

AFRICAN AMERICAN ENGLISH SPEAKERS' PRODUCTION
DEMANDS IN SPONTANEOUS UTTERANCES

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ABSTRACT

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African American English (AAE) dialect speakers have unique speech production demands regarding the environment and linguistic production. This study observes the acoustic impact of these variables and the relationship between the occurrence of select AAE phonological features and disfluency occurrences from 19 African American adults from the South and other regions of upbringing. Results of this study reveal a positive correlation between AAE dialect feature occurrences and disfluencies presented during a story retell task for participants from the Southern region. Additional findings revealed significance in the variation of AAE dialect feature use between female and male participants as well as participants from the Southern region. Clinical implications of this study show the need to observe naturalistic speech across environments and the need for better understanding of perceptual judgment and disfluency for AAE dialect speakers.

To all the Black and Brown children who are
discovering their world of speech and language.

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TABLE OF CONTENTS

LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
INTRODUCTION.....	1
Chapter 1 LITERATURE REVIEW.....	3
1.1 Motivations from Speech-Language Pathology and Professional Practice.....	3
1.2 Speech Production Demands.....	4
1.3 African American English Dialect	9
1.4 Present Study.....	15
Chapter 2 METHODOLOGY.....	16
2.1 Participants and Corpus.....	16
2.2 Procedure.....	17
2.3 Data Acquisition.....	17
2.4 Statistical Analysis.....	22
Chapter 3 RESULTS	23
3.1 Number of Tokens.....	23
3.2 Determining Overall AAE Feature Usage Percentage	25
3.3 Correlations between AAE variant usage rate and Disfluency Rate.....	33
Chapter 4 DISCUSSION.....	38
4.1 AAE and Disfluency.....	38
4.2 Clinical Implications and Future Directions.....	41
APPENDICES.....	43
APPENDIX A Table A1 Bivariate Correlations of Southern Participants.....	44
APPENDIX B Table A2 Bivariate Correlation Summary of Southern N = 14 Participants.....	46
APPENDIX C Table A3 Alpha Level of Southern N = 14 Participants.....	47
APPENDIX D Considerable Methods for Bivariate Correlation Analysis of AAE Features.....	48
REFERENCES.....	49

LIST OF TABLES

Table 1 Participant Demographics.....	16
Table 2 Coded AAE Phonological Features	19
Table 3 Coded Disfluencies	21
Table 4 Number of AAE Feature Tokens Across All N = 19 Participants	24
Table 5 Number of Disfluency Tokens Across All N = 19 Participants.....	25
Table 6 Variant (N AAE) Feature Usage and Opportunities (OP) for All N = 19 Participants....	26
Table 7 Bivariate Correlations for All N = 19 Participants.....	30
Table 8 Bivariate Correlation Summary for All N = 19 Participants.....	32
Table 9 Lowest Alpha Level Threshold for All N = 19 Participants for Each Phonological Variable.....	32
Table 10 Percent AAE Features and Disfluencies.	34

LIST OF FIGURES

Figure 1. Regional dialect differences across the United States.....	10
Figure 2. Sample sound file with AAE feature and disfluency type coding for the following utterances “...bed, but the bed is too soft.”.....	22
Figure 3. Correlation between AAE features and disfluencies across all participants (N=19)	35
Figure 4. Correlation between AAE features and disfluencies across participants from the South (N = 14)	37

INTRODUCTION

The ability to speak and be understood is a fundamental and uniquely human ability. Individual judgment is developed over time and influences how the language an individual is perceived (Bennett & Verney, 2018; Bosker, Quené, Sanders, & Jong, 2014; Clopper & Pisoni, 2006; Mackey, Finn, & Ingham, 1997). African American English (AAE) is a dialect of American English used by many, but not all African Americans (Green, 2002). AAE speakers use various phonological, lexical, and grammatical dialect features. These features can be influenced by speech production demands which can include the environment, linguistic production, and the expectation of fluency. Current research shows that the environment, including the context of a setting and who is in it (Childs, 2019; Giles, 1973) can impact the linguistic production demands of code-switching (Amodio, 2014; Giles, Taylor, & Bourhis, 1973), thereby impacting speech production; this may be particularly true for AAE speakers. However, there is little research which has addressed the potential impact of the expectation of fluency on AAE speakers. Specifically, there is limited understanding regarding the expectations an observer or a listener may have on the speaker to produce fluent speech within an environment, specifically for AAE speakers. For clinical speech-language pathology practice, it is critical to consider speech production demands to determine if a patient or client's speech is presenting within typical or normal limits. This clinical expectation becomes increasingly complex when a patient or a client comes from a linguistically or culturally distinct background from the speech-language pathologist (American Speech-Language-Hearing Association, n.d.; Dixon, 2014; Horton & Apel, 2014).

The goal of this thesis is to investigate the relationship between the use of AAE dialect features and the presentation of typical and atypical speech disfluencies. This relationship

observed while considering the impact of speech production demands, specifically the influence of the environment, linguistic production and code-switching, and fluency of speech. To investigate this relationship, the present thesis considered the speech patterns of 19 African American young adult participants from various demographic backgrounds in a corpus of pre-existing speech.

Chapter 1

LITERATURE REVIEW

1.1 Motivations from Speech-Language Pathology and Professional Practice

The goal of speech-language intervention is to identify, assess, diagnose, and treat speech and language concerns (Speech-Language Pathologists., n.d.). For example, the goal of articulation intervention is to improve speech intelligibility of clients, including those from a culturally and linguistically diverse backgrounds. There is a higher probability of this goal to be achieved when a speech-language pathologist (SLP) has culturally competent knowledge and understanding of a client's natural and culturally appropriate linguistic productions. Thus, a lack of knowledge by the SLP about client's speech variations will lead to the difficulty setting and reaching intervention goals.

The American Speech-Language and Hearing Association (ASHA) defines cultural competence as not only having an understanding of but also an appropriate response to diverse cultural variables presented in an interaction between a client, their family, and a professional (American Speech-Language-Hearing Association, n.d.). ASHA requires that SLPs practice cultural competence for effective clinical practice to ensure that each variable of an individual's culture that influences language can be targeted during intervention practice (American Speech-Language-Hearing Association, n.d.). As cultural knowledge is gained, identification and recognition of typical or atypical speech and language will be established. To help ensure that SLPs are actively demonstrating best practice for linguistically and culturally diverse clients, self-assessment of cultural competence is important for identification of personal limitations (American Speech-Language-Hearing Association, n.d.; Dixon, 2014; Teitelbaum, 2017). The increase of research and literature of Non-Mainstream American English provides resources to

SLPs and other professionals to assist in the growth of culture competence (Horton & Apel, 2014).

Accurate diagnostics are a critical part of best practice for speech and language services to ensure the implementation of appropriate intervention. For example, a client presents with typical disfluencies such as interjections of filler words during an assessment; these production characteristics may not indicate a memory disorder, an executive function disorder, or even a fluency disorder. Instead, SLPs must consider factors such as the production demands placed on the client at the moment, in addition to these diagnostic possibilities (Amodio, 2014; Giles, 1973; Goberman, Hughes, & Haydock, 2011). There is an expectation during a speech and language evaluation of fluency, among other things, to determine whether a client's speech production is within normal limits (Bosker et al., 2014). Therefore, an SLP must be clinically competent to evaluate fluency of speech (Yaruss & Quersal, 2002) while considering other speech production demands such as the environment and linguistic ability, which becomes even more important and challenging for clients from linguistically and culturally diverse backgrounds. This present study will provide insight into the issues of determining the relationship between fluency and African American English phonological features.

1.2 Speech Production Demands

1.2.1 Demands in the Environment

Speech production demands within the environment can be influenced by expectations of how an individual should present themselves (Eberhardt, Dasgupta, & Banasznski, 2003). For example, someone may act differently in the classroom than they would out with friends on the weekend. Moreover, someone may speak one way at the neighborhood corner and another way in a formal speech and language treatment session. These examples illustrate the difference

between what the setting is, who is observing or listening, and what the current task or the action within the environment is. The desire to change one's presentation, specifically one's speech, may come from the desire or need to conform to perceived expectations associated with the current environment (Giles, 1973).

Communication Accommodation Theory is the impact of one's own communication style in addition to the impression and evaluation of a communication partner's style impacts the motivation to adapt (Manstead, 1991). As rules for specific behaviors in an environment are learned and/or uncovered over time, there is a need to belong and successfully navigate those expectations, which leads to smooth interactions in the environment (Borrie & Liss, 2014; Dijksterhuis & Bargh, 2001; Giles, 1973; Manstead, 1991). Thus, adhering to the social expectations associated with a particular environment by demonstrating expected and/or appropriate behavior can serve a specific purpose and function of allowing parties to feel comfortable in an environment (Molinsky, 2007; Ward & Kennedy, 1999). Goberman and colleagues suggested that a speaker's language patterns could also be impacted by other factors, such as their age, gender, and their relationship to the listener (Goberman, Hughes, & Haydock, 2011). Additionally, the setting may also require alternate forms of speech such as those exemplified in what some scholars of African American English have called "home language" versus "school language" (Ainsworth & Foster, 2017; Delpit & Dowdy, 2008).

Childs (2019) discusses the phenomenon of the Observer's Paradox which is the influence that an interviewer has on a speaker's phoneme elicitation (Labov, 1972; Wyatt, 1995). The influence that the observer or the listener has on the speaker may impact their speech production in terms of speech style. Childs also suggest that the more familiar a relationship between an interviewer and a speaker, the more likely reduced or casual speech styles will occur

(Labov, 1972; Wyatt, 1995). These researchers also noted the impact that sensitivity of the task within the environment can have on the speaker. The topic of conversation, the activity, and the degree of conversation between two speakers can influence linguistic production too. Variables of the environment, setting, observer and the listener, and the task must also be considered when eliciting speech because they can impact speech-language production (Holt, 2018) and influence the perception of speech-language abilities (Bennett & Verney, 2018; Bosker et al., 2014; Mackey, Finn, & Ingham, 1997).

1.2.2 Demands in Code Switching

Javier and Marcos define code-switching as “change in words or language as an individual moves from one situation or topic to another” (1989). This phenomenon takes place for both bilinguals and bidialectal (Jacqueline Toribio, 2001; Bond & Lai, 1986; Bennett & Verney, 2018; Javier & Marcos, 1989) in structural and nonstructural conditions (Javier & Marcos, 1989). Structural conditions involve linguistic productions that facilitate vocabulary correspondence and language shifts. Nonstructural conditions involve extralinguistic or social and psychological effects on language output, in which switching serves as an important function for the individual (Javier & Marcos, 1989; Giles, 1973).

The purpose that code-switching serves for a speaker may be structural or nonstructural, in order to present themselves in a specific manner (Amodio, 2014; Giles, Taylor, & Bourhis, 1973). Giles and colleagues note that linguistic adjustments can be made contingent on characteristics of the listener; social status, sex, age, and/or knowledge about the conversational topic (1973). When interacting with a communication partner who has matched characteristics, there is more comfort and ease because of the commonality between them (Neeley, 2013). To

avoid negative perceptions, individuals may desire the adoption of social norms by shifting speech styles (Mackey, Finn, & Ingham, 1997).

Speech matching is a way of shifting speech to match characteristics like speech rate, accent, durations, and intensity (Giles, Taylor, & Bourhis, 1973; Borrie & Liss, 2014). Judgments and stereotypes made by the listener, and a desire to not be subject to negative stereotypes may also influence a speaker's need and desire to code-switch (Giles, 1973; Foulkes & Docherty, 2006; Amodio, 2014). The adoption of an alternate language form must result in a positive social value and power for those switching dialect forms. This shift can be valuable because of the assumptions that may be made due to an individual's social class or cultural background. Knowledge about the speaker's language form can influence these ideas (Foulkes and Docherty, 2006; Mackey, Finn, & Ingham, 1997).

The ability to code-switch between languages or dialects is unique because of a speaker's ability to choose from their repertoire of language and dialect patterns to produce a single message in alternate ways (Giles & Hewstone, 1982; Giles, 1973). Accent mobility (Giles, 1973), speech matching (Giles, Taylor, & Bourhis, 1973), rhythmic entrainment (Borrie & Liss, 2014) and the chameleon effect (Chartrand & Bargh, 1999) are terms that have been used to talk about the phenomena of code-switching. Each of these terms highlights the effect that the listener or the observer has on the speaker and their need or desire to code switch. However, it is important to consider that a listener or observer may not influence the speaker. Rather a speaker may maintain what Giles defines as accent loyalty, where there is little to no variability in pronunciation usage (Giles, 1973). Motives for code-switching or accent loyalty may be influenced by learning events or memories with the result of language output (Amodio, 2014; Pickering & Garrod, 2004; Volk, Köhler, & Pudelko, 2014).

1.2.3 Demands in Fluency

Disfluency in speech is defined as interruptions in the forward flow of speech (Goberman, Hughes, & Haydock, 2011; Guitar, 2013). Disfluencies have been divided by within-word disfluencies, between-word disfluencies, interjections (Bothe, 2008; Goberman, Hughes, & Haydock, 2011), and pauses (Guitar, 2013). Within-word disfluencies are part-word repetitions, sound repetitions, and blocks. Between-word disfluencies are whole word repetitions and phrase repetitions. Interjections are audible fillers with words such as “uh,” “um,” “ah,” and may also include laughter (Jacqueline Toribio, 2001). Pauses can be either silent or filled pauses that do not convey linguistic meaning but interject fluid speech (Goberman, Hughes, & Haydock, 2011; Guitar, 2013; Jacqueline Toribio, 2001). Speech disfluencies are not exclusive to those with disfluency disorders but are typically more common in those without fluency disorders (Ambrose & Yairi, 1999; Reardon-Reeves & Yaruss, 2013, p. 10). These types of disfluencies can include word repetitions, phrase repetitions, revisions, and interjections (Goberman, Hughes, & Haydock, 2011; Reardon-Reeves & Yaruss, 2013, p. 10). Jacqueline Toribio (2001) discusses pause, false start, breakdown, and laughter produced by bilingual participants saying phrases such as “Snow White and the Seven Dwarfs.”

The environment can also influence disfluencies in speech, such as the context of a topic, the speaker’s age, gender, and the relationship to a listener or observer (Goberman, Hughes, & Haydock, 2011). Giles and Hewstone (1982) discuss this influence in the context of emotional topics for bilingual and bidialectal speakers. Specifically, the context of the topic and the relationship between the speaker and the listener can also result in the adoption of a colloquial pronunciation with increased speech rate and more disfluencies (Childs, 2019; Giles & Hewstone, 1982). The influence of these extralinguistic conditions may increase planning time

and result in heightened anxiety (Goberman, Hughes, & Haydock, 2011; Schachter, Christenfeld, Ravina, & Bilous, 1991), resulting in turn in disfluent productions of speech. Schachter and colleagues (1991) concluded that filled pauses are unaffected by anxiety, indicating that some, but not all disfluencies can be affected by planning time and heightened anxiety. The fear of a listener or observer's negative evaluations or predictions of poor performance can give rise to communication anxiety (Shi, Brinthaup, McCree, 2015; Major, Fitzmaurice, Bunta, & Balasubramanian, 2005). However, familiarity with the context of a topic and a listener or observer can reduce disfluencies and draw less attention from the listener (Ainsworth & Foster, 2017; Hall, 1977).

An individual's native language and dialect can also influence a listener's perception of fluency. Bosker and colleagues (2014) identified native and nonnative fluency differences. The initial experiment was designed to identify how listeners weigh fluency characteristics of native and nonnative speech. They found that nonnative speech was perceived overall to be less fluent in terms of vocabulary, grammar, pauses, repetitions, and syllable durations when compared to native speech (Bosker et al., 2014). Lastly, explicit and implicit negative attitudes about a perceived language or dialect may result in the listener's perception of the speaker to be unnatural or less-comprehensive (Mackey, Finn, & Ingham, 1997; Major, Fitzmaurice, Bunta, & Balasubramanian, 2005), suggesting an increased need for cultural competence, in order to accurately determine speech and language production abilities.

1.3 African American English Dialect

1.3.1 The Variety of African American English

African American English (AAE) is a rule-governed dialect of English spoken by many, but not all, African Americans in most regions of the United States (Green, 2002). The wide

range of AAE dialect features and the use indicates the variation between individual use (Stockman, 1996; Wyatt, 1995). Kovac (1982) found that a working-class African American may demonstrate increased use of AAE features, while a middle-class African American may demonstrate a decreased use of AAE features in comparison (Kovac, 1982; Wyatt, 1995). Variations of AAE also include the differences across regions with emerging research examining these regional differences and how they are perceived (Berry & Oetting, 2017; Holt, 2018; Jones, 2015; Mitchell, Lesho, & Walker, 2017; Stockman, 1996; Thomas & Wassink, 2010; Wolfram, 2007). Figure 1 provides a map by Jones (2015) which displays the regional dialect differences across the United States. Furthermore, Holt (2018) discovered regional variations as well as socio-ethnic variations of AAE vowel production, suggesting that AAE vowel production may be influenced by the social environment and differences in dialects by region (Holt, Jacewicz, & Fox, 2015; Jones, 2015). While we recognize this wide variety of AAE, these patterns are neither random or chaotic, but rather rule-governed and systematic (Foulkes & Docherty, 2006; Green, 2002).

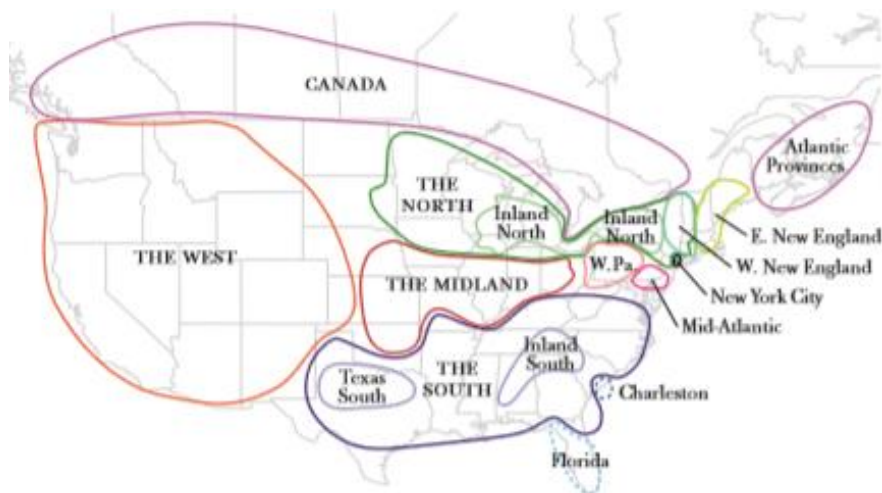


Figure 1. Regional dialect differences across the United States (Jones, 2015).

Frequently in literature, AAE has been compared with Mainstream English or Standard American English (Berry & Oetting, 2017; Wyatt, 1995). This comparison has led to the English variant of AAE to be stigmatized as deviant and deficient over many years (Gluszek & Dovidio, 2010; Thomas, 2007; Wyatt, 1995). Terms to imply deviance from what is considered standard have contributed to the negative bias which has been associated with AAE (Baugh, 2000; Lanehart, 2001). Caution against assuming there is an idealized version of AAE in part because AAE speakers that show variation apart from an idealized form may be unrealistic (Berry & Oetting, 2017; Pearson, Conner, & Jackson, 2013; Wolfram, 2007).

1.3.2 Phonological Features

AAE consists of several phonological, lexical, and grammatical features that are utilized in a systematic form (Foulkes & Docherty, 2006; Wyatt, 1995). During the earliest stages of language acquisition, children acquire a manner of speech from all varieties as they are spoken. For AAE speakers, language acquisition is unique because are not only AAE forms acquired, but also common Mainstream American English forms (Green, 2011; Wyatt, 1995). These use of these common structures with the addition of unique AAE features provides AAE speakers with a large repertoire of language to choose from in different contexts (Giles & Hewstone, 1982). Wyatt (1995) provides caution that while the increased repertoire of language is a benefit, there are challenges for young children who are needing to distinguish the difference between the use of language forms. The mismatch of AAE and Mainstream American English could further result in difficulties or delays (Pearson, Conner, & Jackson, 2013).

Various phonological features of AAE have been observed and defined across the literature. Common phonological features include changes in initial phoneme, liquid phoneme variations, initial consonant blends, medial and final consonants, and deletion of final consonants

and clusters (Craig, Thompson, Washington, & Potter, 2003; Paul, 2007; Pollock, Bailey, Berni, Fletcher, Hinton, Johnson, ... & Weaver, 1998; Purnell, Idsardi, & Baugh, 1999; Shapiro, 1995; Thomas, 2007; Wiig, Secord, & Semel, 2013; Wyatt, 1995). While there is a long list of phonological AAE features, some features may generally occur more often than other features. Craig and colleagues (2003) observed nine phonological features, 24 morphosyntax features, and eight combined phonological and morphosyntactic features used by African American children during a reading task. The nine phonological features observed were a postvocalic consonant reduction, “g” dropping, substitution for voiceless and voiced “th” devoicing final consonants, consonant cluster reduction, consonant cluster movement, syllable deletion, syllable addition, and monophthongization. They found that the phonological features occurred more often in the reading task than morphosyntactic features. Results also revealed that devoicing of final consonants was the only phonological feature that was not observed (Craig et al., 2003). However, in an alternate study with the same participants, devoicing of final consonants did occur during a spontaneous narrative task (Thompson, Craig, & Washington, 2004). Combined, the results from these studies suggest that these AAE features do occur. Although, the impact of the task in an environment can also have additional influences on the production of the feature. A task such as reading may not elicit a greater occurrence of AAE features in comparison to a spontaneous narrative task such as a spontaneous description activity, conversation, and story retell task (Thompson, Craig, & Washington, 2004). While these are different ways to sample speech and language, methods to obtain spontaneous speech samples are still a matter of discussion. Further understanding continues to evolve regarding reduction in causal spontaneous speech (Warner & Tucker, 2011; Ernestus & Warner, 2011), especially in AAE.

Acoustic measures of AAE have been quantified using a Dialect Density Measure (DDM), which is a token-based approach to determining the rate at which a dialect pattern occurs (Kohler, Bahr, Silliman, Bryant, Apel, & Wilkinson, 2007; Oetting & McDonald 2002; Craig & Washington 2006). This token-based approach counts the dialect features within a communication unit (Van Hofwegen & Wolfram, 2010) and is followed by dividing the number of words within a communication unit. This calculation provides the DDM of the speaker. A limitation to this approach is the minimal consideration for the fact that a multisyllabic word may provide the opportunity to observe multiple phonological features that may be typically associated AAE on separate syllables. By this rationale, normalizing the number of words is a less desirable means of determining the rate of dialect usage than normalizing by the number of syllables.

Van Hofwegen and Wolfram (2010) stated that the use of the token-based DDM approach is better when complemented by another a complementary analysis such as a type-based approach. A type-based approach analyzes the different types of AAE features that are represented rather than the total frequency of the AAE features (Van Hofwegen & Wolfram, 2010). However, a type-based approach generally fails to provide a quantitative and graded estimate of the amount of dialect in individual speaker's utterances.

1.3.3 AAE and Speech Production Demands

African American English speakers have unique speech production demands because of social expectation on them in various environments and the impact that the environment may have on their code-switching. Phonetic imitation is influenced by the context (setting, observer and listener, and the task) in which the phonetic skills are learned (Babel, 2012). AAE dialect speakers talk one way at home and are expected to speak another way at school providing

conditions for the need to learn the skill to code-switch (Delpit & Dowdy, 2008). Delpit and Dowdy (2008) discuss the phenomenon that takes place for AAE speakers' where the "home language" and the "public language" meet. This meeting of "home" and "public" language culminates in a decision of an AAE speaker to engage in the production demands of code-switching to the public language utilized in a current environment, or else to maintain their home language by demonstrating accent loyalty (Giles, 1973; Delpit & Dowdy, 2008). While there is value in the freedom and the ability to move from home language to public language (Molinsky, 2007), there is concern that a sense of inferiority of one language form to another may lead to negative bias associations (Baugh, 2000; Delpit & Dowdy, 2008; Lanehart, 2001; Wyatt, 1995).

Prestigious terms such as proper, correct, and decent have historically not been used to describe AAE dialect (Delpit & Dowdy, 2008; Giles, 1973; Wyatt, 1995), because of the stereotypes associated with AAE. Specifically, the home language of AAE speakers has been considered less prestigious than the public language forms that are closely related to mainstream English variations in settings such as school (Delpit & Dowdy, 2008; Giles, 1973). The influence of prestige can have a great effect on changes in behavior, specifically language behavior. The perception of the listener or observer may influence the need for code-switching (Amodio, 2014; DeJarnette, Rivers, & Hyter, 2015; Gaither, Cohen-Goldberg, Gidney, & Maddox, 2015; Holt, 2018; Kendall & Wolfram, 2009; Major et al., 2005), particularly if the speaker has predetermined knowledge or a belief that one form of language or dialect will be preferred in a particular environment (Babel & Russell, 2015; Eberhardt, Dasgupta, & Banasznski, 2003; Foulkes & Docherty, 2006; Mackey, Finn, & Ingham, 1997). Speech-language pathologist must consider the variables of the environment and factors related to code-switching when providing services to AAE speakers. These variables may interact with the fluency expectation and

influence language output and SLP's resulting perceptual judgments (Amodio, 2014; Babel & Russell, 2015; Bosker et al., 2014; Goberman, Hughes, Haydock, 2011).

1.4 Present Study

Previous research has shown that AAE dialect speakers have unique social demands due to dialect and cultural backgrounds, which can impact speech production. However, there is limited research looking at how these production demands may impact fluency for AAE dialect speakers. The purpose of this study is to investigate how the occurrence of AAE dialect features covaried with indices of production difficulty, especially disfluency. To investigate this relationship, AAE phonological features and disfluencies were measured and assessed in a spontaneous story retell task from 19 African American participants. The correlation between the rate of AAE phonological features and the rate of disfluencies was calculated while considering variability among samples of African Americans. By examining subsets of participants based on sex and demographics. Research implications of this study will provide insight into clinical evaluation of production difficulty and sensitivity to linguistic and cultural differences to ensure valid clinical recommendations for assessment and treatment planning.

Chapter 2

METHODOLOGY

2.1 Participants and Corpus

This present study included 19 African American adult participants from the Sociolinguistic Archive and Analysis Project (SLAAP) corps of recordings at North Carolina State University (NC State). SLAAP was established in 2007 and served as a database to provide interviews and transcribed audio files to enable and improve experimental linguistic inquiry (Kendall, 2007). The 19 participant files are a few among thousands of hours of audio files in the corpus (Kendall, 2007).

Inclusion criteria for this study included African American participants with no disclosed speech, language, or hearing impairments. Participants were comprised of 8 females and 11 males; all had an education level of some college. They varied in demographic backgrounds; 14 the participants grew up predominantly in the Southern region of the United States, and 5 participants grew up in alternate regions of the United States and/or overseas (Table 1). Qualification for regional upbringing was defined by reference to the regional dialect map provided by Jones (2015) in Figure 1.

Table 1 <i>Participant Demographics</i>			
<u>Participant</u>	<u>Sex</u>	<u>Demographics</u>	<u>Region of Upbringing</u>
bf04	Female	Born in Alabama. Moved to Germany at five years old.	Germany
bf13	Female	Born in Texas. Grew up in North Carolina.	South
bf17	Female	Born in Pennsylvania. Moved to Japan at two years old. Then moved to North Carolina at five years old. Moved back to Japan.	Japan/US
bf18	Female	Grew up in Massachusetts. Moved to D.C. at 13 years old.	Northeast
bf20	Female	Grew up in Virginia.	South
bf22	Female	Born in North Carolina.	South

Table 1 (cont'd)

Participant Demographics

bf23	Female	Grew up in North Carolina.	South
bf24	Female	Grew up in Germany until about six years old. Moved to Georgia then North Carolina.	Germany
bm06	Male	Grew up in Louisiana. Moved to Iowa at age 6. Moved to North Carolina after elementary school.	South
bm19	Male	Grew up in North Carolina.	South
bm21	Male	Grew up in North Carolina.	South
bm25	Male	Grew up in North Carolina.	South
bm26	Male	Grew up in Indiana.	Midwest
bm27	Male	Grew up in Florida. Moved to North Carolina during childhood.	South
bm28	Male	Grew up in North Carolina.	South
bm29	Male	Grew up in North Carolina.	South
bm30	Male	Grew up in North Carolina.	South
bm31	Male	Grew up in North Carolina.	South
bm32	Male	Grew up in North Carolina.	South
<i>Note.</i> The region of upbringing is dependent on if a participant spent time outside of the Southern region or not. If participants spent more than five years growing up outside of the Southern region, they were not included within the Southern region description.			

2.2 Procedure

The 19 African American participants engaged in a series of speaking tasks as directed by Dr. Erik Thomas and/or Dr. Jeffrey Reaser of NC State. (Note that both researchers are Caucasian. Specifically, participants completed the following speaking tasks in order: 1) give a short self-introduction 2) retell a story 3) read sentences and 4) read a word list. This study involved analysis only of productions during the story retell task. In the story retell task, participants were asked to choose one story from a list of fairy tales such as “The Three Little Pigs,” “Jack and the Bean Stock,” and “Goldilocks and the Three Bears.” Then the participants were asked to retell the story as they could recall it, independently.

2.3 Data Acquisition

The archived sound files were analyzed in a Praat text grid. The story retell task was evaluated for 15 select phonological features of AAE dialect (Table 2). Phonological features

were coded in Praat using point tiers. Features were coded for the acoustic presentation of an AAE phonological feature and coded alternately for the opportunity to utilize the AAE dialect feature. The task was also evaluated for nine select disfluencies (Table 3) and marked only when present on interval tiers.

Four lab members, the author, and three undergraduate assistants conducted the coding of AAE phonological features and disfluency types. The author trained the assistants by providing definitions and explanations of AAE dialect features (Table 2) adapted from Wyatt (1995), Pollock and colleagues (1998), Craig et al. (2003), Shapiro (1995), and Wiig and colleagues (2013). Training also included defining disfluency types and determining their occurrence (Table 3), which were adapted from Bothe (2008), Goberman, Hughes, and Haydock (2011), Reardon-Reeves and Yaruss (2013), and Guitar (2013). Each participant Praat textgrid file was reviewed for coding accuracy by the author. Figure 1 displays an example of the coding in Praat. Each sound file was transcribed orthographically in a separate document, and syllable counts were taken per participants' story retell. Individual phonological AAE features were tallied for the AAE variant and the non-AAE variant. The total number of opportunities (i.e., phonological contexts where an AAE variant could be observed) were tallied overall, each of which was coded as demonstrating either an AAE dialect feature or a non-AAE dialect feature. Likewise, individual disfluencies were tallied and then totaled per participant. Across all $N = 19$ participants the speech from the story retell task lasted a mean of 94.3 seconds with a minimum of 46 seconds and a maximum of 202 seconds for the completion of the task.

Table 2 Coded AAE Phonological Features			
<u>AAE Phonological Features</u>	<u>Examples</u>	<u>AAE Variant Code(s)</u>	<u>Non-AAE Variant Code(s)</u>
<i>Final Consonant Cluster Reduction</i> : omission of the second consonant of the cluster in the final position; both consonants must share voicing	/toʊld/ (told) → /toʊl/ /pɪgz/ (pigs) → /pɪg/ /fɜrst/ (first) → /fɜrs/	CR-0	CR-1
<i>Final Consonant Deletion</i> : the deletion of a single final consonant in syllable final position (nasality is maintained on preceding vowel when nasals are deleted)	/dʒæk/ (Jack) → /dʒæ/ /lɪtəl/ (little) → /lɪəl/ (omission of coda /t/) mæn (man) → mæ (nasalized /æ/)	CD-0-con	CD-1-con
<i>Devoicing of Final Obstruent</i> : devoicing of final obstruent in syllable final position (length of preceding of vowel maintained)	/bæd/ (bad) → /bæd/ (devoiced /d/, not overt /t/) /wʌz/ (was) → /wʌ/ /ʌv/ (of) → /ʌ/	DV-0-con	DV-1-con
<i>Stopping of Interdental Fricatives</i> : interdental fricatives replaced with stops; voiceless interdental fricative /θ/ replaced by /t/ when near a nasal	/ðɪs/ (this) → /dɪs/ /mʌðər/ (mother) → /mʌdər/ /tɛnθ/ (tenth) → /tɛnt/ /nʌθɪŋ/ nothing → /nʌθɪŋ/ or /nʌθɪn/ (near a nasal)	dh=>d (for /ð/ → /d/) th=>t (for /θ/ → /d/)	dh=>dh (for unchanged / ð /) th=>th (for unchanged /θ/)
<i>L-lessness</i> : omission of /l/ after a vowel; substitution of /l/ with a mid or back vowel “uh” following a vowel or glide	/fɪl/ (feel) → /fio/ /lɪtəl/ (little) → /lɪtə/ /rɪkəl/ (recall) → /rɪkə/	l=>V	l=>l
<i>R-lessness</i> : omission or substitution /ə/ for /r/ in the medial or final position; omission or prolongation of /r/ with a proceeding vowel	/moə/ (more) → /moə/ /ðɛr/ (there) → /ðɛə/ /stɔri/ (story) → / stɔi/	r=>V	r=>r
<i>R-Blend Reduction</i> : the omission of /r/ in initial consonant blend with /θ, p, b, k, g/	/θru/ (through) → /θu/ /brɪk/ (brick) → /bɪk/ /græs/ (grass) → /gæs/	RB-0	RB-1

Table 2 (cont'd)

Coded AAE Phonological Features

<i>Nasalization of Vowels:</i> nasalization of vowels preceding deleted final syllable nasal consonants; final nasal reliance on preceding nasal vowel	/mæn/ (man) → mæ (nasalized /æ/) /wantəd/ (wanted) → /watəd/	n=>V	n=>n
<i>“g” Dropping:</i> the absence of final “g” in words ending in -ing	/rʌnɪŋ/ (running) → /rʌnim/ /biŋ/ (being) → /bim/	NG-0	NG-1
<i>Deletion of unstressed syllable:</i> deletion of unstressed syllables in initial and medial positions	/əbaʊt/ (about) → /baʊt/ /miðiəm/ (medium) → /miəm/ /gʌvərmənt/ (government) → /gʌvmənt/	US-0	US-1
<i>Partial Cluster Substitution:</i> substitution of /k/ for /t/ in initial str-cluster	/strɪt/ (street) → /skrit/ /strɔ/ (straw) → /skrɔ/	CS-0	CS-1
<i>Distant Assimilation:</i> the palatalization of the initial sound in the cluster /str/ in any position; this feature is not exclusive to AAE or another dialect or region	/strɔ/ (straw) → /skrɔ/ /rɪstrɪktɪv/ (restrictive) → /rɪʃtrɪktɪv/ /ɪndʌstri/ (industry) → /ɪndʌʃtri/	DA-0	DA-1
<i>Haplology:</i> deletion of reduplicated syllable	/mɪsɪ'sɪpi/ (Mississippi) → /mɪsɪpi/ /prəbəbli/ (probably) → /prəbli/	H-0	H-1
<i>Metathesis:</i> switch in position within a word of /s/	/æsk/ (ask) → /æks/ /græsp/ (grasp) → /græps/	M-0	M-1
<i>-es Plural Marker:</i> use of -es plural marker with words ending in -sk, -st, -sp clusters	/dɛsk/ (desk) → /dɛsəz/ /tɛst/ (tests) → /tɛsəz/	PM-0	PM-1
<i>Note.</i> The use of “con” in the code indicates the need for the phonemic consonant coded. The use of “V” in the code indicates the use of the vowel variant instead of the original phoneme. This AAE Phonological Features list was adapted from Wyatt (1995), Pollock and colleagues (1998), Craig et al. (2003), Shapiro (1995), and Wiig and colleagues (2013).			

Table 3 <i>Coded Disfluencies</i>		
<u>Disfluency Type</u>	<u>Description</u>	<u>Disfluency Code</u>
Part word repetition	Repetition of speech sound/sounds less than a whole word	pt word rep
Word repetition	Repetition of speech sound/sounds in one 1-syllable word or multisyllabic word	word rep
Phrase repetition	Repetition of speech sound/sounds in more than one word	phrase rep
Prolongation	Prolonged phonated or nonphonated sound	prolong
Pause	Prolonged silence within an utterance occurring for a minimum of 1 second within utterances	pause
Interjection	Any sound or sounds such as “uh,” “ah,” laughing	interj-word
Revision	Utterance is interrupted then revised and completed	revis
Incomplete phrase	Utterance is interrupted and abandoned	incomp phr
<i>Note.</i> The use of “word” in the interjection code is the indication of the word that was used during the interjection. This disfluency type list was adapted from Bothe (2008), Goberman, Hughes, & Haydock (2011), Reardon-Reeves & Yaruss (2013), and Guitar (2013).		

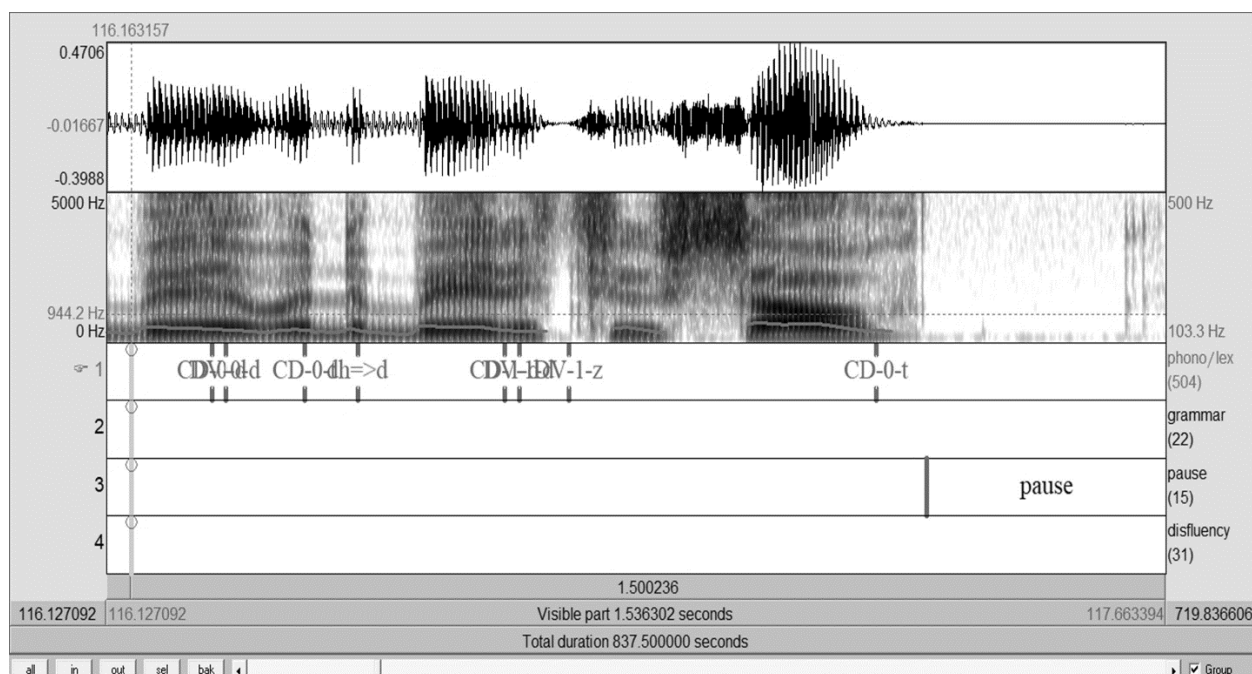


Figure 2. Sample sound file with AAE feature and disfluency type coding for the following utterances “...bed, but the bed is too soft.”

2.4 Statistical Analysis

Statistical analyses were conducted to evaluate the relationship between AAE dialect features and disfluency production across all participants, between males and females, and for participants from the Southern region. Bivariate correlation analyses and univariate Analyses of Variance (ANOVA) were conducted in SPSS at an alpha level of $\alpha = 0.05$. Correlational analyses were completed using the ‘regression’ function within Microsoft Excel with the Analysis ToolPAK add-in option.

An inter-rater reliability analysis was conducted by selecting four participants’ files which all coders coded in common. Coders determined the use of select AAE phonological features per given word by indicating that the AAE variant was used or not. A moderate Kappa agreement resulted (0.59, 79%).

Chapter 3

RESULTS

3.1 Number of Tokens

3.1.1 AAE Feature and Opportunity Tokens

A token-based approach was used to quantify the amount of dialect realization for each participant. This entailed counting the number of AAE phonological feature opportunities. Recall that AAE phonological feature opportunities were defined as phonological contexts where an AAE feature could occur. Therefore, some words had more than one AAE phonological feature opportunity. Each opportunity was coded for whether the AAE variant or the non-AAE variant was demonstrated. This token-based approach was selected because it permitted a nuanced, graded, quantitative analysis of how frequently each participant was using specific AAE features. For each observed phonological feature opportunity of the types listed in Table 2, the total number of tokens counted was determined by observing the total number of AAE features and the total number of opportunities to use the feature.

Each of the select phonological feature was typed and coded to determine the total number of opportunity tokens and AAE tokens per feature. Table 3 displays the number of AAE feature token opportunities across all $N = 19$ participants' retellings of the storybook.

Table 4 <i>Number of AAE Feature Tokens Across All N = 19 Participants</i>									
	<u>Total N AAE</u> <u>Features</u>	<u>Total N</u> <u>Opportunities</u>	<u>Mean</u>	<u>SD</u>	<u>Median</u>	<u>1st</u> <u>Quartile</u>	<u>3rd</u> <u>Quartile</u>	<u>Min</u>	<u>Max</u>
Final Consonant Cluster Reduction (including “and”)	561	807	42.5	30	31	26	48	15	153
Final Consonant Cluster Reduction (excluding “and”)	232	256	13.5	10.5	11	7	17.5	0	48
Final Consonant Deletion	672	2614	137.6	61	158	88	178	29	245
Devoicing of Final Obstruent	88	565	29.7	20	26	16	46	0	68
Stopping of Interdental Fricatives	255	856	45.1	18	40	31	59	17	77
L-lessness	143	399	21	14	15	11	28	5	52
R-lessness	70	482	25.4	14	25	16	34	4	54
R-Blend Reduction	8	97	5.1	2.3	5	3	6.5	2	11
Nasalization of Vowels	172	969	51	21	46	38	70	21	84
“g” Dropping	56	75	3.9	3.7	2	0.5	6	0	11
Deletion of Unstressed Syllables	33	214	11.3	7.2	10	6.5	15	3	27
Partial Cluster Substitution	0	31	1.6	1.57	1	0.5	2	0	6
Distant Assimilation	10	33	1.7	1.7	2	0.5	2	0	6
Haplology	1	1	0.1	0.2	0	0	0	0	1
Metathesis	0	0	0	0	0	0	0	0	0
-es Plural Marker	0	0	0	0	0	0	0	0	0
Grand Total	2301	7143							

3.1.2 Disfluency Types Tokens

A token-based approach was used to count disfluencies within the task. The total number of disfluencies were counted in addition to the divide between disfluency type. Table 3 displays the count of disfluency tokens across all N = 19 participants.

Table 5 <i>Number of Disfluency Tokens Across All N = 19 Participants</i>								
	<u>Total</u>	<u>Mean</u>	<u>SD</u>	<u>Median</u>	<u>1st Quartile</u>	<u>3rd Quartile</u>	<u>Min</u>	<u>Max</u>
Part-Word Repetition	4	0.2	0.54	0	0	0	0	2
Word Repetition	13	0.7	0.82	1	0	1	0	3
Phrase Repetition	14	0.7	0.99	0	0	1	0	3
Prolongation	1	0.1	0.23	0	0	0	0	1
Pause	102	5.4	6	3	1.5	6.5	0	22
Interjection	66	3.5	4.01	2	1	4	0	14
Revision	35	1.8	2.09	1	0.5	2	0	8
Incomplete Phrase	43	2.3	2.16	2	1	3	0	10
Grand Total	346							

3.2 Determining Overall AAE Feature Usage Percentage

This project employed a rigorous approach to quantifying the amount of AAE usage by all participants in the study. To determine the usefulness of select phonological features, features with a mean less than ten were excluded (-es Plural Marker, R-Blend Reduction, “g” Dropping, Partial Cluster Substitution, Distant Assimilation, Haplology, and Metathesis). These excluded features did not provide enough data to develop an accurate percentage of dialect feature use (Table 4). Table 4 displays the number of AAE features presented per participants and the opportunities each participant had to use the AAE dialect features. The number of opportunities are the chance that were presented for a select AAE feature to be used.

Table 6

Variant (*N* AAE) Feature Usage and Opportunities (OP) for All *N* = 19 Participants

	FCCR-in “and”		FCD		DVO		SIF		L-I		R-I		NV		DUS		FCCR-ex “and”	
ID	<u>N</u> <u>AA</u> <u>E</u>	<u>OP</u>	<u>N</u> <u>AAE</u>	<u>OP</u>	<u>N</u> <u>AAE</u>	<u>OP</u>	<u>N</u> <u>AAE</u>	<u>OP</u>	<u>N</u> <u>AAE</u>	<u>OP</u>	<u>N</u> <u>AAE</u>	<u>OP</u>	<u>N</u> <u>AAE</u>	<u>OP</u>	<u>N</u> <u>AAE</u>	<u>OP</u>	<u>N</u> <u>AAE</u>	<u>OP</u>
bf04	7	24	4	56	1	10	3	26	3	10	0	16	2	22	0	4	4	17
bf13	14	30	14	117	1	24	4	35	0	19	0	17	1	37	0	7	5	11
bf17	20	30	14	108	0	0	1	29	1	11	0	16	2	39	0	21	8	9
bf18	11	15	16	50	2	3	10	17	1	5	0	4	8	22	0	7	4	5
bf20	41	44	56	173	10	51	5	38	10	29	1	22	22	60	3	10	17	17
bf22	38	64	31	192	10	42	8	51	9	46	2	32	10	61	2	18	7	7
bf23	35	40	19	158	6	50	3	47	4	13	0	36	22	71	0	10	18	18
bf24	16	25	30	125	1	26	9	24	5	11	0	25	5	41	1	8	8	8
bm0 6	36	52	25	196	1	50	24	70	3	27	1	27	6	78	1	6	7	9
bm1 9	17	19	32	80	5	5	14	25	1	6	6	8	6	46	0	9	0	0
bm2 1	18	26	49	172	17	68	30	55	2	9	20	50	9	41	1	16	5	5
bm2 5	47	49	61	218	3	35	3	61	26	52	1	24	19	68	3	14	21	21
bm2 6	22	31	74	245	7	51	18	67	22	43	7	28	10	78	1	3	5	6

Table 6 (cont'd)

Variant AAE Feature Usage and Opportunities for All N = 19 Participants

bm2 7	36	40	26	173	4	41	1	40	2	22	0	38	9	41	4	24	23	23
bm2 8	51	61	83	182	4	21	33	65	27	39	3	31	10	84	3	14	20	20
bm2 9	70	153	27	29	10	33	47	57	6	16	6	35	2	51	7	27	48	48
bm3 0	20	31	26	96	4	26	10	33	1	15	1	12	7	21	2	3	7	7
bm3 1	21	26	32	79	1	5	25	39	13	14	2	7	9	27	2	3	11	11
bm3 2	41	47	53	165	1	24	7	77	7	12	20	54	13	81	3	10	14	14
<i>Note.</i> AAE Feature Key: FCCR-in “and” = Final Consonant Cluster Reduction (include “and”); FCD = Final Consonant Deletion; DVO = Devoicing of Final Obstruent; SIF = Stopping of Interdental Fricative; L-l = L-lessness; R-l = R-lessness; NV = Nasalization of Vowels; DUS = Deletion of Unstressed Syllables; FCCR-ex “and” = Final Cluster Reduction (exclude “and”).																		

Given the rigorous nature of this project, we also considered whether some AAE features were more discriminative of AAE dialect usage than others. To determine the consistency of AAE feature use across the different phonological features, a bivariate correlation analysis was conducted, in which AAE feature percentages were correlated for all pairwise combinations. The extent to which different phonological features may be prone to revealing variation on the dimension of AAE in comparison to mainstream dialect realization has not yet been investigated. For example, obtaining a significant, positive correlation between the percentage of AAE-variant realization for final consonant deletion and for stopping of interdental fricatives across participants would suggest that a participant who showed a high rate of AAE-variant usage for final consonant deletion also showed a high rate of AAE-variant usage for stopping of interdental fricatives in a bivariate correlation. Furthermore, this positive correlation would support the validity of both features being used in a quantitative analysis of AAE dialect usage. By contrast, any feature that did not show correlated variant use across participants with at least one other phonological feature was expected to provide a less useful or sensitive index of dialect variation for this group of participants and potentially add noise and variability to the analysis. Several methods were considered to conduct the bivariate correlation analysis (Appendix D), however, the method which to the average across all correlated variables at $\alpha = .05$ was found to be the most comprehensive to determine significance.

Table 5 displays the bivariate correlations of rates of AAE phonological features for all pairwise combinations of the eight phonological features. Note that the rate of FCCR was calculated in two different ways: both with and without tokens of the word “and.” Given the frequency of this lexical item, it was hypothesized that this word would show more reduction overall and therefore that deletion of /d/ in the final consonant might not be reflective of AAE

dialect usage for this word. Both means of calculating FCCR were entered into the bivariate correlation. Since these drew on an overlapping set of data, bivariate correlations between these variables were trivially significantly correlated and are therefore left out of the subsequent summary tables. Further, while both methods of calculating FCCR showed similar patterns of correlation with other variables, only FCCR excluding “and” was chosen for the remainder of the analysis, due to a greater number of pairwise correlations with other variables at $\alpha = 0.10$ than the alternative method.

A summary of features which showed a bivariate correlation with any other feature at a relaxed threshold of $\alpha = 0.10$ is presented in Table 6. Table 7 condenses these data further and summarizes the six phonological features which showed a bivariate correlation with at least one other phonological feature at the more stringent level of $\alpha = 0.05$. These features were final consonant deletion, devoicing of final obstruent, stopping of interdental fricatives, r-lessness, l-lessness, and deletion of unstressed syllables.

Table 7 Bivariate Correlations for All N = 19 Participants										
		FCCR-in “and”	FCD	DVO	SIF	L-l	R-l	NV	DUS	FCCR-ex “and”
FCCR-in “and”	<i>r</i>	1	0.016	0.183	-0.131	0.296	0.268	.556*	0.189	.693**
	<i>p-value</i>		0.947	0.453	0.594	0.218	0.268	0.013	0.439	0.001
	<i>N</i>	19	19	19	19	19	19	19	19	18
FCD	<i>r</i>	0.016	1	0.361	.753**	0.402	0.369	-0.053	0.332	0.396
	<i>p-value</i>	0.947		0.128	0.000	0.088	0.120	0.830	0.166	0.104
	<i>N</i>	19	19	19	19	19	19	19	19	18
DVO	<i>r</i>	0.183	0.361	1	.553*	-0.104	.621**	0.184	-0.196	0.110
	<i>p-value</i>	0.453	0.128		0.014	0.671	0.005	0.450	0.421	0.663
	<i>N</i>	19	19	19	19	19	19	19	19	18
SIF	<i>r</i>	-0.131	.753**	.553*	1	0.294	0.441	-0.008	0.217	0.208
	<i>p-value</i>	0.594	0.000	0.014		0.222	0.059	0.975	0.372	0.408
	<i>N</i>	19	19	19	19	19	19	19	19	18
L-l	<i>r</i>	0.296	0.402	-0.104	0.294	1	0.203	0.197	.487*	0.310
	<i>p-value</i>	0.218	0.088	0.671	0.222		0.405	0.418	0.034	0.211
	<i>N</i>	19	19	19	19	19	19	19	19	18
R-l	<i>r</i>	0.268	0.369	.621**	0.441	0.203	1	-0.056	0.105	0.317
	<i>p-value</i>	0.268	0.120	0.005	0.059	0.405		0.820	0.667	0.199

Table 7 (cont'd)
Bivariate Correlations for All N = 19 Participants

	<i>N</i>	19	19	19	19	19	19	19	19	18
NV	<i>r</i>	.556*	-0.053	0.184	-0.008	0.197	-0.056	1	0.405	0.418
	<i>p-value</i>	0.013	0.830	0.450	0.975	0.418	0.820		0.086	0.084
	<i>N</i>	19	19	19	19	19	19	19	19	18
DUS	<i>r</i>	0.189	0.332	-0.196	0.217	.487*	0.105	0.405	1	0.411
	<i>p-value</i>	0.439	0.166	0.421	0.372	0.034	0.667	0.086		0.090
	<i>N</i>	19	19	19	19	19	19	19	19	18
FCCR-ex “and”	<i>r</i>	.693**	0.396	0.110	0.208	0.310	0.317	0.418	0.411	1
	<i>p-value</i>	0.001	0.104	0.663	0.408	0.211	0.199	0.084	0.090	
	<i>N</i>	18	18	18	18	18	18	18	18	18
<i>Note.</i> AAE Feature Key: FCCR-in “and” = Final Consonant Cluster Reduction (include “and”); FCD = Final Consonant Deletion; DVO = Devoicing of Final Obstruent; SIF = Stopping of Interdental Fricative; L-l = L-lessness; R-l = R-lessness; NV = Nasalization of Vowels; DUS = Deletion of Unstressed Syllables; FCCR-ex “and” = Final Cluster Reduction (exclude “and”). Gray scale values are duplicated values, which have been separated by the dashed line. Values within the boxes indicate bivariate correlations which were significant at $\alpha \leq 0.05$. *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).										

Table 8

Bivariate Correlation Summary for All N = 19 Participants

<u>Correlated Variable #1</u>	<u>Correlated Variable #2</u>	<u>r</u>	<u>p</u>
FCD	SIF	0.753	0.0001***
DVO	R-l	0.621	0.005**
DVO	SIF	0.553	0.014*
L-l	DUS	0.487	0.034*
SIF	R-l	0.441	0.059
NV	FCCR-ex “and”	0.418	0.084
DUS	FCCR-ex “and”	0.411	0.09
NV	DUS	0.405	0.086
FCD	L-l	0.402	0.088

Note. AAE Feature Key: FCCR-in “and” = Final Consonant Cluster Reduction (include “and”); FCD = Final Consonant Deletion; DVO = Devoicing of Final Obstruent; SIF = Stopping of Interdental Fricative; L-l = L-lessness; R-l = R-lessness; NV = Nasalization of Vowels; DUS = Deletion of Unstressed Syllables; FCCR-ex “and” = Final Cluster Reduction (exclude “and”).

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table 9

Lowest Alpha Level Threshold for All N = 19 Participants for Each Phonological Variable

<u>Correlated Variables</u>	<u>Lowest Alpha Level for Correlation</u>
DUS	0.05
DVO	0.05
FCCR-ex “and”	0.1
FCD	0.05
L-l	0.05
NV	0.1
R-l	0.05
SIF	0.05

Note. AAE Feature Key: FCCR-in “and” = Final Consonant Cluster Reduction (include “and”); FCD = Final Consonant Deletion; DVO = Devoicing of Final Obstruent; SIF = Stopping of Interdental Fricative; L-l = L-lessness; R-l = R-lessness; NV = Nasalization of Vowels; DUS = Deletion of Unstressed Syllables; FCCR-ex “and” = Final Cluster Reduction (exclude “and”).

Additionally, the subset of N = 14 participants who grew up in the South was entered into a separate bivariate correlation. That analysis is presented in Appendix A.

3.3 Correlations between AAE variant usage rate and Disfluency rate

To provide a single summary measure for each participant of overall AAE feature usage, the percentage of AAE phonological features was determined from the six qualifying phonological features from the bivariate correlation which showed at least one significant correlation with another feature at $\alpha = 0.05$. The overall percentage of AAE variant feature usage (% overall AAE variant usage) for each participant was then calculated as the average of the individual percentages of AAE variant usages for each of the six qualifying AAE phonological features, using the following formula:

$$\% \text{ overall AAE variant usage} = [\% \text{ DUS} + \% \text{ DVO} + \% \text{ FCD} + \% \text{ L-I} + \% \text{ R-I} + \% \text{ SIF}] / 6$$

The percentage of disfluencies for each participant was determined by the number of occurrences of disfluency for that participant, divided by the number of syllables spoken by the participant. The formula is given as follows:

$$\% \text{ disfluency} = (\text{sum of all disfluencies from Table 3}) / \text{total \# syllables}$$

Table 8 displays for each of the N = 19 participants the total number of AAE feature opportunities and the percent of AAE phonological feature use, as well as the number of disfluencies and the total number of syllables from the task per participant.

Table 10 <i>Percent AAE Features and Disfluencies</i>						
<u>Participant</u>	<u>AAE (N)</u>	<u>Opportunities (N)</u>	<u>% AAE Use</u>	<u>Disfluency (N)</u>	<u>Syllables (N)</u>	<u>% Disfluencies</u>
bf04	11	122	9%	15	121	12%
bf13	19	219	5%	8	218	4%
bf17	16	185	4%	16	242	7%
bf18	29	86	29%	6	118	5%
bf20	85	323	22%	13	342	4%
bf22	62	381	15%	4	424	1%
bf23	32	314	10%	8	325	2%
bf24	46	219	20%	5	237	2%
bm06	55	376	13%	14	390	4%
bm19	58	133	48%	11	182	6%
bm21	119	370	29%	16	299	5%
bm25	97	404	19%	11	463	2%
bm26	129	437	30%	42	489	9%
bm27	37	338	9%	5	380	1%
bm28	153	352	36%	19	468	4%
bm29	103	197	48%	25	310	8%
bm30	44	185	26%	7	196	4%
bm31	75	147	52%	9	161	6%
bm32	91	342	28%	44	413	11%

3.3.1 All participants

The first stage of analysis was to determine if there was a relationship between % overall AAE variant usage and % disfluency when all $N = 19$ participants were included. Therefore, a correlation analysis was run including participants to determine the extent of the relationship between AAE features and disfluencies. Results are shown in Figure 3. A regression analysis showed revealed no significant relationship between the variables, $r = 0.25$, $F(1,18) = 1.138$, $p = 0.30$.

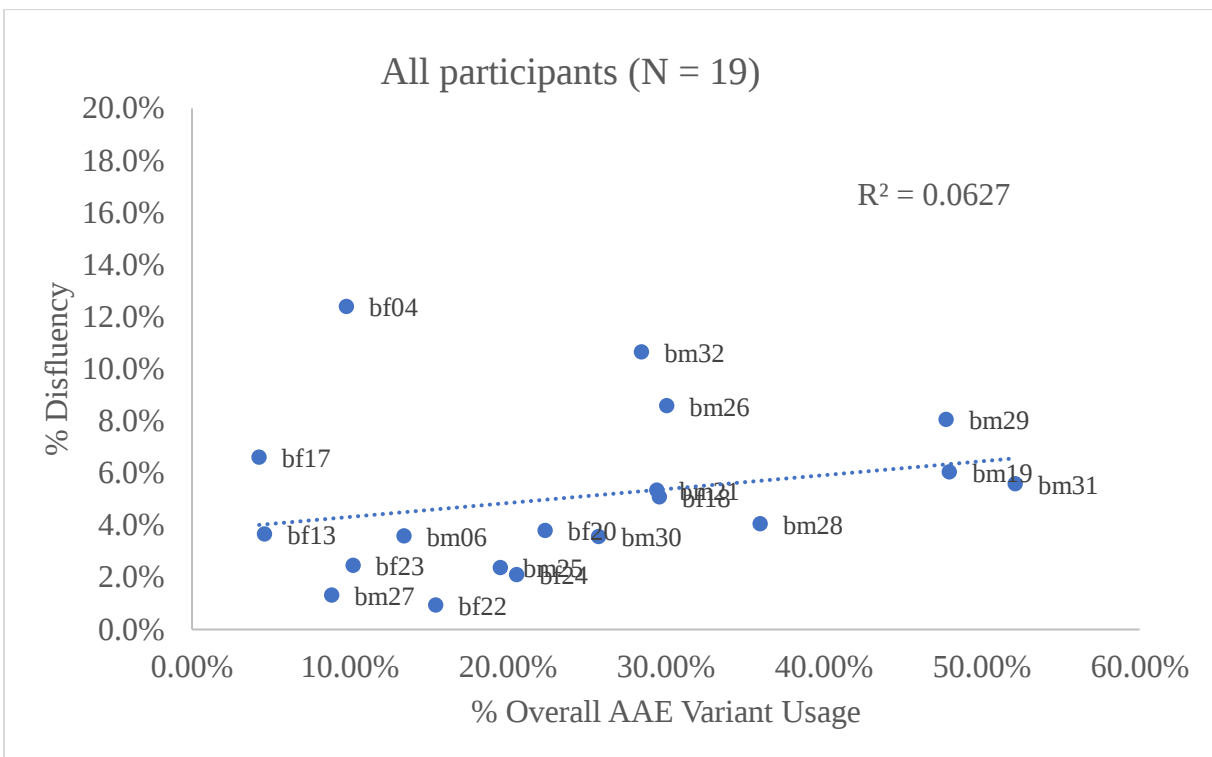


Figure 3. Correlation between AAE features and disfluencies across all participants (N = 19)

Next, the data from these participants were divided according to gender to determine if there were different patterns of % overall AAE feature usage and/or disfluency for the females ($n = 8$) and the males ($n = 11$). A one-way ANOVA test with the variable Gender (with levels of Female vs. Male) on the dependent variable of % overall AAE feature usage showed a statistically significant difference between female ($M_{\text{female}} = 0.15$, $SD = 0.09$) and male ($M_{\text{male}} =$

0.24 (SD = .15)) participants' % overall AAE feature use [$F(1,17) = 8.059, p = .011$, partial $\epsilon^2 = 0.322$]. An additional one-way ANOVA test with the variable Gender (with levels of Female vs. Male) on the dependent variable of % disfluency revealed ANOVA revealed no statistically significance between female ($M_{\text{female}} = 0.05$, SD = 0.04) and male ($M_{\text{male}} = 0.05$, SD = .03) participants' % disfluency usage [$F(1,17) = .0278, p = .605$, partial $\epsilon^2 = .016$].

Finally, separate correlations and regressions were run for female and male participants examining the relationship between % overall AAE feature usage and % disfluency. The female participants showed $r = 0.34$; however, regression analysis showed that this relationship was not significant, $F(1,7) = 0.790, p = .41$. The male participants showed $r = 0.63$; regression analysis showed that this relationship was significant, $F(1,10) = 5.96, p = 0.04$.

3.3.2 Participants from the South

An individual's region of upbringing can have a profound impact on their dialect. Therefore, subsequent analyses focused on the $N = 14$ participants who were raised predominantly in the Southern region, excluding five of the participants who grew up in alternate regions of the United States and/or overseas. Qualification for regional upbringing is defined by the regional dialect map provided by Jones (2015) in Figure 1. A separate bivariate correlation analysis on the rate of AAE variant usage to check for consistency with phonological feature usage. A similar pattern was found in comparison to all participants (see Appendix A, B, and C).

Using the formula for % overall AAE feature usage and % disfluency defined above, the correlation between these measures for the $N = 14$ participants from the South was determined. A regression analysis showed a significant positive relationship between the variables, $r = 0.62$, $F(1,13) = 7.377, p = 0.019$.

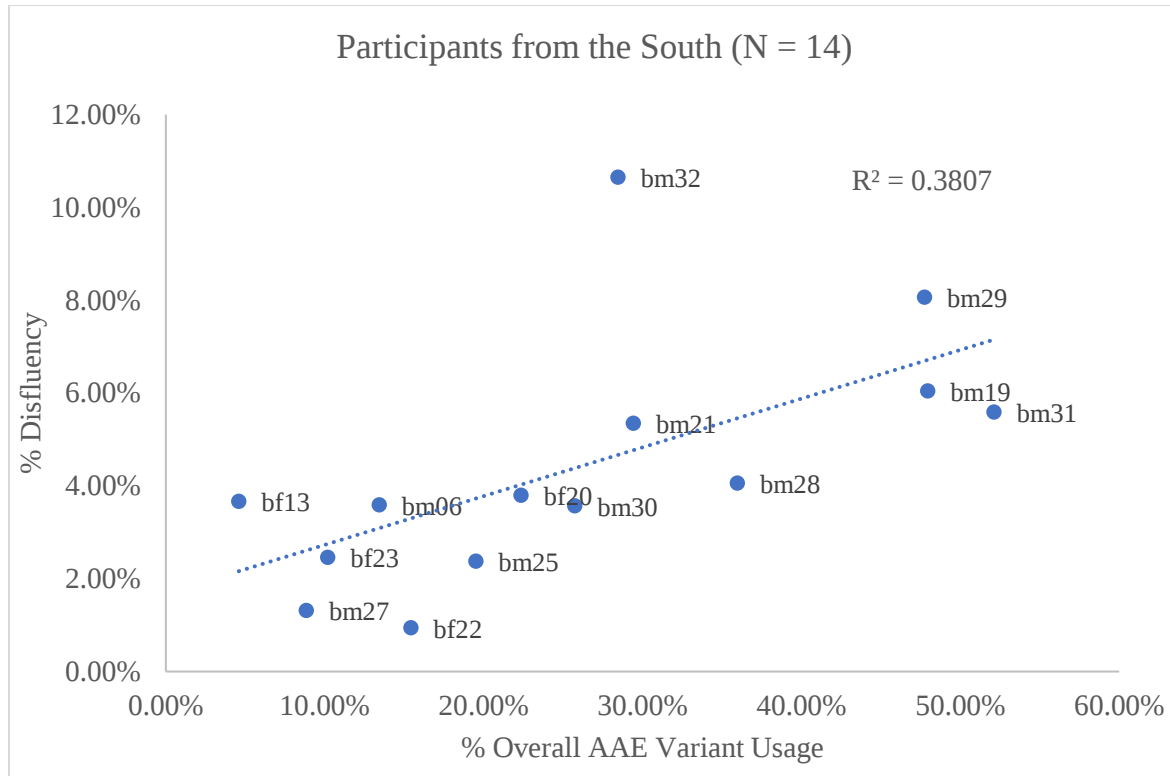


Figure 4. Correlation between AAE features and disfluencies across participants from the South (N = 14).

Next, the data from these participants were divided according to gender to determine if there were different patterns of % overall AAE feature usage and/or disfluency for the male ($n = 10$) and female ($n = 4$) participants from the Southern region. A one-way ANOVA test with the variable Gender (with levels of Female vs. Male) on the dependent variable of % overall AAE feature usage showed a statistically significant difference between female ($M_{\text{female}} = 0.13$ ($SD = 0.08$)) and male ($M_{\text{male}} = 0.31$ ($SD = .15$)) participants [$F(1,12) = 4.970$, $p = .046$, partial $\epsilon^2 = .293$]. An additional one-way ANOVA test with the variable Gender (with levels of Female vs. Male) on the dependent variable of % disfluency revealed ANOVA revealed no statistically significance between female ($M_{\text{female}} = 0.03$, $SD = 0.01$) and male ($M_{\text{male}} = 0.05$, $SD = .03$) participants [$F(1,12) = 2.564$, $p = .135$, partial $\epsilon^2 = .176$].

Chapter 4

DISCUSSION

This present study evaluated the extent of the relationship between the use of AAE dialect features and the presentation of speech disfluencies during a story retell in a laboratory. Results revealed a positive correlation between AAE features and disfluencies for participants from the South, indicating that participants who showed more AAE features also showed more disfluencies. When examining both sex and region of upbringing results reveal a significant difference in the AAE features used, but no difference in a number of disfluencies presented, with significance particularly for males from the South. Overall, from this study, we found that the males in this study, specifically who grew up in the Southern region, showed a significant positive correlation between AAE features and disfluency occurrences.

4.1 AAE and Disfluency

To understand the relationship between AAE features and disfluencies better, we need to understand how the variables of the environment, linguistic production, and the expectation of fluency may have impacted this relationship due to the Communication Accommodation Theory. It is important again to note that instruction to participants was conducted by two Caucasian males, while all 19 participants were African American students. The researchers communicated with participants about the task instructions. Participants completed the task within a sound booth in a research laboratory on the university campus. Under these conditions, it would not be expected that participants would use their most natural form of speech because of the influence of this formal setting and the observers and listeners (Childs, 2019). It's also important to note, that these participants were already at school and they were not with matched peers during the task, the influence to code-switch or use their home language would not serve as great of a

purpose as their school or public language would have for the story retell task (Amodio, 2014; Ainsworth & Foster, 2017; Delpit & Dowdy, 2008; Eberhardt, Dasgupta, & Banasznski, 2003; Giles, Taylor, & Bourhis, 1973). The setting of this task could have impacted linguistic production because of the narration of the task was more of a “school” task than a social task, thus implying the expectation of the need to adapt to their school voice (Delpit & Dowdy, 2008). However, the spontaneity of the story retell task may have allowed for more fluid AAE productions during the task, therefore suggesting that the environment could have an impact on the linguistic production results, parallel to the impact of motivations for Communication Accommodation Theory (Manstead, 1991).

This thesis employed a rigorous methodology to investigate the relationship between AAE feature presentation and disfluencies. Notably, steps were taken to determine the validity of the AAE features themselves and how their rates of usage related to one another across participants. The rates of AAE variant usage relied strictly on phonological features; few morphosyntactic indices of AAE usage were evidenced by participants, rendering these not as useful to quantify nonstandard dialect usage. For example, within the story retell task, some participants told the story in the past tense, and some participants told the story in the present tense. The difference in tense provided different opportunities to use specific AAE features. A story presented in the present tense will provide more opportunities to use the “g” Dropping than a past tense story because of the more frequent use of words with “-ing” endings. The authenticity of AAE feature production is difficult because the elicitation of natural forms of speech during a spontaneous speech task is unpredictable in determining the AAE feature and opportunities to use. The variation among participants based on sex and region of upbringing supports the research regarding the variation in AAE dialect usage. Among the 19 participants in

this study, the use of AAE features ranged from 5% to 52%. While considering the additional variables that may influence these results, this variation supports the need for future research to understand the trends in AAE dialect variability.

The insignificant, positive correlation between AAE feature production and disfluencies in the participants of this study. It is important to mention that the only AAE features, specifically phonological features that excluded vowels, were accounted for in this study. If other lexical, grammatical, and phonological features that included vowels were included in this study results may have presented differently. Additionally, the acoustic criteria used for this study may not have provided the most accurate identification of disfluency from these participants. This notation is supported by current literature, where an increase of disfluencies from AAE dialect features in comparison to other dialect speakers have not been shown (Olsen, Steelman, Buffalo, & Montague, 1999; Proctor, Yairi, Duff, & Zhang, 2008; Robinson & Crowe, 1998).

The results of the significance driven primarily by the male participants, we must consider the impact of the environment, linguistic production, and the expectation of fluency between males and females. While the researchers providing instruction to the participants were male, the male participants had a relationship of significantly greater correlation between AAE features and disfluencies. These results could suggest that the impact of these variables may have more influence on males than they do females. Males use of more AAE features than females is parallel with current research (Labov, 1990), however, given the small sample size, additional data is warranted to determine the impact these variables may have on males and females separately. These variables may have also impacted the significant relationship found between AAE features and disfluencies across the 14 participants from the Southern region. However, this subset of data was driven primarily by males for the South who demonstrated a significant

relationship between AAE features and disfluencies on their own. Additional research to discover the impact of regional dialect and upbringing may provide a better understanding of the impact of these variables on AAE variability. Additional research is also warranted to interpret the impact of disfluency and AAE, whether disfluency is a result of a breakdown in speech or a feature of AAE dialect in males and/or those from Southern regions.

4.2 Clinical Implications and Future Directions

The results of this study also highlight the importance of not only cultural competence but the variables of influence that could impact the assessment of language capacity or abilities. An SLP's familiarity with AAE phonological features is critical for accurate and appropriate clinical practice as well as, the consideration of other variables (i.e., environment, linguistic production, the expectation of fluency) that may impact linguistic production. The elicitation of natural speech production is important for identification because natural speech samples provide better identification of linguistic abilities. Specifically, AAE speakers have unique production demands such as the environment, linguistic production and code-switching, and the expectation of fluency must be considered during speech and language evaluations because of their impact on an SLP's judgment of linguistic ability.

This study is not without limitations. The lab environment with unmatched researchers may have limited true linguistic ability and variations for the participants. Participants were also limited to specific laboratory-based testing scenario, where additional clinical opportunities to observe speakers in alternate environments would provide a more accurate assessment of linguistic production of AAE. A story retell task in the lab environment may not provide the best opportunities for naturalistic speech, particularly if the stories which are retold are unfamiliar to the speaker. Additionally, the perception of speech fluency may change along with the changes

in the environment. Future research that would observe speech production both acoustically and perceptually in alternate environments could provide a better understanding of the relationship between AAE dialect features and fluency production.

APPENDICES

APPENDIX A Table A1 Bivariate Correlations of Southern Participants

Table A1 Bivariate Correlations of Southern $N = 19$ Participants										
		FCCR-in “and”	FCD	DVO	SIF	L-l	R-l	NV	DUS	FCCR-ex “and”
FCCR-in “and”	r	1	-0.233	0.123	-0.352	0.378	0.172	.577*	0.029	0.513
	p -value		0.424	0.675	0.217	0.182	0.557	0.031	0.920	0.073
	N	14	14	14	14	14	14	14	14	13
FCD	r	-0.233	1	0.338	.762**	0.408	0.317	-0.240	0.259	0.336
	p -value	0.424		0.238	0.002	0.147	0.270	0.409	0.372	0.261
	N	14	14	14	14	14	14	14	14	13
DVO	r	0.123	0.338	1	0.481	-0.082	.796**	-0.118	-0.221	0.514
	p -value	0.675	0.238		0.082	0.780	0.001	0.687	0.449	0.072
	N	14	14	14	14	14	14	14	14	13
SIF	r	-0.352	.762**	0.481	1	0.307	0.509	-0.279	0.231	0.173
	p -value	0.217	0.002	0.082		0.285	0.063	0.334	0.426	0.573
	N	14	14	14	14	14	14	14	14	13
L-l	r	0.378	0.408	-0.082	0.307	1	0.157	0.267	0.455	0.454
	p -value	0.182	0.147	0.780	0.285		0.592	0.356	0.102	0.119
	N	14	14	14	14	14	14	14	14	13

Table A1 (cont'd)

Bivariate Correlations of Southern N = 19 Participants

R-l	<i>r</i>	0.172	0.317	.796**	0.509	0.157	1	-0.118	-0.068	0.321
	<i>p-value</i>	0.557	0.270	0.001	0.063	0.592		0.688	0.818	0.285
	<i>N</i>	14	14	14	14	14	14	14	14	13
NV	<i>r</i>	.577*	-0.240	-0.118	-0.279	0.267	-0.118	1	0.500	.562*
	<i>p-value</i>	0.031	0.409	0.687	0.334	0.356	0.688		0.069	0.045
	<i>N</i>	14	14	14	14	14	14	14	14	13
DUS	<i>r</i>	0.029	0.259	-0.221	0.231	0.455	-0.068	0.500	1	0.364
	<i>p-value</i>	0.920	0.372	0.449	0.426	0.102	0.818	0.069		0.222
	<i>N</i>	14	14	14	14	14	14	14	14	13
FCCR-ex “and”	<i>r</i>	0.513	0.336	0.514	0.173	0.454	0.321	.562*	0.364	1
	<i>p-value</i>	0.073	0.261	0.072	0.573	0.119	0.285	0.045	0.222	
	<i>N</i>	13	13	13	13	13	13	13	13	13

Note. AAE Feature Key: FCCR-in “and” = Final Consonant Cluster Reduction (include “and”); FCD = Final Consonant Deletion; DVO = Devoicing of Final Obstruent; SIF = Stopping of Interdental Fricative; L-l = L-lessness; R-l = R-lessness; NV = Nasalization of Vowels; DUS = Deletion of Unstressed Syllables; FCCR-ex “and” = Final Cluster Reduction (exclude “and”).

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

APPENDIX B Table A2 Bivariate Correlation Summary of Southern N = 19 Participants

Table A2 <i>Bivariate Correlation Summary of Southern N = 14 Participants</i>			
<u>Correlated Variable #1</u>	<u>Correlated Variable #2</u>	<u>r</u>	<u>p</u>
DVO	R-l	0.796	0.001***
FCD	SIF	0.762	0.002**
NV	FCCR-ex “and”	0.562	0.045*
DVO	FCCR-ex “and”	0.514	0.072
SIF	R-l	0.509	0.063
NV	DUS	0.5	0.069
DVO	SIF	0.481	0.082
<i>Note.</i> AAE Feature Key: FCCR-in “and” = Final Consonant Cluster Reduction (include “and”); FCD = Final Consonant Deletion; DVO = Devoicing of Final Obstruent; SIF = Stopping of Interdental Fricative; L-l = L-lessness; R-l = R-lessness; NV = Nasalization of Vowels; DUS = Deletion of Unstressed Syllables; FCCR-ex “and” = Final Cluster Reduction (exclude “and”). ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.			

APPENDIX C Table A3 Alpha Level of Southern N = 14 Participants

Table A3 <i>Alpha Level of Southern N = 14 Participants</i>	
<u>Correlated Variables</u>	<u>Lowest Alpha Level for Correlation</u>
DUS	0.1
DVO	0.05
FCCR-ex “and”	0.05
FCD	0.05
NV	0.05
R-l	0.05
SIF	0.05
<i>Note.</i> AAE Feature Key: FCCR-in “and” = Final Consonant Cluster Reduction (include “and”); FCD = Final Consonant Deletion; DVO = Devoicing of Final Obstruent; SIF = Stopping of Interdental Fricative; L-l = L-lessness; R-l = R-lessness; NV = Nasalization of Vowels; DUS = Deletion of Unstressed Syllables; FCCR-ex “and” = Final Cluster Reduction (exclude “and”).	

APPENDIX D Considerable Methods for Bivariate Correlation Analysis of AAE Features

Additional methods were considered to conduct bivariate correlations to determine qualifying AAE dialect features. The following methods were considered, and Method 3 was chosen for the purpose of this study:

Method 1: Average across all correlated variables at $\alpha = .10$ (see bivariate correlations) (when bivariate correlations are based on all subjects)

Method 2: (Sum of all AAE features / Sum of total features) for all correlated variables at $\alpha = .10$ (when bivariate correlations are based on all subjects)

Method 3: Average across all correlated variables at $\alpha = .05$ (see bivariate correlations) (when bivariate correlations are based on all subjects)

Method 4: (Sum of all AAE features / Sum of total features) for all correlated variables at $\alpha = .05$ (when bivariate correlations are based on all subjects)

Method 5: Same as Method 1, except substituting Final Consonant Cluster Reduction (including “and”) for Final Consonant Cluster Reduction (excluding “and”)

Method 6: Average across all correlated variables at $\alpha = .10$ (see bivariate correlations) (when bivariate correlations are based on 14 subjects from the South)

Method 7: (Sum of all AAE features / Sum of total features) for all correlated variables at $\alpha = .10$ (when bivariate correlations are based on 14 subjects from the South)

Method 8: Average across all correlated variables at $\alpha = .05$ (see bivariate correlations) (when bivariate correlations are based on 14 subjects from the South)

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