spellings that accurately reflected speaker pronunciations to be wrong, so we counted, for in-

stance, <That cop partner been got transferred> as a correct transcription of *That cop∅ partner BEEN got transferred* 'that cop**'s** partner was transferred a long time ago'.[23] We did not generally evaluate punctuation, unless it was ambiguous in a way that would affect later interpretation and the subject's paraphrase made it clear that a different reading was intended (e.g. <Who he had told.> for *Who he had told?* 'Who did he tell?' when accompanied by the paraphrase *The person he had told*).

In evaluating paraphrase accuracy, we attempted to be as lenient as possible. Court reporters are not necessarily asked to think about what they are hearing, and the paraphrase task was outside of their normal practice. Also, while court reporters' understanding of what they hear may play into their ability to accurately transcribe, their personal understanding is not independently important with regard to the official court record.

If a paraphrase was ambiguous and could potentially be interpreted as accurately paraphrasing the stimulus, we counted it as correct. For instance, we somewhat leniently considered <I already told you that> as a correct paraphrase of *I BEEN told you that*, even though a more accurate paraphrase, which other court reporters employed, was <I told you that a long time ago>. In this particular instance, we did not necessarily expect the court reporters to be able to paraphrase something they may understand but have never 'translated' perfectly accurately—some clearly struggled with how to 'translate' *BEEN*, and most employed the strategy of using one or more adverbs: for example, 'I **already** told you that **before**'. The clearly wrong answers fell into two broad categories: (i) replacing *been* with standard English 'have been' as in <I have been telling you that> for *I BEEN told you that*, or (ii) obviously wrong paraphrases like <She already bought the drugs> for *I BEEN went to the store*. By the lenient standard, sixty-five of the 351 total utterances with stressed *been* were correctly paraphrased. By the stricter standard one referee advocated for, this number drops to thirty-four (mostly from three of the court reporters who consistently wrote some variation on 'a long time ago'). In general, however, such decisions were few and far between, because the types of errors the court reporters made were much more clear cut, as is discussed below.

For each court reporter, we evaluated whether the transcription of each utterance was correct (yes or no), whether the paraphrase of each utterance was correct (yes or no), the number of words in the utterance, and the number of words wrong for each utterance. We also evaluated whether the transcription altered the record of the people involved ('who'), the action or subject matter ('what'), the time or aspect ('when'), or the location ('where'). We evaluated whether the transcription altered whether an utterance was a statement or question and whether an utterance was a proposition or its negation ('force'). We evaluated whether errors were related to the morphosyntactic token in the stimulus or whether they were phonetic or phonological in nature. We evaluated whether the court reporter's paraphrase included assumptions of criminality not justified by the stimulus, whether the transcription was intelligible or 'word salad', and whether the transcription carried the same meaning despite being a mistranscription. In counting the number of wrong words, we were extremely conservative and did not count wrong words added between correct words in the right order, false starts, cases where the correct meaning was recoverable from the transcript (e.g. <O more> for *no more*), and so forth.

---

[23] This may seem obvious to linguists, but court reporters expressed different philosophies about whether they 'clean up' speech to reflect what they think was intended versus what was actually said, and also expressed concern that their transcription may be counted as inaccurate despite reflecting what a speaker actually said verbatim.

4. RESULTS. Despite certification at or above 95% accuracy as required by the Pennsylvania Rules of Judicial Administration (Supreme Court of PA 2016), the court reporters performed well below this level, with an average TRANSCRIPTION ACCURACY of 59.5%, at the level of a full utterance. That is, 40.5% of the utterances were incorrectly transcribed in some way. The best performance on the task was 77% accuracy, and the worst was 18% accuracy. We think this bears repeating: the very best of these court reporters, all of whom are currently working in the Philadelphia courts, got one in every five sentences wrong on average, and the worst got more than four out of every five sentences wrong, under better-than-normal working conditions, with the sentence repeated. Participant performance is summarized in Figure 1 (the red line is 95% accuracy, the level at which they are all certified). Given that court reporters are not evaluated based on how many utterances are correct, but rather how many words are correct, we also evaluated them against a WORD ERROR RATE (WER). By this metric, they still do not meet their professional standards: mean performance was 82.9% correct, 12.1 percentage points below their lowest professional standard. The best among them performed at 91.2% accuracy, the worst at 58.4%—meaning the worst participant transcribed LESS THAN TWO THIRDS of the words correctly. Participant performance by WER is summarized in Figure 2.
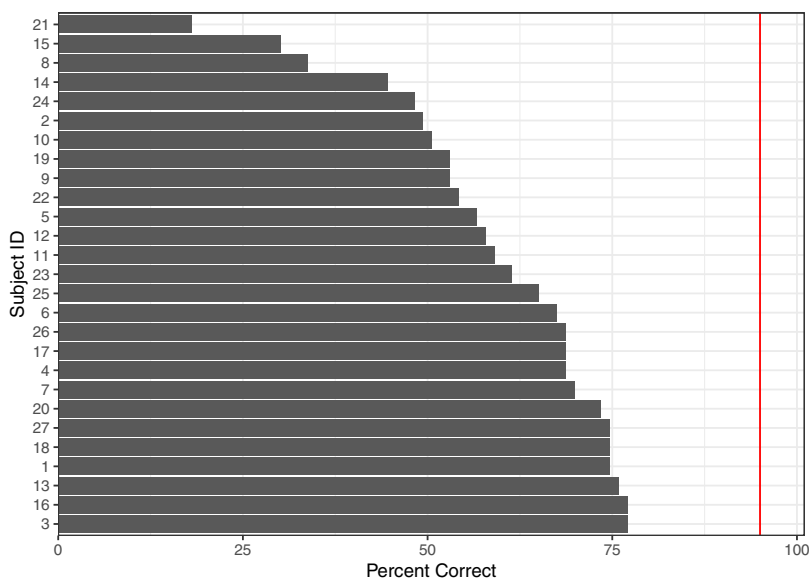

FIGURE 1. By-sentence transcription accuracy by subject.

The participants' evident comprehension of what was said was significantly worse than their transcriptions. On average, they accurately paraphrased the utterances a mere 33% of the time. The best performance was 61% paraphrase accuracy, and the worst 8.4%. Their paraphrasing performance is summarized in Figure 3 (note that some court reporters did not paraphrase at all; the figure includes accuracy only for those who performed the task as requested).[24]

---

[24] Specifically, subjects 4, 5, and 15 did no paraphrases; while subject 21 partially completed the task, they were missing a full twenty-nine paraphrases, and every single paraphrase they did complete was incorrect and the paraphrases so odd as to make us question whether they understood the task fully. Since we were interested in average accuracy on paraphrasing, we therefore decided not to include subject 21 in the average paraphrasing accuracy for the sample.
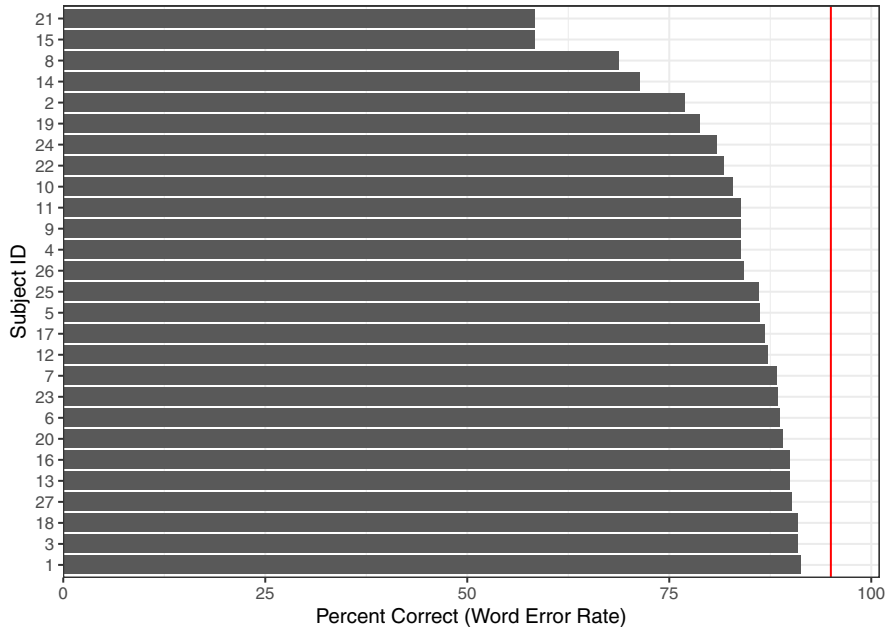
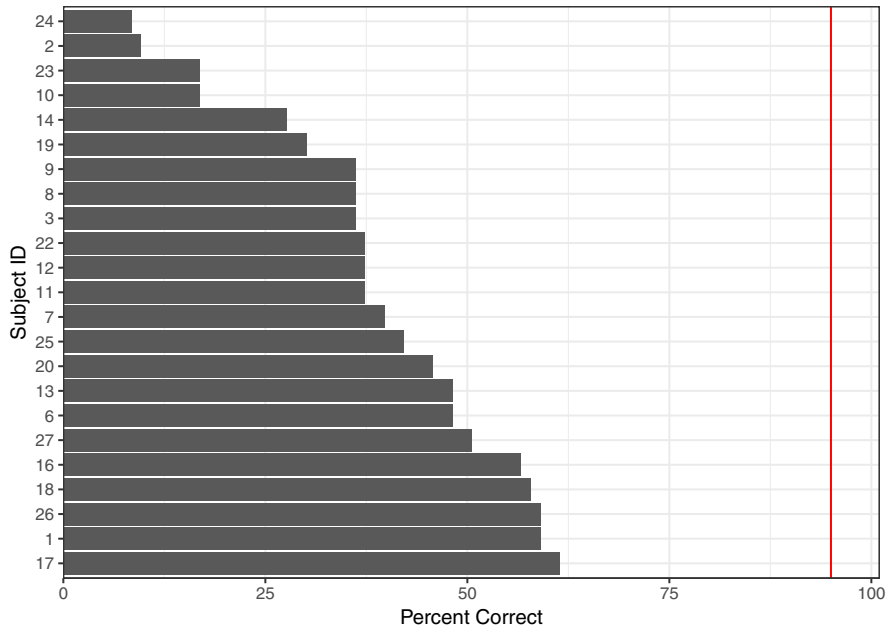FIGURE 2. WER transcription accuracy by subject.

FIGURE 3. Paraphrase accuracy by subject.

It is important to note that their transcription errors and paraphrasing errors did not line up in any predictable way, as shown in Figure 4. That is, court reporters could, and sometimes did, correctly transcribe an utterance but fail to correctly paraphrase it, or incorrectly transcribe but correctly paraphrase an utterance. For those who did paraphrase (twenty-four of the twenty-seven), they got both wrong about as often as they got both right (626 with both incorrect, 625 with both correct). Unsurprisingly, there are significantly fewer instances in which the transcription is incorrect but the paraphrase is

somehow correct, though this scenario occurred 121 times, as shown in Table 4. The results of a point-biserial correlation test between 'paraphrase correct' and 'word error rate' reveal a correlation of 0.30 for white court reporters and 0.31 for black court reporters; effectively, the number of words mistranscribed in an utterance was not a good predictor of whether the utterance was correctly or incorrectly paraphrased, and this did not differ by race.
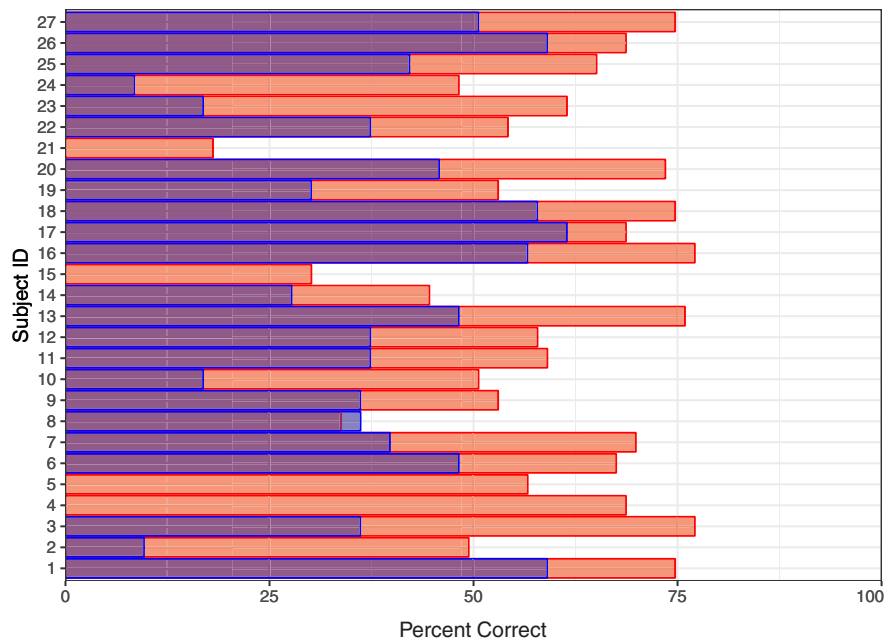

FIGURE 4. Transcription accuracy (red) and paraphrase accuracy (blue) by subject.

	TRANSCRIPTION CORRECT	TRANSCRIPTION INCORRECT
PARAPHRASE CORRECT	625	121
PARAPHRASE INCORRECT	566	626
PARAPHRASE MISSING	142	161

TABLE 4. Transcription and paraphrase accuracy.

The court reporters' transcriptions altered the who, what, when, where, and force of an utterance in 701 of the 2,241 transcriptions, fully 31%. For example, more than one transcribed *He don't be in that neighborhood* 'He isn't usually in that neighborhood' as <We going to be in this neighborhood>, meaning 'We are going to be in this neighborhood'.

Table 5 summarizes the transcription error rates for court reporters who self-identify as black or African American and those who do not; the difference between the two groups is not statistically significant at the α = 0.01 level. That is, the black court reporters, who we may hypothesize are less likely to mistranscribe AAE, did not make statistically significantly fewer transcription errors on this test. There is, however, a significant difference in the types of errors black and nonblack court reporters made. When we look only at the mistranscribed utterances and classify them based on whether the error is related to the specific morphosyntactic elements the stimuli were designed to test or to the phonetics or phonology of some other part of the stimulus, it becomes clear that the black court reporters mistranscribed for morphosyntactic reasons and for phonetic or phonological reasons at roughly equal rates (49% of errors were morphosyntac-

tic), while nonblack court reporters made significantly more errors related to the morphosyntax of AAE (61% of errors were morphosyntactic); see Table 6.[25] A chi-square test of independence shows this difference to be significant at the $p = 0.005$ level.

	NONBLACK	BLACK
CORRECT	964	369
INCORRECT	696	212

TABLE 5. Transcription error rates for black and nonblack court reporters. The difference between the groups is not statistically significant at $p < 0.01$ ($\chi^2 = 5.059$, $p = 0.024$).

	NONBLACK	BLACK
MORPHOSYNTAX	356	80
PHONETICS/PHONOLOGY	225	84

TABLE 6. Type of transcription errors by black and nonblack court reporters. The difference between the groups is statistically significant at $p < 0.01$ ($\chi^2 = 7.71$, $p = 0.005$).

When we examine whether the reporters could clearly demonstrate that they understood what was spoken, there are also statistically significant differences. Black court reporters correctly paraphrased utterances into standard English 52.5% of the time when they chose to paraphrase at all (if we count 'no paraphrase' as incorrect, that number drops to 44%), while nonblack court reporters correctly paraphrased 33.7% of the time (29.4% with 'no paraphrase' counted as incorrect); see Table 7. That is, neither group seemed to understand the majority of what they were hearing or to have the ability to communicate the meaning of the utterances clearly, but nonblack court reporters were significantly worse at this task, as the results of the chi-square test reported in Table 7 show. We discuss the black court reporters' relationship with AAE, social class, and language attitudes in §5.4 below.

	NONBLACK	BLACK
CORRECT	488	258
INCORRECT	959	233
MISSING	213	90

TABLE 7. Paraphrase error rates for black and nonblack court reporters. The difference between the groups is statistically significant at $p < 0.01$ ($\chi^2 = 56.62$, $p < 0.001$).

Finally, gibberish would have been introduced into the court record in 248 (11%) of the transcriptions had they been part of live testimony at trial. That is, participants either left stenotype 'untranslates' in their transcription, wrote utterances that were ungrammatical and nonsensical in both SAE and AAE, or invented vocabulary. See Table 8 for examples of such transcriptions. There are a number of possible reasons for this. As John Rickford noted (p.c.), they may have thought it better to write down something rather than nothing, since 'one can use the *something* to prepare a fuller more accurate transcript on a second or third attempt'. We note here that the court reporters were subsequently given the opportunity to revisit their transcriptions, and in many cases did not correct the 'untranslates' despite unlimited time to do so.[26] We also wish to reiterate that given the

[25] The errors in Table 6 do not add up to the overall number of wrong transcriptions because the table only includes errors that could definitely be classified as triggered by morphosyntax or by phonetics/phonology. Errors for which we could not determine a trigger are excluded from the table. Furthermore, the table only includes tokens from transcriptions where the meaning was changed by the error. For example, if the sentence was *What had happened was…* and the court reporter wrote <What happened was>, the meaning is not changed, and it is difficult to tease apart if morphosyntax or phonetics/phonology contributed to the missing word.

[26] We should also note, however, that we instructed court reporters not to attempt to guess after the fact at the meaning of utterances they did not hear or understand during the test.

instructions they received and their professional training, they may have anticipated being evaluated against a word error rate, where an unintelligible utterance, but with some number of correctly transcribed words, is still better than no transcription.

ERROR TYPE	SENTENCE	STANDARD ENGLISH	TRANSCRIPTION
'untranslates'	It's a jam session you should go to.	There's a jam session you should go to.	this [HRA] jean [SHA] [TPHAOEPB] to.
word salad	Mark sister friend BEEN got married.	Mark's sister's friend got married a long time ago.	Wallets is the friend big
nonce words	He BEEN don't eat meat.	He doesn't eat meat and hasn't for a long time.	He bindling me
multiple types	He a delivery man.	He's a delivery man.	he's deliver reason [PHA-F]

TABLE 8. Types and examples of gibberish in the transcriptions.

5. DISCUSSION. The court reporters evidently struggled with all aspects of AAE. The morphosyntactic elements we tested included some features of AAE that are not unique to it and that we expected to be understood (e.g. multiple negation, as in *nobody never say nothing* 'nobody ever says anything'), but even these utterances were not universally transcribed correctly. When utterances were correctly transcribed, court reporters were inconsistent in their ability to paraphrase the same morphosyntactic feature of AAE. As alluded to above, many of the incorrectly transcribed utterances were wrong not because of an error in transcribing the AAE morphosyntactic feature tested in that particular utterance, but for other reasons. That is, a court reporter may have heard and correctly transcribed stressed *been* or preterite *had*, but mistranscribed a different part of the utterance. The evidence suggests three broad issues: the sounds of Philadelphia AAE, the structure of AAE more broadly construed, and language attitudes around 'Ebonics'.[27] In the rest of this section, we discuss each of these in turn.

5.1. PHONETIC AND PHONOLOGICAL ELEMENTS OF MISCOMPREHENSION. We cannot know precisely what is happening in the minds of listeners, but the types of transcription errors made by the court reporters were consistent with two potential triggers for miscomprehension. The first type of error is cross-dialect, and crosslinguistically common, mishearing. There is not yet much sociolinguistic literature on this subject, with the notable exception of Labov 2011, though there is a great deal of discussion on vowel and consonant confusion in the phonetics literature (Miller & Nicely 1955, Wickelgren 1965, Klein et al. 1970, Shepard 1972, Mermelstein 1976, Weber & Smits 2003), and the kinds of errors documented are consistent with learner errors taken for granted in historical linguistics (Crowley & Bowern 2010, Campbell 2013, Ringe & Eska 2013). The second type of error is dialect-motivated mishearing (following Labov 2011).

With regard to the first type of error, all of the court reporters submitted a few transcriptions with errors that could be attributed to normal mishearing. Were this the only type of transcription error, participants would have been in the 95% accuracy range. These kinds of mistranscriptions include the following.

- confusing /p/, /t/, and /k/, especially after /s/ in a syllable onset, as in *hospital* → <high s**ch**ool>
- ignoring or adding glottal stops, as in *he been don't eat meat* → <he better **know he** me>

---

[27] We say their attitudes around 'Ebonics' are relevant, because by all indications, the court reporters had no attitudes whatsoever about African American English, having mostly never heard the term (see Table 3 above).

- confusion between /l/ and /w/ and among voiced coronals (/l/, /n/, /d/), as in *he been don't eat meat* <he been de**l**ay me>
- miscategorizing adjacent identical segments, as in *wi**sh sh**e'd* → <wish you'd> or *wi**fe fr**iend* → <white friend>[28]
- mishearing (or not hearing) /h/, especially in unstressed syllables and sentence-initially, as in ***he** ain't even ask me that* <ain't even … >
- mishearing (or not hearing) schwa, especially sentence-initially, as in *A nigga* BEEN *got home* → <Nigger Ben got home a while ago>
- changing one distinctive feature, for example, /m/ transcribed as /b/, as in ***M**ark sister friend* BEEN *got married* → <**B**oss the friend Ben got married>

All of these kinds of mishearing are most likely phonetically motivated, the result of similar acoustic signatures leading to ambiguity. For instance, /l/ and /w/ have very similar acoustic signatures, with a noticeable dip in both F1 and F2, and potentially a dip in amplitude (Ladefoged & Maddieson 1998, Ladefoged & Johnson 2014).

The second type of error we term dialect-motivated mishearing. By this, we mean instances in which the most plausible trigger for miscomprehension was a difference in dialect between the speaker and the listener, resulting in the listener positing different words than the speaker said. Labov 2011 discusses this kind of miscomprehension as a result of the Northern Cities Vowel Shift (NCVS), where speakers heard [bɔs] 'bus' as *boss* or [sæk] 'sock' as *sack* in isolation and in shorter extracts from a full sentence, but could generally (but not always) recover the word *bus* or *sock* when given a recording of a full sentence, such as *I can remember, vaguely, when we had the busses with all the antennas on top*. The key takeaway for our purposes is the unsurprising finding that different accents can lead to miscomprehension, and that this can be due to systematic features of a dialect's sound system. Features of AAE that evidently caused confusion for the court reporters, often from their inappropriately assuming the presence of the feature and 'correcting' for it, include the following, and examples are given in the discussion below.

- monophthongization of /a͡ɪ/ to /ɑː/ or /aː/
- deletion or vocalization of postvocalic /l/ and /ɹ/
- the FEEL-FILL merger
- the PIN-PEN merger
- deletion of postvocalic /v/
- the deletion or addition of glottal stops, or inferring the wrong word following a debuccalized final stop

Frequently, both common phonetically motivated mishearing and dialect-motivated mishearing appeared to work in concert, leading to transcriptions that diverged wildly from what was said but in evidently principled ways. For instance, in 9a the FEEL-FILL merger seems to be one of the triggers of mistranscription, while in 9b, deletion of /v/ seems to be the trigger. In 9c, postvocalic /ɹ/-deletion in *Mark*, combined with failure to hear the [+nasal] distinctive feature of the initial /m/ but correctly hearing its place and voicing, combined with deletion of the unstressed syllable at the end of *sister*, which also had a deleted /ɹ/, leads to an erroneous transcription that would introduce gibberish into the official court record and leave the original utterance unrecoverable were this an

---

[28] While *wife friend* was mistranscribed as <white friend> five times, perhaps surprisingly the inverse did not happen (i.e. *white friend* was never transcribed as <wife friend>).

official transcription. However, the phonetic distance between *Mark sister* as spoken by the AAE speaker in question and *Boxes the* in SAE is quite small—it is potentially the difference of [+nasal] on one segment.

(9) a. SENTENCE: I don't even be **feeling** that.
    SPOKEN: aː o͡ʊ   ĩː   bi **fɪlĩ**   næʔ
    TRANSCRIPTION: I am   be **filling** her.

   b. SENTENCE: He a **delivery** man.
    SPOKEN: hi ə **dəlɪːɹi**   mæn
    TRANSCRIPTION: He's a **leery**   man.

   c. SENTENCE: **Mark sister** friend BEEN got married.
    SPOKEN: **maːk sɪstə** fɹĩ   bɛn gɑt mæɹiʔ
    TRANSCRIPTION: **Boxes the**   friend been got married.

More often than not, it seemed as though court reporters were assuming features of AAE and attempting to correct for them, even when those features were not present in the speech they heard. For instance, a nasalized, reduced realization of *don't* in *he don't* in the utterance in 10 was evidently interpreted as /l/-vocalization in *he'll* in the transcription in 10a, and as AAE *gon'* /ɡõn/ [ɡõ͡ʊ̃] 'gonna' in the transcription in 10b.

(10) SENTENCE: He don't   be in this neighborhood.
    SPOKEN: hi o͡ʊ̃   bi ĩ nɪs nẽ͡ɪbəhʊd
  a. TRANSCRIPTION: He will   be in this neighborhood.
  b. TRANSCRIPTION: We going to be in this neighborhood.

Similarly, the court reporters sporadically seemed to interpret underlying /ɑ/ as a monophthongized /a͡ɪ/, which is a stereotypical feature of AAE that is widely consciously known by speakers of other dialects (Rodriguez et al. 2004, Rahman 2008). For instance, the first syllable of *hospital* in example 11a was evidently interpreted as a monophthongized pronunciation of *high*, which, combined with the acoustic similarity of /p/ and /k/ after /s/, led the court reporter to transcribe *hospital* as *high school*. In 11b, a pronunciation of *locked* that exhibits T/D-deletion and stop debuccalization was apparently interpreted as a monophthongized pronunciation of *lie*.

(11) a. SENTENCE: He had asked me did I go to the hospital.
     SPOKEN: hi ʰæ æs mi dɪd ɑː ɡo͡ʊ t   hɑspɪɹuʷ
     TRANSCRIPTION: He   asked me did I go to   high school.

    b. SENTENCE: She be talkin' 'bout 'why your door always locked?'
     SPOKEN: ʃi bi tɑʔm ba͡ʊ̃ʔ waː jə   dʊᵊ ɔlwe͡ɪz lɑʔ
     TRANSCRIPTION: She be talking about why you do   always lie.

The error in 11a was made by six of the court reporters, that in 11b was made by three of them, and only one made both mistakes, so there is nothing inherent to the pronunciation in either of the stimuli that was universally confusing to the court reporters.

   It should also be noted that while the orthographic representations of the actual stimuli and the court reporters' transcriptions are very different, the orthography masks what may be much less drastic errors than they first appear. Plausible mechanisms of miscomprehension for examples 10b and 11b are schematized in Figures 5 and 6, respectively. For both, the Levenshtein distance between the actual speech stream and a plausible speech stream given a (wrong) hypothesis about what was said, using phonemes as a unit of analysis, is 1. That is, the phonetic distance between *don't* and *going to* or between *locked* and *lie* in standard English is significantly higher than the phonetic distance between possible realizations of these words in other dialects, as shown in Table 9.
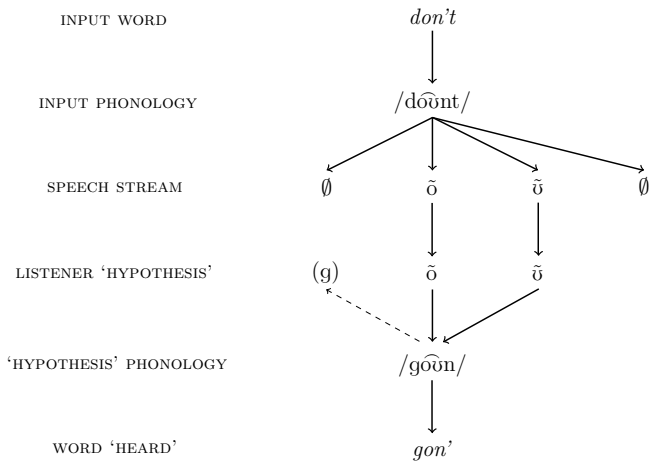
INPUT WORD   *don't*

INPUT PHONOLOGY   /dõʊ̃nt/

SPEECH STREAM   ∅   õ   ʊ̃   ∅

LISTENER 'HYPOTHESIS'   (g)   õ   ʊ̃

'HYPOTHESIS' PHONOLOGY   /gõʊ̃n/

WORD 'HEARD'   *gon'*

FIGURE 5. A possible trigger for hearing *don't* as *going to*, as in example 10b.

INPUT WORD   *locked*

INPUT PHONOLOGY   /lɑkt/

SPEECH STREAM   l   ɑ   ʔ

LISTENER 'HYPOTHESIS'   l   ɑ   (ː)

'HYPOTHESIS' PHONOLOGY   /lɑɪ/

WORD 'HEARD'   *lie*
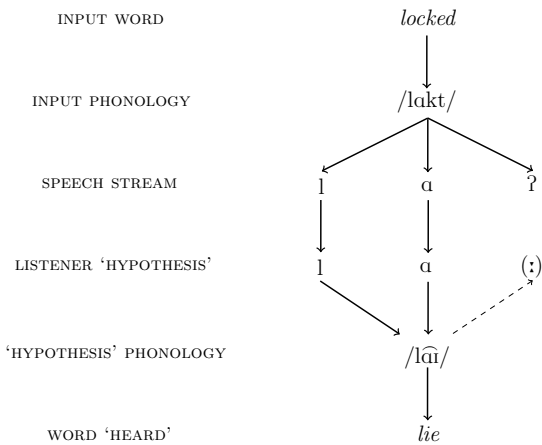
FIGURE 6. A possible trigger for hearing *locked* as *lie*, as in example 11b.

WORDS	STANDARD	LEV. DIST.	DIALECT	LEV. DIST.
don't & going to	[dõʊ̃nt] : [gõʊ̃ɪŋ tu]	5	[õʊ̃] : [gõʊ̃]	1
locked & lie	[lɑkt] : [lɑɪ]	3	[lɑʔ] : [lɑː]	1
hospital & high school	[hɑspɪɾəl] : [hɑɪskul]	5	[hɑspɪɾʊʷ] : [hɑskʊʷ]	3

TABLE 9. A comparison of Levenshtein distances for standard and dialect forms.

In fact, for some of the mishearings, an even more granular approach—one looking at distinctive features or spectral phenomena—may be the most fruitful. For instance, Figure 7 shows a spectogram of a speaker saying *went there*, as part of the utterance *I BEEN went there* 'I went there a long time ago'. One court reporter transcribed this utterance as <I been lived there>. A critical listen aided by spectrographic analysis reveals that the speaker said [wĭdeɹ] for *went there*. Many of the well-studied features of AAE combine in this example: there is T/D-deletion on *went*,[29] the speaker exhibits the PIN-

---

[29] There are a number of ways of analyzing this, and here we are using T/D-deletion consistent with our description above: that is, encompassing both deletion and debuccalization. Full deletion may, theoretically, result in a fully voiced intervocalic /d/. The spectrogram in question is also consistent with full deletion and a pause between words.

PEN merger, TH-stopping changes the initial /ð/ of *there* to [d], and the coda /n/ in *went* is realized as nasalization on the preceding vowel. Note, however, that the nasalization on the vowel does not start until well into the vowel duration (at around 250 milliseconds). Note also that /w/ and /l/ have very similar spectral signatures, with both exhibiting a decrease in amplitude, a low second formant, and a high third formant. Finally, in most varieties of English, lax vowels do not appear in open syllables (Gordon 2002), so the listener must infer some reduced or deleted syllable coda. While on the page the difference between *went* and *lived* is enormous, especially to native speakers of dialects other than AAE, the phonetic distance between plausible realizations of both (uttered [wĩ] and imagined [lɪ]) is not that great—even less so when we recall that [lɪ] is a reasonable pronunciation of *lived* for some AAE speakers (one exhibiting both T/D-deletion and postvocalic /v/-deletion).
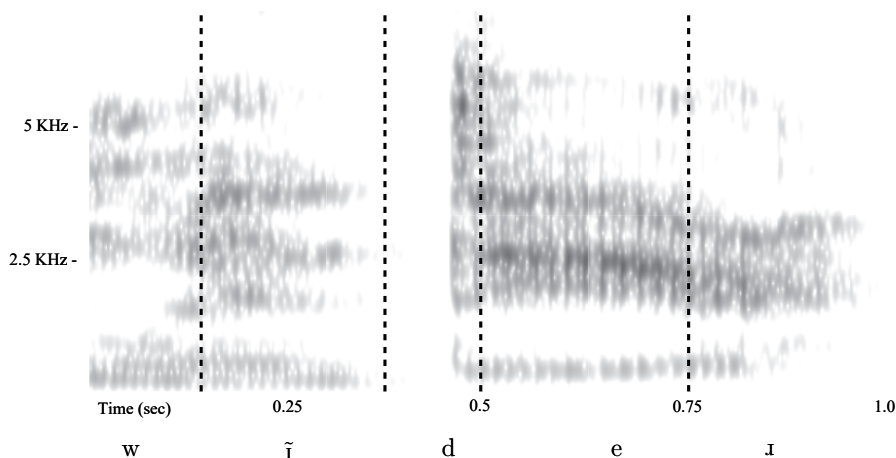

FIGURE 7. Spectrogram of *went there* from a female Philadelphia AAE speaker.

It is important to recall, however, that this test was performed with clear, loud audio, and each utterance was preceded by a warning tone and was spoken twice, all in a quiet room. The test setting was thus much better than the court reporters' actual normal work environment, so such mishearings are still troubling, especially in light of the fact that native AAE speakers without the court reporters' training had no such difficulty with the task.

5.2. DIVERGENT VOWELS AND PHILADELPHIA ACCENTS. Lastly, there were a number of instances in which the court reporter mistranscription was apparently at least in part the result of some trigger relating to expectations about the white Philadelphia accent. Philadelphia English has been extensively studied (see, inter alia, Labov 1989, Labov et al. 2013, Labov & Fisher 2015) and has a number of distinct characteristics that separate it from other accents in the Northeast. While, like all regional accents, it is in constant flux, the white Philadelphia accent can be broadly characterized as having fronted /o/ and /u/, so-called Canadian raising in which the nucleus of the diphthong in the PRICE vowel raises before voiceless consonants so that *right* becomes [ɹʌ͡ɪt] but *ride* stays [ɹɑ͡ɪd], fronting of the nucleus of the MOUTH vowel so *house* is realized as [hæ͡ʊs], and a complex system of tensing of /æ/ to [eə] before nasals, /f/, /s/, and /θ/ in closed syllables (detailed in Labov 1989). So-called EY-raising, in which the FACE vowel is realized as /i/ in closed syllables, has also been reported for some white Philadelphia

speakers (Labov 2011).[30] See Figure 8 for a visualization of distinctive characteristics of the white vowel system in Philadelphia.
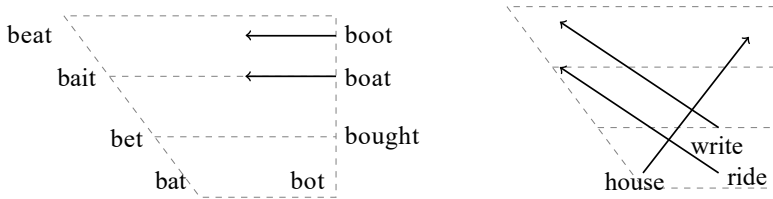
FIGURE 8. Distinctive characteristics of the Philadelphia (white) vowel system.

The court reporters, being predominantly white women from Philadelphia or its suburbs, exhibited strong (white) Philadelphia accents. For instance, one, while talking about the responsibility inherent to her job, exclaimed that at the end of the day, 'I get to *go home* [gə͡ʊ hə͡ʊm] but he just changed his *whole life* [hə͡ʊl lʌ͡ɪf]'. All expressed concerns over how well a jury would understand what they hear, with one stating: '**I** understand, but what *about* [əbə͡ʊʔ] a *jury* [d͡ʒɔɹi]?'.

These are legitimate concerns given how different white and black accents are in Philadelphia. African Americans in Philadelphia generally do not participate in the local sound changes described above, and they have been documented as emphatically not participating in the white Philadelphia tense /æ/ system, instead raising and LAXING /æ/ to something approximating [ε], as in [bεg] 'bag', keeping lax /æ/ before nasals, or variably participating in the supraregional (white) pattern of tensing /æ/ before nasals only (Labov & Fisher 2015). The speakers in our sample generally did not exhibit features of white Philadelphia phonology, although one speaker from North Philly variably fronted her back vowels and tensed /æ/ before nasals. Consistent with AAE in Philadelphia and New York but not with the broader literature on AAE, most of our speakers did not exhibit the PIN-PEN merger. Unmerged pronunciations, especially of stressed *been*, caused confusion, as in example 12, and more than once it was taken to be either a name or part of a name, as demonstrated in 12a and 12b.

(12) a. SENTENCE: That cop partner BEEN got transferred.
         MEANING: That cop's partner was transferred a long time ago.
         TRANSCRIPTION: That cop partner, **Ben**, got transferred.
     b. SENTENCE: A nigga BEEN got home.
         MEANING: I got home a while ago.
         TRANSCRIPTION: **Nigger Ben** got home a while ago.
     c. SENTENCE: You BEEN should have known that.
         MEANING: It's the case that you should have known that a long
                             time ago.
         TRANSCRIPTION: You **bench** on that.

Similarly, tensing of /æ/ before nasals caused confusion, so *jam* in example 13 was interpreted as *jean* by five of the court reporters, as *James* by three, as *shame* or *same* by three, as *cane* by one, and as *king* ([kiŋ]?) by one.

(13) it's a jam [d͡ʒ i͡ə] session you should go to.

Note that four of these miscomprehensions seem to be related to assumed EY-raising (*James*, *shame*, *same*, and *cane*).

---

[30] Labov 2011 refers to this as 'the raising of checked *ey*'.

Finally, in at least one instance shown in example 14, the evidence suggests that it was the speaker not exhibiting a white Philadelphia accent—specifically, not exhibiting Canadian raising—that led the court reporter to posit a different word from what was said.

> (14) SENTENCE: He be TIGHT about something.
>   TRANSCRIPTION: He put **Tide** on   something.

It is possible that for this court reporter, the expectation of a vowel alternation (between [taɪdˀ] *tide* and [tʌɪtˀ] *tight*) may have been the trigger for miscomprehension.[31] As one referee noted, lexical or morphosyntactic unfamiliarity may also have been at play in the previous examples.

More broadly, the evidence from this study suggests two hypotheses for further inquiry. First, while individuals may be comfortable with both 'standard' English and a different local variety, to the extent that two varieties that diverge in different ways from the prestige dialect are in contact, the ways they differ from the prestige variety and from each other may be triggers for miscomprehension. While divergence from the prestige variety has been shown to trigger miscomprehension, even among listeners of the same nonprestige variety as the speaker, to our knowledge there has not yet been a study of nonstandard dialects in contact.[32] Second, to the extent that speakers of a given dialect do not conform to stereotypical dialect patterns (e.g. AAE speakers who do not exhibit the PIN-PEN merger), listeners who are not thoroughly familiar with the dialect they are hearing may struggle to parse the input, even if what is spoken is closer to either the standard or the listener's nonstandard native dialect than the stereotypical dialect patterns would be.

5.3. MORPHOSYNTACTIC ELEMENTS OF MISCOMPREHENSION. The results of the experiment suggest that the court reporters' paraphrases were dependent on context clues rather than a confident understanding of the morphosyntax of AAE. For instance, a court reporter might inconsistently paraphrase stressed *been* as a remote perfect marker in some utterances but as equivalent to *have been* in others, or might paraphrase habitual *be* as indicating habitual action in some utterances but as an incorrectly conjugated form of the verbal copula in others.

The general impression the transcripts leave is of court reporters attempting to make sense of utterances that they do not understand, often by fitting the spoken utterance to the next nearest grammatical utterance in SAE, whether or not the two utterances coincide. This can result in transcriptions that change important aspects of what was said, often in subtle, insidious ways. For instance, in example 15, the order of events in the transcription is precisely wrong. The utterance means 'Usually, he has already gone to bed when I get off work', but the transcription suggests 'he' goes to bed when, or after, the speaker gets off work. This kind of error can make or break an alibi, and a mistranscription of this kind during a deposition can be used to argue on the stand that a witness is perjuring themself when they attempt to clarify.

> (15) SENTENCE: He be done gone to bed when I be getting off work.
>   MEANING: He has usually already gone to bed when I am usually getting off work.
>   TRANSCRIPTION: He is going to bed when I get off work.

---

[31] This particular court reporter transcribed the *jam session* sentence with the single word 'inaudible', so we unfortunately cannot investigate a possible relationship between the two.

[32] Labov 2011 does study cross-dialect comprehension, but not those in close geographic proximity and therefore in constant potential contact.

As John Rickford (p.c.) has pointed out, in 15 the transcriber 'reverses the habitually ongoing and completed predicates'. Similarly, in example 16, the proposition the speaker is negating is instead embedded in a structural presupposition (Yule 1996). That is, the 'fact' that *the police love us* is assumed in the transcription, whereas it is a direct quote that is being negated in the actual utterance.

(16) SENTENCE: Ain't nobody talkin' 'bout 'The police love us'.
     MEANING: Nobody is saying (that) 'the police love us'.
     TRANSCRIPTION: There isn't anybody talking about how the police love us.

Sometimes, court reporters changed what was said in an apparent attempt to 'clean up' the grammar, although those who did so were inconsistent in their attempts. This is discussed further below with regard to court reporter language attitudes, but it should be noted that in some cases the resulting transcription was ungrammatical in both AAE and SAE (as in example 17a) or significantly changed the meaning of the utterance (as in 17b).

(17) a. SENTENCE: Where James' friend went?
        TRANSCRIPTION: Where **did** James' friend went?
     b. SENTENCE: I was wondering when you **tryna** go.
        MEANING: I was wondering when you **intend to** go.
        TRANSCRIPTION: I was wondering when you **try and** go.

Even when the transcriptions were correct, it was clear that the court reporters often misanalyzed the morphosyntax. For instance, negative auxiliary inversion, as in example 18, when correctly transcribed was often paraphrased as a command, not a statement. A third of the court reporters (eight of twenty-four) paraphrased negative auxiliary inversion constructions as commands in this way.

(18) SENTENCE: Don't nobody never say nothing to them.
     MEANING: Nobody ever says anything to them.
     PARAPHRASE (1):   Don't ever say anything to them.
     PARAPHRASE (2):   Don't tell the police anythin [sic]

In example 19a, a remote past perfect marker is reinterpreted as pluperfect. Similarly, in some cases where morphosyntactic features of AAE were incorrectly transcribed, the court reporters appeared to insert or delete material in order to make an utterance make sense, as shown in example 19b, in which material is added that changes habitual *be* into the verb *to be*.

(19) a. SENTENCE: They BEEN don't go there no more.
        TRANSCRIPTION: They hadn't gone there anymore.
     b. SENTENCE: He don't be in this neighborhood.
        TRANSCRIPTION: He don't want to be in this neighborhood.

Finally, and unsurprisingly, habitual *be* was frequently interpreted as a 'misconjugated' form of the verb *to be*, as in example 20.

(20) SENTENCE: A nigga be workin'.
     MEANING: I am often working.
     PARAPHRASE: That nigger is working.

The trend of interpreting habitual *be* as a misconjugated form of *to be* is consistent with negative language attitudes about AAE that are popular with the general public. The court reporters exhibited quite a few common negative language attitudes about AAE, to which we now turn.

5.4. COURT REPORTER LANGUAGE ATTITUDES. The court reporters all exhibited negative attitudes about AAE, or more properly 'Ebonics', as less than a third had even

heard the term 'African American English'. They all expressed attitudes that align well with the idea that AAE is just 'standard English with mistakes' (Pullum 1999), with the exception of one who grew up as a bilingual speaker and expressed a higher degree of metalinguistic awareness (but who had learned what they[33] knew of AAE on the job, figuring it out from trial and error).

After the task, the court reporters all enthusiastically discussed the task and the speakers, unsolicited by the researchers. We should note that both researchers with whom the court reporters interacted were in professional attire and are visually raced by strangers as white, which may have influenced both the reporters' desire for and the nature of the discussion. The court reporters expressed frustration with the format of their day-to-day work and shared 'war stories' about not understanding while in the courtroom. Many indicated that they did not feel they could regularly ask for clarification and that if they did not hear something, interrupting for clarification was strongly discouraged by the lawyers and judges. One told a story about how they had delayed court proceedings by insisting on knowing what a defendant said, and angered the district attorney and judge by asking for clarification five times. Another court reporter elicited surprised reactions from their colleagues by matter-of-factly declaring 'I'll ask 'em to repeat', with a shrug. It seems as though court reporters' apparent unwillingness to ask people to repeat stems from both discouragement by the rest of the court and a strong sense that their job is to hear and transcribe, and if they ask for repetitions they risk appearing unprofessional.

There is also a strong assumption that, because of their professional training and certification, they are accurate. This is coupled with an apparent assumption that AAE speakers simply do not speak correctly. For instance, one exclaimed: 'The judge will ask them to repeat, but won't tell 'em (exasperated) "You need to speak proper!"'. Another volunteered: 'Sometimes I have to be like "Okay, don't roll your eyes"'. One in particular expressed judgment of both AAE-speaking witnesses and AAE speakers on the bench:

> I'll get rid of the *um*s and *uh*s, but I'll write what was said. There's a judge who'll say something like 'where be those jawn' [sic] and I will write that down as it was said.[34] And I'm like 'you need to be careful'.

Court reporters grossly overestimated their ability to identify not just what was said, but also who the speakers were. For instance, one of the court reporters was adamant that they recognized one of the voices, a male speaker from North Philadelphia. Initially concerned that the court reporter had in fact heard our speaker in court, we later came to realize that they thought the speaker was Philadelphia comedian Kevin Hart (it was not). They would not hear otherwise.

Often, court reporters (and participants in the pilot studies) would volunteer evidence that they understand AAE in the form of statements such as 'I watched *The Wire* without subtitles', 'I watch BET', or 'I listen to Power 105 sometimes'.[35] One court reporter asserted: 'African American English isn't even my hardest task!'. This idea of familiarity with both African American language and culture is betrayed, however, by their frequent inability to correctly transcribe AAE clichés included in the stimuli like *what had happened was* and *it be that way sometimes*.

---

[33] To preserve anonymity, we use singular *they* to refer to specific court reporters.

[34] *Jawn* is a Philadelphia term meaning 'thing, whatchamacallit'. The utterance *where be those jawn* is ungrammatical in AAE.

[35] Power 105.1 is a Philadelphia hip hop radio station.

The court reporters also exhibited frustration with the speakers and with African Americans in the Philadelphia courts. One exclaimed: 'The tenses drive me crazy! *He be workin'*: what does that mean?! He ɪs working? He works? He does work? That drives me ɴᴜᴛs!'. This is a court reporter explicitly stating that they do not understand the dialect they are asked to transcribe on a daily basis, while framing it as a deficiency on the part of the speaker.

Perhaps more troubling is the undercurrent of assumptions of criminality. Fewer than ten of the stimuli made any mention of criminality or the justice system whatsoever, but a strong assumption of criminality was indicated both in discussions with court reporters following the task and in the paraphrases they submitted. One court reporter who was the first to speak in their group immediately upon finishing the task declared: 'I don't spend a lot of time in criminal court'. Another, in a different group, volunteered: 'They're clearly involved in drugs'. Unprompted, most groups began discussing their experiences in criminal court, with a few explaining that the stimuli sentences—neutral speech in AAE—sounded exactly like what they hear on a day-to-day basis in criminal court. One reporter in particular paraphrased nearly every sentence as having criminal meaning, including paraphrasing *he ain't workin', but he be workin'* as 'he sells drugs', *I was curious, did his white friend call* as 'Did you get any cocaine or crack cocaine', *my boss don't be givin' a nigga enough hours at work* as 'a prostitute not getting enough work', and the philosophical *Is it a god above?*, inspired by teenagers' musings in Labov's 1968 interviews (reproduced in Labov 1972), as 'who is the boss of drug dealing'. Not all of the assumptions of criminality were this blatant, but often the male speakers and referents were evidently assumed to be drug dealers, drug addicts, and felons, and the female speakers and referents were evidently assumed to be prostitutes, battered women, or both. For instance, another court reporter transcribed *it's a jam session you should go to* as <It's a shame, sexually, what you go through>.

Many were also very squeamish around use of the word *nigga*. Another court reporter, who was black, volunteered of a young white woman: 'Poor [ɴᴀᴍᴇ] had to write *nigger*[36] I don't know how many times'. Another declared, 'I haven't had too many who say it', which was immediately met by a black court reporter with 'How you don't have people who say it?'. The response was 'I don't know; I just got lucky I guess'. More troubling than their discomfort around hearing the word *nigga*, which most volunteered that they heard often in testimony, was their discomfort around writing it. Some of them said things like 'I don't even have *nigger*[37] in my dictionary', meaning that it would either render as an 'untranslate', requiring the reporter to replace an unpronounceable string of letters later, or would simply appear as other words (for instance, one had multiple responses with <a anything or> instead of <a nigga>). Some went so far as to attempt to sanitize it by replacing it with other words. However, since quite a few did not understand that *a nigga* often has a first-person referent (Jones & Hall 2019), in the process of ostensibly alleviating their discomfort around the word they altered the meaning of what was spoken, changing who did what, as in example 21. Others went in the opposite direction and made semantically neutral AAE *a nigga* into the standard English slur (and thereby also changed who was being referred to), as in example 20 above.

---

[36] The court reporter pronounced a word-final /ɹ/.
[37] This court reporter also pronounced it with a word-final /ɹ/.

(21) SENTENCE: What a nigga told you?
     MEANING: What did I tell you?
     TRANSCRIPTION: What did he tell you?

This discomfort around 'the n-word' and stigmatization of AAE, especially vernacular registers of it, was not limited to the court reporters who self-identified as white. Black court reporters also voiced strongly negative evaluations of AAE. In some cases, they did so while simultaneously making use of AAE features in their own speech. One volunteered: '[NAME] and I don't talk like that. These people maybe didn't come from professional families or didn't have much education', but went on to say '*It's* a lot of African Americans who don't talk like that', using AAE expletive *it* instead of the standard *there*. The same court reporter did not consistently understand some of the more different morphosyntactic features of AAE, while simultaneously exhibiting common, less marked, and less socially evaluated features—explaining, for example, that when they don't understand, 'I'll *aks* the lawyer'. Another of the black court reporters described how they had read about habitual *be*, noticed it in their own speech, and then attempted to eliminate it from their speech—the opposite of the desired outcome of the rehabilitative work linguists have been doing in pointing out the existence and validity of such constructions. One, whose own casual speech with the researchers exhibited apparently categorical absence of third singular *-s* on verbs, exclaimed after the transcription task: 'I can't stand when people talk like that. I hate that! It's torture!'. The performance of the black court reporters on the paraphrase task as well as the opinions they voiced about AAE and 'Ebonics' suggest a complicated relationship between these black professionals and AAE. They speak with AAE phonological and morphosyntactic patterns, but may not make use of all available features (Labov 1998), especially those that are more divergent or socially marked, and may negatively evaluate its use in professional and legal spheres (consistent with e.g. Rahman 2008) while simultaneously diverging significantly from prestige standards and local white varieties.

At best, the court reporters took a somewhat patronizing, paternalistic, 'velvet glove' (Jackman 1994) approach to AAE and AAE speakers. However, all of the court reporters demonstrated a strong desire to improve. In the moment, they all expressed a desire for better training on accents and dialects, surprise at hearing that AAE is rule-governed, and a strong interest in knowing what its rules are. All of the court reporters who volunteered for this task expressed pride in their profession. Even the one who appeared the most flustered after the task explained that they were willing to do 'anything to help the profession'. Many volunteered suggestions for other accents they felt they did not have sufficient training on, and in fact, multiple groups suggested that the researchers perform follow-up work with British English, as well as various accents associated with other minority groups in Philadelphia (e.g. Cambodian and Vietnamese accents). We think it is crucial to remember that the majority of these court reporters do not have significant real-world experience with AAE outside of their profession, and that their professional training is focused almost exclusively on speed and transcription accuracy for standard English, with occasional legal and medical jargon. Put more simply, court reporters' training does not prepare them to accurately transcribe nonstandard dialects they are likely to encounter on the job. While they clearly do hold negative opinions of AAE, it is not clear how much of their miscomprehension is directly related to race and how much we might expect were they given Appalachian English, Scottish English, or Newfoundland English, for instance. In this regard, more research is sorely needed.

6. POLICY SUGGESTIONS. As Arthur Spears (p.c.) remarks, 'The injustice involved in court reporting is intolerable and is an insult to the legal notion of all citizens' receiving

equal treatment under the law', and this should not be accepted. However, this is the result of a long historical process that will take enormous effort and great goodwill to undo. Extensive discussion and correspondence with senior scholars in sociolinguistics (particularly John Baugh, John Rickford, Arthur Spears, and Walt Wolfram) have made clear a general consensus that all paths forward must include changes to training and education and should utilize the media to bring broader awareness to the problem. As we see it, there is the specific problem of transcription inaccuracy, and the broader problem of a long history of deep injustice toward African Americans in the judicial system.

Regarding the issue of transcription inaccuracy, a handful of solutions that may at first seem appealing have serious flaws on further investigation. Colleagues have suggested ideas like (i) specialized training and certification for court reporters above and beyond their usual training, so that existing court reporters can optionally pursue additional training and certification, (ii) AAE translators in the courtroom, or (iii) replacing court reporters with speech-to-text or other natural language processing (NLP, sometimes incorrectly referred to as AI) technology. We believe all of these are untenable. The first does not take into account how transcribing jobs are assigned to court reporters and has the potential to reinforce treating AAE, and other nonstandard dialects, as if they are in some way outside the realm of a 'normal' court reporter's purview. The second is even more flawed: it runs the risk of completely delegitimizing AAE speakers in the courtroom, especially given that most non-AAE speakers in North America evidently believe that (a) they understand AAE and (b) it is defective. Furthermore, the speech of the translator becomes the official record of what was said, regardless of what the speaker actually said or intended. This adds yet another layer to an already overcomplicated and failing system. The third implies that technology can do better than the court reporter; however, there is ample evidence that speech-to-text and other NLP solutions perform poorly on AAE and other dialects and may further exacerbate the problem. Any solution to the (narrow) transcription problem must take into account the broader problem of harmful linguistic ideologies with common-currency anti-black stigma, bias (both conscious and not), and a court system that is the accumulated product of four centuries of white supremacy.

We propose that the narrow solution to the transcription problem that is most likely to make an incremental improvement is to require all court reporters to be certified not just on 'standard' English but on other dialects also, especially those they are most likely to encounter.[38] This should not be an 'add-on' but rather fully integrated into their professional training: their listening, accuracy, and speed tests should be performed on nonstandard speech and evaluated against the same standards as their performance on medical jargon, legal jargon, and other speech they are already tested on. This necessarily entails that they be taught the basics of dialects: that they exist, that they are systematic, and that their evaluation is social (and not the job of the transcriber to judge or alter). To take Philadelphia as an example, fully 44% of the population of the city is black, and they are disproportionately likely to come into contact with the criminal jus-

---

[38] A referee asked, 'where does one draw the line?', and asked about, for example, English-lexifier creoles. Our stance is that the solution is to draw not a linguistic line, but rather a sociological one. Speakers of AAE are not newcomers to the United States; rather, they are individuals who have been here for centuries, whose different language use is the result of segregation, and who have a reasonable expectation of comprehension on the part of other Americans. For that reason, we would argue that speakers of AAE, Appalachian English, and so forth should expect court reporter proficiency, whereas speakers of, say, Jamaican Patois could reasonably expect a translator.

tice system and criminal court. If the reporter's job is to faithfully transcribe, and linguistic variation is a scientifically demonstrated fact, then the court reporter is not being trained to do their job if they are not acquainted with the range of variation and taught how to accurately transcribe that range of variation in the course of their training. A court reporter who cannot transcribe AAE with 95% accuracy and works in criminal court in Philadelphia is, simply put, incapable of performing their basic job duties.

The broader problem of AAE in the courts, as it relates to all other participants, will require much broader societal solutions. First and foremost, linguistic education for the general population is necessary. This means continuing outreach from linguists, local activism, and changes in schoolroom approaches to dialect and prestige language. As Arthur Spears has suggested (p.c.), an intense and sustained media blitz is important to bolster activist efforts and bring awareness to the issue. A long-term solution requires us to change the views of the general public as relates to nonstandard dialects. We believe this boils down to insisting that English and Language Arts teachers teach what Labov (1970) calls the 'logic' of nonstandard English, and that they teach classroom norms not by insisting that nonstandard varieties are broken, but by situating nonstandard and prestige varieties socially. We recognize that this is no mean feat and that we are not the first to suggest or push for this solution. We believe that public scholarship and engagement with the general public; institutional support from organizations like the Linguistic Society of America in the form of policy suggestions, outreach, and training; and continued pressure from linguists and sociologists—especially those who are not from the affected populations and therefore have greater appearance of impartiality—are a potential starting point.

We intend to publish further research that attempts to empirically determine whether proposed remedies (i) have a positive impact and (ii) scale up. Currently, there is not enough research on dialect stigma and interventions against it, especially as relates to a judicial context, to provide necessary empirical support for the proposed policies. We plan to carry out a study to determine the effectiveness of sensitivity training combined with specialized dialect training on the alleviation of bias and improvement of cross-dialect comprehension. Additionally, we intend to replicate the current study with other nonstandard dialects, such as Appalachian English and Chicano English, to further document and quantify the problem of nonstandard dialect miscomprehension in the courtroom. Finally, we plan to study the effect of AAE miscomprehension in interactions between patients and medical professionals. The issue of cross-dialect miscomprehension has wide-ranging consequences across all aspects of social interaction. It is necessary both to test the effectiveness of remedies and to document the scale of the problem in order to begin to address it across the board.

7. CONCLUSIONS. We have demonstrated that Philadelphia court reporters transcribed African American English at a dramatically lower level of accuracy than the 95% or higher level at which they are certified. Not only did they inaccurately transcribe mundane AAE sentences in a better-than-normal acoustic setting, but they also often failed to understand what was being said. Both the sounds of AAE and the structure were difficult for the court reporters. African American participants parsed AAE accents better, but all of the court reporters failed to understand and correctly transcribe what linguists may think of as well-studied, well-known features of AAE.

We also demonstrated in §2.4 and §2.5 the importance of the court record. Altered testimony, starting as early as a pretrial deposition, can have a ripple effect, leading to accusations of perjury (as with Rachel Jeantel in *State of Florida v. George Zimmer-*

man) or to lawyers arguing that witness statements are inadmissible as evidence based on their AAE syntax (as in *United States of America v. Joseph Arnold*). Perhaps most pernicious, altered testimony may simply go unnoticed and unchallenged, but affect perceptions of witness credibility.

We showed that the court reporters in our study held negative language attitudes around AAE. They immediately recognized voices as 'black' and associated black voices with criminality, deviance, and untrustworthiness. There was a strong perception that AAE speakers were unable to speak 'proper' or were in some way impaired.

Crucially, however, the court reporters did not seem to hold (or share) explicit anti-black racist ideology.[39] All of the court reporters expressed sympathy toward the people going through the criminal justice system, and all expressed a strong desire to improve their ability to serve AAE speakers. Unfortunately, their training does not line up with their task. None had explicit training on the sounds and structure of AAE, despite it being the native language variety of nearly half of the city they work in and a dialect disproportionately represented in criminal court. Their certification at 95% accuracy or higher on a different dialect, however, gave an inflated sense of their own accuracy and abilities. They evidently knew that their transcriptions frequently made no sense, but attributed it to some fault with the speakers.

Court reporters are expected to be the best ears in the room. They are the easiest to test on this kind of task. They have the most training of anyone in the courtroom when it comes to speech. It may not be unreasonable to expect lawyers, judges, and juries who do not speak AAE to parse and understand significantly less. That white lawyers and laymen alike do not understand AAE is supported by our pilot findings, though more research is needed.

At its heart, the criminal justice system is built on a foundational assumption that participants are uncovering the truth of events. But when verbatim transcription is not actually verbatim, and when not only the court reporters but also the lawyers, judges, and juries may not actually understand the language of defendants and witnesses, the truth can easily be distorted. In effect, African Americans who speak AAE are denied the right to testify, if their testimony can be altered or disregarded. While we are all familiar with the expression 'Anything you say can and will be held against you', for African Americans, it is evidently the case that even things you NEVER SAID can and will be held against you. Until AAE speakers can be certain that their testimony will be faithfully transcribed and will be understood, there can be no justice.

REFERENCES

BAILEY, GUY, and ERIK THOMAS. 1998. Some aspects of African-American Vernacular English phonology. In Mufwene et al., 85–109.

BAUGH, JOHN. 1983. *Black street speech: Its history, structure, and survival*. Austin: University of Texas Press.

BAUGH, JOHN. 1999. *Out of the mouths of slaves: African American language and educational malpractice*. Austin: University of Texas Press.

---

[39] It is important to note that we are not claiming their views did not betray racism. Rather, consistent with the literature on unconscious or implicit bias, they explicitly took a positive stance toward black people, while their statements revealed an implicit racial bias. What we did not encounter was court reporters who explicitly stated overt racial animus.

BLAKE, RENÉE. 1997. Defining the envelope of linguistic variation: The case of 'don't count' forms in the copula analysis of African American Vernacular English. *Language Variation and Change* 9(1).57–79. DOI: 10.1017/S0954394500001794.

BLAKE, RENÉE, and CARA SHOUSTERMAN. 2010. Diachrony and AAE: St. Louis, hip-hop, and sound change outside of the mainstream. *Journal of English Linguistics* 38(3).230–47. DOI: 10.1177/0075424210374955.

CAMPBELL, LYLE. 2013. *Historical linguistics*. 3rd edn. Edinburgh: Edinburgh University Press.

CARSON, E. ANN. 2018. Prisoners in 2016. *Bureau of Justice Statistics*. Online: http://www.bjs.gov/index.cfm?ty=pbdetail&iid=6187.

CHARLES, CAMILLE ZUBRINSKY. 2003. The dynamics of racial residential segregation. *Annual Review of Sociology* 29.167–207. DOI: 10.1146/annurev.soc.29.010202.100002.

COLLINS, CHRIS; SIMANIQUE MOODY; and PAUL M. POSTAL. 2008. An AAE camouflage construction. *Language* 84(1).29–68. Online: https://www.jstor.org/stable/40071011.

COLLINS, CHRIS, and PAUL M. POSTAL. 2012. *Imposters: A study of pronominal agreement*. Cambridge, MA: MIT Press.

CROWLEY, TERRY, and CLAIRE BOWERN. 2010. *An introduction to historical linguistics*. 4th edn. Oxford: Oxford University Press.

CUKOR-AVILA, PATRICIA. 2002. *She say*, *she go*, *she be like*: Verbs of quotation over time in African American Vernacular English. *American Speech* 77(1).3–31. DOI: 10.1215/00031283-77-1-3.

CUKOR-AVILA, PATRICIA, and SONJA L. LANEHART. 2001. Co-existing grammars: The relationship between the evolution of African American and white vernacular English in the South. *Sociocultural and historical contexts of African American English*, ed. by Sonja L. Lanehart, 93–128. Amsterdam: John Benjamins.

DAYTON, ELIZABETH. 1996. *Grammatical categories of the verb in African-American Vernacular English*. Philadelphia: University of Pennsylvania dissertation.

DEVERS, LINDSEY. 2011. Plea and charge bargaining. *Bureau of Justice Assistance*. Online: https://www.bja.gov/publications/pleabargainingresearchsummary.pdf.

EADES, DIANA. 2010. *Sociolinguistics and the legal process*. Buffalo: Multilingual Matters.

FAGAN, JEFFREY; ANTHONY A. BRAGA; ROD K. BRUNSON; and APRIL PATTAVINA. 2016. Stops and stares: Street stops, surveillance, and race in the new policing. *Fordham Urban Law Journal* 43(3).539–614. Online: https://ir.lawnet.fordham.edu/ulj/vol43/iss3/3.

FAGAN, JEFFREY; AMANDA GELLER; GARTH DAVIES; and VALERIE WEST. 2010. Street stops and broken windows revisited: The demography and logic of proactive policing in a safe and changing city. *Race, ethnicity, and policing: New and essential readings*, ed. by Stephen K. Rice and Michael D. White, 309–48. New York: New York University Press.

FASOLD, RALPH W. 1972. *Tense marking in black English: A linguistic and social analysis*. (Urban language series 8.) Arlington, VA: Center for Applied Linguistics.

FRIDLAND, VALERIE. 2003. Network strength and the realization of the Southern vowel shift among African Americans in Memphis, Tennessee. *American Speech* 78(1).3–30. DOI: 10.1215/00031283-78-1-3.

GORDON, MATTHEW J. 2002. Investigating chain shifts and mergers. *The handbook of language variation and change*, ed. by J. K. Chambers, Peter Trudgill, and Natalie Schilling-Estes, 244–66. Malden, MA: Blackwell.

GREEN, LISA J. 1998. Aspect and predicate phrases in African-American Vernacular English. In Mufwene et al., 37–68.

GREEN, LISA J. 2002. *African American English: A linguistic introduction*. Cambridge: Cambridge University Press.

HANCOCK, RYAN A. 2012. The double bind: Obstacles to employment and resources for survivors of the criminal justice system. *University of Pennsylvania Journal of Law and Social Change* 15(4).515–29. Online: https://scholarship.law.upenn.edu/jlasc/vol15/iss4/3.

HARRIS, DAVID A. 1996. Driving while black and all other traffic offenses: The Supreme Court and pretextual traffic stops. *The Journal of Criminal Law and Criminology* 87(2).544–82. Online: https://scholarlycommons.law.northwestern.edu/jclc/vol87/iss2/5.

JACKMAN, MARY R. 1994. *The velvet glove: Paternalism and conflict in gender, class, and race relations*. Berkeley: University of California Press.

Jones, Taylor. 2015. 'Eem' negation in African American English: A next step in Jespersen's cycle? *University of Pennsylvania Working Papers in Linguistics* 22(1):18. Online: https://repository.upenn.edu/pwpl/vol22/iss1/18.

Jones, Taylor. 2016. AAE talmbout: An overlooked verb of quotation. *University of Pennsylvania Working Papers in Linguistics* 22(2):11. Online: https://repository.upenn.edu/pwpl/vol22/iss2/11.

Jones, Taylor, and Christopher S. Hall. 2019. Grammatical reanalysis and the multiple N-words in African American English. *American Speech* 94(4), to appear.

King, Sharese. 2016. On negotiating racial and regional identities: Vocalic variation among African Americans in Bakersfield, California. *University of Pennsylvania Working Papers in Linguistics* 22(2):12. Online: https://repository.upenn.edu/pwpl/vol22/iss2/12.

Klein, Wolfgang; Reinier Plomp; and Louis C. W. Pols. 1970. Vowel spectra, vowel spaces, and vowel identification. *The Journal of the Acoustical Society of America* 48(4B).999–1009. DOI: 10.1121/1.1912239.

Kohn, Mary Elizabeth. 2013. *Adolescent ethnolinguistic stability and change: A longitudinal study*. Chapel Hill: University of North Carolina Chapel Hill dissertation.

Labov, William. 1969. Contraction, deletion, and inherent variability of the English copula. *Language* 45(4).715–62. DOI: 10.2307/412333.

Labov, William. 1970. The logic of nonstandard English. *Language and poverty: Perspectives on a theme*, ed. by Frederick Williams, 153–89. New York: Academic Press.

Labov, William. 1972. *Language in the inner city: Studies in the black English vernacular*. Philadelphia: University of Pennsylvania Press.

Labov, William. 1989. Exact description of the speech community: Short *a* in Philadelphia. *Language change and variation*, ed. by Ralph W. Fasold and Deborah Schiffrin, 1–57. Amsterdam: John Benjamins.

Labov, William. 1994. *Principles of linguistic change, vol. 1: Internal factors*. Oxford: Blackwell.

Labov, William. 1998. Co-existent systems in African-American Vernacular English. In Mufwene et al., 110–53.

Labov, William. 2010. Unendangered dialect, endangered people: The case of African American Vernacular English. *Transforming Anthropology* 18(1).15–27. DOI: 10.1111/j.1548-7466.2010.01066.x.

Labov, William. 2011. *Principles of linguistic change, vol. 3: Cognitive and cultural factors*. Malden, MA: Wiley-Blackwell.

Labov, William; Sharon Ash; and Charles Boberg. 2006. *The atlas of North American English: Phonetics, phonology and sound change*. Berlin: Mouton de Gruyter.

Labov, William, and Sabriya Fisher. 2015. African American phonology in a Philadelphia community. In Lanehart, 256–79.

Labov, William; Ingrid Rosenfelder; and Josef Fruehwald. 2013. One hundred years of sound change in Philadelphia: Linear incrementation, reversal, and reanalysis. *Language* 89(1).30–65. DOI: 10.1353/lan.2013.0015.

Ladefoged, Peter, and Keith Johnson. 2014. *A course in phonetics*. 7th edn. Stamford, CT: Cengage Learning.

Ladefoged, Peter, and Ian Maddieson. 1998. *The sounds of the world's languages*. Oxford: Blackwell.

Lane, Austin. 2014. 'You tryna grammaticalize?': An analysis of 'tryna' as a grammaticalized semi-auxiliary. *The Eagle Feather* 11. DOI: 10.12794/tef.2014.305.

Lanehart, Sonja. 2015. *The Oxford handbook of African American language*. Oxford: Oxford University Press.

Lewis, Amanda E. 2003. *Race in the schoolyard: Negotiating the color line in classrooms and communities*. New Brunswick, NJ: Rutgers University Press.

Lin, Ann Chih, and David R. Harris. 2008. *The colors of poverty: Why racial and ethnic disparities persist*. New York: Russell Sage Foundation.

Loflin, Marvin D.; Nicholas J. Sobin; and Joe L. Dillard. 1973. Auxiliary structures and time adverbs in Black American English. *American Speech* 48(1/2).22–28. DOI: 10.2307/3087889.

Logan, John R. 2013. The persistence of segregation in the 21st century metropolis. *City & Community* 12(2).160–68. DOI: 10.1111/cico.12021.

Mallinson, Christine, and Walt Wolfram. 2002. Dialect accommodation in a bi-ethnic mountain enclave community: More evidence on the development of African American English. *Language in Society* 31(5).743–75. DOI: 10.1017/S0047404502315021.

Martin, Stefan, and Walt Wolfram. 1998. The sentence in African American Vernacular English. In Mufwene et al., 11–36.

Massey, Douglas S. 2004. Segregation and stratification: A biosocial perspective. *Du Bois Review: Social Science Research on Race* 1(1).7–25. DOI: 10.1017/S1742058X04040 032.

Massey, Douglas S., and Nancy A. Denton. 1988. The dimensions of residential segregation. *Social Forces* 67(2).281–315. DOI: 10.1093/sf/67.2.281.

Mermelstein, Paul. 1976. Distance measures for speech recognition, psychological and instrumental. *Pattern recognition and artificial intelligence*, ed. by C. H. Chen, 374–88. New York: Academic Press.

Metcalfe, Christi, and Ted Chiricos. 2018. Race, plea, and charge reduction: An assessment of racial disparities in the plea process. *Justice Quarterly* 35(2).223–53. DOI: 10.1080/07418825.2017.1304564.

Miller, George A., and Patricia E. Nicely. 1955. An analysis of perceptual confusions among some English consonants. *The Journal of the Acoustical Society of America* 27(2).338–52. DOI: 10.1121/1.1907526.

Mufwene, Salikoko S.; John R. Rickford; Guy Bailey; and John Baugh (eds.) 1998. *African-American English: Structure, history, and use*. New York: Routledge.

O'Sullivan, David, and David W. S. Wong. 2007. A surface-based approach to measuring spatial segregation. *Geographical Analysis* 39(2).147–68. DOI: 10.1111/j.1538-4632.2007.00699.x.

Pullum, Geoffrey. 1999. African American Vernacular English is not standard English with mistakes. *The workings of language: From prescriptions to perspectives*, ed. by Rebecca S. Wheeler, 59–66. Westport, CT: Praeger.

Rahman, Jacquelyn. 2008. Middle-class African Americans: Reactions and attitudes toward African American English. *American Speech* 83(2).141–76. DOI: 10.1215/00031 283-2008-009.

Rehavi, M. Marit, and Sonja B. Starr. 2014. Racial disparity in federal criminal sentences. *Journal of Political Economy* 122(6).1320–54. DOI: 10.1086/677255.

Rekker, Roderik; Dustin Pardini; Loes Keijsers; Susan Branje; Rolf Loeber; and Wim Meeus. 2015. Moving in and out of poverty: The within-individual association between socioeconomic status and juvenile delinquency. *PLoS ONE* 10(11):e0136461. DOI: 10.1371/journal.pone.0136461.

Rickford, John R. 1975. Carrying the new wave into syntax: The case of Black English BIN. *Analyzing variation in language: Papers from the second colloquium on New Ways of Analyzing Variation*, ed. by Ralph W. Fasold and Roger W. Shuy, 162–83. Washington, DC: Georgetown University Press.

Rickford, John R. 1999. *African American Vernacular English: Features, evolution, educational implications*. Malden, MA: Blackwell.

Rickford, John R.; Arnetha Ball; Renée Blake; Raina Jackson; and Nomi Martin. 1991. Rappin on the copula coffin: Theoretical and methodological issues in the analysis of copula variation in African-American Vernacular English. *Language Variation and Change* 3(1).103–32. DOI: 10.1017/S0954394500000466.

Rickford, John R., and Sharese King. 2016. Language and linguistics on trial: Hearing Rachel Jeantel (and other vernacular speakers) in the courtroom and beyond. *Language* 92(4).948–88. DOI: 10.1353/lan.2016.0078.

Rickford, John R., and Christine Théberge Rafal. 1996. Preterite *had* + V-*ed* in the narratives of African-American preadolescents. *American Speech* 71(3).227–54. DOI: 10.2307/455548.

Rickford, John R., and Angela E. Rickford. 1976. Cut-eye and suck-teeth: African words and gestures in New World guise. *Journal of American Folklore* 89(353).249–309. DOI: 10.2307/539442.

Rickford, John R., and Russell John Rickford. 2000. *Spoken soul: The story of Black English*. New York: John Wiley & Sons.

Ringe, Don, and Joseph F. Eska. 2013. *Historical linguistics: Toward a twenty-first century reintegration*. Cambridge: Cambridge University Press.

RODRIGUEZ, JOSÉ I.; AARON CASTELAN CARGILE; and MARC D. RICH. 2004. Reactions to African-American Vernacular English: Do more phonological features matter? *Western Journal of Black Studies* 28(3).407–14.

ROSS, SARAH H.; JANNA B. OETTING; and BETH STAPLETON. 2004. Preterite *had* + V-*ed*: A developmental narrative structure of African American English. *American Speech* 79(2).167–93. DOI: 10.1215/00031283-79-2-167.

SAMPSON, ROBERT J., and W. BYRON GROVES. 1989. Community structure and crime: Testing social-disorganization theory. *American Journal of Sociology* 94(4).774–802. DOI: 10.1086/229068.

SHAPIRO, DOUG; AFET DUNDAR; FAYE HUIE; PHOEBE KHASIALA WAKHUNGU; XIN YUAN; ANGEL NATHAN; and YOUNGSIK HWANG. 2017. A national view of student attainment rates by race and ethnicity—Fall 2010 cohort. *Signature Report No. 12b*. Herndon, VA: National Student Clearinghouse. Online: https://eric.ed.gov/?id=ED580302.

SHARKEY, PATRICK; MAX BESBRIS; and MICHAEL FRIEDSON. 2016. Poverty and crime. *The Oxford handbook of the social science of poverty*, ed. by David Brady and Lisa M. Burton, 623–36. Oxford: Oxford University Press.

SHAW, CLIFFORD R., and HENRY D. MCKAY. 1942. *Juvenile delinquency and urban areas*. Chicago: University of Chicago Press.

SHAW, CLIFFORD R., and HENRY D. MCKAY. 1969. *Juvenile delinquency and urban areas*. Revised edn. Chicago: University of Chicago Press.

SHEPARD, ROGER N. 1972. Psychological representation of speech sounds. *Human communication: A unified view*, ed. by Edward Emil David and Peter B. Denes, 67–113. New York: McGraw-Hill.

SPEARS, ARTHUR K. 1982. The Black English semi-auxiliary *come*. *Language* 58(4).850–72. DOI: 10.2307/413960.

SPEARS, ARTHUR K. 2015. African American Standard English. In Lanehart, 786–99.

SPEARS, ARTHUR K. 2017. Unstressed *been*: Past and present in African American English. *American Speech* 92(2).151–75. DOI: 10.1215/00031283-4202009.

STEWART, WILLIAM. 1966. Social dialect. *Research planning conference on language development in disadvantaged children*. New York: Yeshiva University.

SUPREME COURT OF PENNSYLVANIA. 2016. Amendment to the rules 4001–4016 of the Pennsylvania rules of judicial administration. *The Pennsylvania Code*. Online: https://www.pacode.com/secure/data/201/chapter40/chap40toc.html.

SWISHER, RAYMOND R., and CHRISTOPHER R. DENNISON. 2016. Educational pathways and change in crime between adolescence and early adulthood. *Journal of Research in Crime and Delinquency* 53(6).840–71. DOI: 10.1177/0022427816645380.

THOMAS, ERIK R. 2007. Phonological and phonetic characteristics of African American Vernacular English. *Language and Linguistics Compass* 1(5).450–75. DOI: 10.1111/j.1749-818X.2007.00029.x.

UNITED STATES V. ARNOLD. 2007. 486 F.3d (6th Circuit).

WEBER, ANDREA, and ROEL SMITS. 2003. Consonant and vowel confusion patterns by American English listeners. *Proceedings of the 15th International Congress of Phonetic Sciences (ICPhS)*, Barcelona, 1437–40. Online: https://www.internationalphoneticassociation.org/icphs-proceedings/ICPhS2003/papers/p15_1437.pdf.

WELLS, JOHN C. 1982. *Accents of English, vol. 1: An introduction*. Cambridge: Cambridge University Press.

WICKELGREN, WAYNE A. 1965. Acoustic similarity and intrusion errors in short-term memory. *Journal of Experimental Psychology* 70(1).102–8. DOI: 10.1037/h0022015.

WOLFRAM, WALT. 1994. On the sociolinguistic significance of obscure dialect structures: The [NP$_i$ *call* NP$_i$ V-*ing*] construction in African-American Vernacular English. *American Speech* 69(4).339–60. DOI: 10.2307/455854.

WOLFRAM, WALT; ERIK R. THOMAS; and ELAINE W. GREEN. 2000. The regional context of earlier African American speech: Evidence for reconstructing the development of AAVE. *Language in Society* 29(3).315–55. Online: https://www.jstor.org/stable/4169023.

YANG, CRYSTAL S. 2015. Free at last? Judicial discretion and racial disparities in federal sentencing. *The Journal of Legal Studies* 44(1).75–111. DOI: 10.1086/680989.

YULE, GEORGE. 1996. *Pragmatics*. (Oxford introductions to language study.) Oxford: Oxford University Press.

[tayjones@sas.upenn.edu]
[jessie.kalbfeld@nyu.edu]
[rhancock@wwdlaw.com]
[rclark@sas.upenn.edu]