THE IMPACT OF AFRICAN AMERICAN ENGLISH ON LANGUAGE PROFICIENCY IN ADOLESCENT SPEAKERS

June Graham-Bethea, Ph.D., CCC-SLP
North Carolina A&T State University
Greensboro, NC, USA

Alan Kamhi, Ph.D., CCC-SLP
University of North Carolina at Greensboro
Greensboro, NC, USA

ABSTRACT

To examine previous findings that AAE use is related to complex syntax in spoken language, this study examined the relationship between AAE, complex syntax, and lexical diversity in adolescent African American English-speaking students in spoken and written language. There were no significant differences in syntactic complexity, type token ratio, and vocabulary use as a function of AAE use. The only significant correlations between AAE use and these measures were in the low moderate range (r = .32-.36). The findings of this study were thus inconsistent with previous studies by Craig and Washington (1994, 1995), but were consistent with the more recent study by Jackson and Roberts (2001). Future studies should continue to examine how AAE changes over time and how AAE use may influence syntactic and lexical aspects of language.

KEY WORDS: African American English, complex syntax, lexical diversity, adolescents

INTRODUCTION

Despite the efforts of educators across the United States to narrow a persistent academic gap between African American and non-minority students, African American (AA) children continue to perform poorly on standardized tests of academic achievement (National Assessment of Educational Progress, 2012) and are over-represented on the nation's special education caseloads. African American children's performance in reading and math (NAEP, 2012) is significantly lower than non-minority students and even though the gap narrowed between 1992-2007 for fourth and eighth grade students, it continues to exist leaving many students at risk for academic failure. One factor contributing to the academic achievement gap is the language skills that African American children bring to classrooms (Craig & Washington, 2002). Studies have shown that many African American children show consistently lower levels of performance on measures of vocabulary (NAEP, 2012) and complex syntax (Baratz, 1970; Fasold & Wolfram, 1970; Labov, 1971). The importance of vocabulary for reading has been well documented (National Reading Panel, 2000; Beck, McKeown, & Kucan, 2013). The role that complex syntax plays in reading and academic performance is less obvious, but recent studies have shown that productivity measures of complex syntax are strongly related to academic performance (Arndt & Schuele, 2013). The children studied ranged in age from 4.0-5.5.

The deficiency view of dialect, which was prevalent nearly five decades ago (Baratz, 1970; Dillard, 1972; Wolfram & Fasold, 1974), predicted that high dialect users would produce fewer complex sentences than low dialect users. Surprisingly, the high African American English (AAE) users produced significantly more complex sentences than the low AAE users (Craig & Washington, 1994). These findings were confirmed in a subsequent study by Craig and Washington (1995) that examined simple and complex prepositional phases. The high AAE users produced significantly more complex prepositional phrases than low AAE users. Puzzled by these findings, Craig and Washington (1995) suggested that perhaps high

AAE is an indication of more advanced language ability because it is associated with an increase in the number of types of structures used not just the repetitive use of a small set of forms. This would mean that high AAE usage would be associated with increased lexical diversity throughout the language system. Increased lexical diversity would be reflected in higher Type Token Ratios (TTR), more literate (Type 2, 3) vocabulary in spoken and written language.

These findings and claims have not been supported in subsequent studies by Craig and Washington (1998) and Jackson and Roberts (2001). In addition, no study has examined the relationship between complex syntax, lexical diversity and AAE in older school-age children nor has any study investigated these relationships in written language. The present study was designed to test this claim by comparing complex syntax, lexical diversity and AAE usage of spoken and written samples of language in typically developing 7th grade African American students.

Language Development in Older School-Age Children

Syntax is an aspect of language that is characterized by gradual linguistic growth in the adolescent population. Syntactic development during adolescence is a time for increased proficiency, not a time for developing new grammatical structures (Nippold, Ward-Lonergan, & Fanning, 2005; Nippold et al., 2005). During this period, adolescents develop an awareness of how to use pre-established grammatical structures more efficiently. These structures result in production of more complex communication (Nippold, et al., 2005). Sentences gradually increase in length, complexity, and so does informational density. Spoken sentence length matches chronological age until around age 9 years at which time the growth curve slows. Adolescents' conversational utterances average 10-12 words by the later secondary years.

Written sentence length increases from 7-14 words between 3rd and 12th grade (Scott & Stokes, 1995). The use of noun phrases increases

through the use of appositives, elaborated subjects, nonfinite verbs, and relative clauses (Scott & Stokes, 1995). For example, the following is a noun phrase expansion using appositives: *Margaret the corporate attorney bought a town house*. Verb phrases increase through the use of modal auxiliary verbs, the perfect aspect, and the passive voice. For example, the following is an example of a verb phrase through the use of perfect aspect*: She had been working all day*. Clausal density gradually increases during the school-age and adolescent years (Scott & Stokes, 1995) just as sentence length does. The use of subordinate clauses, center-embedded and object relative clauses, past perfect marking, modal auxiliaries, and low frequency adverbial conjunctions increase. The mean subordination index for grade 3 is 1.22, grade 5 is 1.29, grade 8 is 1.39 and for grade 11 is 1.52 according to Scott (1988). The use and understanding of linguistic devices such as adverbial conjuncts (e.g. moreover, consequently, and furthermore) are used more often to join sentences and to produce cohesive discourse (Nippold, Hesketh, Duthie, & Mansfield, 2005). The use and understanding of adverbial conjuncts steadily improve during adolescence in written communication (Scott, 1984). Concordant (e.g. similarly, moreover, and consequently) and discordant (e.g. contrastively, rather, nevertheless) adverbial conjuncts have been found to be equally difficult for students. Overall findings regarding syntax in adolescents indicate that its development is gradual and characterized by improved proficiency in using more complex structures including increased sentence length, complexity, informational density, and cohesive devices such as adverbial conjuncts.

Semantics is another aspect of language that develops gradually in the adolescent population. According to Nippold (1993), lexical diversity and figurative expressions are two important features of semantics that are potential markers of academic success in the adolescent population. Rapid growth in vocabulary size occurs during adolescence, especially between the ages of 11 and 14 years and by the time that students graduate from high school, they know approximately 80,000 words (Miller & Gildea, 1987). In addition to the quantitative growth in size of the lexicon, there is a continuing refinement in lexical knowledge of adolescents (Nippold, 1998). More words with abstract meanings are acquired by teenagers than what is generally seen in younger children. The literate lexicon is increased and teens are better able to use words in many contexts. Adolescents increase the use of words like *interpret*, *concede*, and *predict* which often occur in textbooks, lectures, and seminars. Nippold (2007) found that adolescents are better able to learn words and their meanings by picking up on cues that morphological markers provide and using context to decipher meanings of unfamiliar words. Semantic growth also involves increased use of verbal humor, idioms, metaphors, similes, slang, and proverbs as well as the ability to complete verbal analogies, and the ability to detect/decipher ambiguous statements.

AAE Use and Complex Syntax

The first study to examine the relationship between AAE usage and complex syntax was Craig and Washington (1994). The participants were 45 low-income, urban, AAE-speaking children (21 boys and 24 girls) between the ages of 4 and 5.5. Two language samples were obtained from each child: one 20- minute sample of children engaged in free play and the other a 10-minute sample taken while children described a set of 10 action pictures. The Peabody Picture Vocabulary Test-R (PPVT-R) was also administered. The samples were analyzed for AAE and complex syntax usage. Children were considered high AAE users if AAE forms occurred in more than 24% of their utterances. In contrast, children were considered low AAE users if AAE forms occurred in less than 11% of utterances. Zero copula/auxiliary and lack of subject-verb agreement were the most frequent AAE forms used by high and low AAE users.

The amount of complex syntax was found to vary across children from 0 to 25%. The mean percentage of utterances containing one or more instances of complex syntax was 8.2 (SD = 5.4). Variables that did not account for these individual differences because they were controlled in the study included (a) socioeconomic status, (b) prior school

experience, (c) prior formal experiences with standard American English, and (d) developmental history. In addition, age and gender were not significantly related to complex syntax usage. Two variables were significantly related to individual variations in complex syntax usage. The number of different types of complex syntax correlated positively with the percentage frequencies of occurrence of utterances containing complex syntax. This finding indicated that increased percentage of complex syntax use reflected a corresponding increase in the types of complex syntax used. The most widely used types of complex syntax were (a) two of the three types of infinitives that were marked with *to*, (b) the conjunction *and* to link two independent clauses, (c) noninfinitive *wh-clauses*, (d) noun phrase complements, and (e) lets/lemme. The action and play focus of the language sampling context may have contributed to the increased use of some of these types. The other variable that correlated positively to complex syntax usage was frequency of sentences containing AAE forms (r=.44).

The children who had the highest number of utterances with an AAE form produced significantly more utterances with complex syntax than children who were low AAE users. There was nothing in the previous literature that would suggest this finding. Craig and Washington (1994) note that the much of the early research on AAE was conducted primarily to refute prevailing assumptions that AAE was a deficient language (Baratz, 1969, 1970; Fasold & Wolfram, 1970; Labov, 1971). Clearly, the positive relationship between complex syntax and AAE use needed to be pursued in future investigations.

Toward this end, Craig and Washington (1995) further analyzed the data from their 1994 study to examine the relationship between AAE and the production of the production of simple and complex prepositional phrases. Nonsignificant correlations were found between amounts of AAE and simpler prepositional phrases scored as identifications (r =-.16, p > .05) and movements (r = -.26, p > .05). Consistent with the previous study, however, a moderately strong, statistically significant, positive correlation (r = .46, p < .016) was found between amounts of AAE and prepositional phrases expressing more complex relative relationships.

Taken together, Craig and Washington (1994; 1995) suggest that the findings from their two studies suggest "that increased amounts of AAE, complex sentences, and semantic relations for prepositions all reflected an increase in the number of types used by the child, not simply the repetitive use of a small set." The expanded diversity of language forms in children using higher levels of AAE indicates a higher level of linguistic proficiency overall for these children.

A study by Jackson and Roberts (2001) is the only other one that has directly examined the relationship of AAE usage and complex syntax. Participants were 85 low SES 3- and 4-year-old children. Fifteen-minute language samples were collected from each child during free play. The role of child factors including AAE, gender, and age were examined in the production of complex syntax. Family factors including home environment were also examined. At age 3 and 4 years, language samples were collected from each participant. Utterances were examined for the presence of one or more of the following types of complex syntax: single infinitives, simple non-infinitive wh-clauses, noun phrase complements, let(s)/lemme, relative clauses, infinitives with a different subject, unmarked infinitives, wh-infinitive clauses, tag questions, and clauses joined by conjunctions. Jackson and Roberts' (2011) findings revealed that boys produced fewer complex syntax forms than did girls. The number of complex syntax forms that the children used correlated positively with the number of different types of complex syntax forms used at age 3 (r=.83) and (r=.84) at age 4. The total number of complex syntax forms correlated positively with mean length of utterance-words (r=.39) at age 3 and (r=.70) at 4 years of age. A positive relationship was shown between the amount of complex syntax and different types of complex syntax which is consistent with the findings of Craig and Washington (1994). The findings showed that the amount of complex syntax was unrelated to AAE, however. At age three, the correlation between complex syntax and AAE was .09 and .11 at age four.

Craig and Washington (1998) indirectly examined the relationship between complex syntax and AAE use in their study of C-unit lengths in the discourse of African American children. Communication units (C-units), defined by Loban (1976) as independent clauses plus their modifiers, offer some important advantages over other potential segmentation units like the T-unit. One purpose of the study was to determine whether there were systematic variations in the average C-unit length relative to syntactic complexity and AAE use. Study participants included 95 African American children from low income homes who ranged in age from 4 to 6 ½. Speech samples were elicited during free play. AAE frequencies were averaged across words. Results showed that complex syntax better explained mean length of communication unit-words (MLCU-w) than did AAE use. Mean length of communication unit-morphemes (MLCU-m) was not significantly related to the children's dialect use (r=.15) while MLCU-w correlated significantly with amounts of dialect, but the relationship was very weak (r =.22). In sum, the first two studies by Craig and Washington (1994, 1995) found a significant moderate relationship between complex syntax and AAE use. Two subsequent studies did not support the findings in these early studies. In addition, no study has examined the relationship of complex syntax and AAE in older school-age children nor has any study investigated these relationships in written language.

AAE and Writing

Earlier studies (Wolfram & Schilling-Estes, 1998) identified AAE features in the writing of AA children and included the absence of the –s marker (e.g. she go_____), absence of plural –s marker (e.g. four mile_), the absence of possessive –s (e.g. John hat), and the absence of –ed (e.g. Yesterday they miss__). Other features that occurred in the spoken language of AAE speakers included multiple negation, the use of *ain't*, and the use of habitual *be*, but were found to occur infrequently. Recent studies (Thompson, Craig, & Washington, 2004; Craig, Zhang, Hensel, & Quinn, 2009; Ivey & Masterson, 2011) have revealed that dialect shifting is evident in African American student writing with noted decreases in the use of AAE. AAE use in written and oral language of Africa American adolescents was examined by Horton-Ikard and Pittman (2010). Language samples were collected from 11 twenty-two African American students in the 10th grade. Four patterns were evident in both written and oral samples: copula variability, subject-verb agreement, cluster reduction, and vowel pronunciation differences. Horton-Ikard and Pittman (2010) used these findings to suggest that dialectal differences continue to play a role in the error types that AAE speakers produce when writing.

There is a paucity of research on AAE use in written language; however, the overall findings of existing studies show that features of AAE are evident in the written language output of those African Americans who use African American English (Thomas-Tate et al., 2006; Craig et al., 2009; Horton-Ikard, & Pittman, 2010; Ivy, L. & Masterson, 2011; Rodriguez & Washington, 2013). The studies that have focused on writing in African American adolescents have shown that AAE use in oral language is more diverse and occurs more often than it does in written language production suggesting that a written language context will encourage less use of AAE.

Craig and Washington (1995) have suggested that high AAE usage may be an indication of more advanced language ability because it was associated with an increase in the number of types of structures used not just the repetitive use of a small set of forms. This would mean that high AAE usage would be associated with increased lexical diversity throughout the language system. Increased lexical diversity would be reflected in higher Type Token Ratios, and a more literate (Type 2, 3) vocabulary in spoken and written language.

Research Questions

The aim of this study was to examine spoken and written language samples in young adolescent students (7th graders) to test this claim using the following research questions:

1.) Are there significant differences in complex syntax, TTR, and Tier 2/3 words in spoken and written samples of low, moderate, and high AAE users?

2.) Is AAE usage significantly related to the use of complex syntax, TTR, and Tier 2/3 words in spoken and written samples?

3.) What are the most frequent AAE forms and complex syntactic structures used by middle school students?

METHOD

Participants

Participants were 32 African American (16 boys and 16 girls) typically developing 12- and 13-year old 7th grade students (mean age=12.5 years). Students were recruited from a local public school system in the Central Piedmont region of North Carolina. Recruitment letters and consent forms were given to middle school students who met the inclusionary criteria. All participants were required to be on grade level in reading and language arts classes based on teacher reports. Participants were also required to have passed their most recent End-of-Grade (EOG) tests in reading with a passing score of 3 or 4. All participants spoke AAE. Low AAE users were defined as those who used AAE in 0-11% of their speech. Moderate AAE users were defined as those who used AAE in 12-19%, and high AAE use was identified when AAE forms occurred in 20-33 % of their utterances. Students with emotional disorders, hearing impairment, sensory or neurological impairments were not included. All participants spoke English as their primary language. None of the participants were enrolled in special education.

Data collection procedures

A modified version of the Favorite Game or Sport task (Nippold, 2005) was used to elicit spoken language samples. The task was designed to elicit detailed discussion of an adolescent's favorite movie, sport, television show, or videogame. A minimum of 75 utterances was elicited from each of the 32 participants. The following script was read aloud to each participant:

I am hoping to learn what people of different ages know about certain topics. Tell me your favorite movie, sport, television show, or videogame as if you were talking to a friend. There are no incorrect answers.

A. What is your favorite movie, sport, television show, or, videogame?

B. Why is _____ your favorite movie, sport, television show, or, videogame?

C. I'm not too familiar with the movie, sport, television show or the sport _____, so I would like for you to tell me about it. For example, tell me about what the goals are, and how many people may play a videogame. Also, tell me about the rules that players need to follow. Tell me everything you can think of about the game of _____ so that someone who has never played before will know how to play.

D. Now I would like for you to tell what a player should do in order to win the videogame of _____. In other words, what are some key strategies that every good player should know?

Study participants were allowed as much time as needed to respond to each prompt. If participants failed to respond, questions were repeated. Questions were repeated if the adolescents asked for repetition. Samples were audio-recorded.

Writing samples were obtained from each participant's reading/ language arts teacher. Written samples contained a minimum of 10 sentences and were representative of each participant's best work as determined by the student's teacher.

Language Measures

AAE Types/Frequency of Use. Oral and written language samples were analyzed for the

presence, type, and frequency of occurrence of 16 features using Washington and Craig's (1994) descriptions of AAE. Examples of examined AAE features include: zero copula or auxiliary, subject verb agreement, fitna/sposeta/bouta, ain't, undifferentiated pronoun case, multiple negation, zero past tense, zero possessives, zero-ing, invariant be, zero to, zero plural, double modal, regularized reflexive, indefinite article, appositive pronoun, and remote past "been." (See examples of each AAE feature in Table 1.).

Complex Syntax. Washington and Craig's (1994) analysis of complex syntax was used. This analysis contained 11 categories of complex syntax: (a) simple infinitive with same subject, (b) simple noninfinitive wh-clause, (c) noun phrase complement, (d) relative clauses, (e) unmarked infinitives, (f) gerunds and participles, (g) clauses joined by conjunctions, (h) tag questions, (i) wh-infinitive clauses, (j) infinitive with different subjects, and (k) let(s)/lemme and infinitive. Examples are provided in Table 2. Following Arndt and Schuele (2013), complex syntax structures were also in dependent clauses because discourse often includes sentences that begin with conjunctions (e.g., because I needed a new pair of shoes). Refer to Table 3 for examples.

Type-Token Ratio. Type-token ratio (TTR) provided a measure of lexical diversity in oral and written language samples elicited from adolescent participants. The TTR was computed by dividing the number of different words by the total number of words in the samples. For example, in a sample containing a total of 87 words/tokens and 62 types, the TTR would be 71.3%.

Vocabulary. Beck, McKeown, & Kucan (2013) have distinguished between three tiers of vocabulary: Tier 1 words are basic words that generally appear during conversation and do not require formal instruction whereas tier 2 words occur infrequently during conversation and are less likely to be learned independently. Examples of Tier 2 words include: contradict, circumstances, precede, etc., Tier 3 words are used in specific topics and domains such as science and social studies. These words are not produced frequently. Examples of tier 3 words include: epidermis, filibuster, pantheon, etc. For the purposes of this study, tier 2 and 3 words were measured for frequency of occurrence for each participant.

Table 1. Morphological and Syntactic AAE Forms (Craig & Washington, 1994).

Zero copula or auxiliary *Is, are*, and modal auxiliaries: will, can, and do are variably included	"the bridge out" "how you do this"
Subject-verb agreement A subject and verb that differ in either number or person	"what do this mean?"
Fitna/sposeta/bouta Abbreviated forms of "fixing to," "supposed to," and "about to."	Fitna: "She fitna backward flip" Sposeta: "when does it sposeta go" Bouta: "this one bouta go in the school"
Ain't "ain't" as a negative auxiliary	"why she ain't comin?"
Undifferentiated pronoun case Nominative, objective, and demonstrative cases of pronouns occur interchangeably	"him did and him"
Multiple negation Two or more negative markers in one utterance	"I don't got no brothers'
Zero possessive Possession coded by word order so that the possessive –s marker is deleted, or the nominative or objective case of pronouns is used rather than the possessive	"he hit the man car" "kids just goin' to walk to they school"
Zero past tense -ed is not always used to denote regular past constructions, or the present tense form is used in place of the irregular past form	"and this car crash" "and then them fall"
Zero –ing Present progressive morpheme –ing is deleted	"and the lady is sleep"
Invariant *be* Infinitival *be* with a variety of subjects coding habitual actions	"and this one be flying up in the sky" "if he be drunk I'm taking him to jail"
Zero *to* Infinitive marker *to* is deleted	"now my turn shoot you"
Zero plural Variable inclusion of plural marker -s	"ghost are boys"
Double modal Two modal forms for a single verb form	"I'm is the last one ridin on"
Regularized reflexive Reflective pronouns "himself" and "themselves" are expressed by "hisself" and "theyself"	"he stands by hisself"
Indefinite article "a" regardless of vowel context	"Brenda had to play for a hour, didn't he?"
Appositive pronoun Both a pronoun and a noun reference the same person or object	"the teacher she's goin' up here"
Remote past "been" "been" is used to mark action in the remote past	

Table 2. Scoring definitions and examples for complex syntax types (Craig & Washington, 1994).

Simple infinitive with same subject Utterances containing verb infinitives in which the subject is the same for both the main verb and the infinitive.	"he don't need *to stand up*' "they was tryin' *to get in*"
Simple noninfinitive wh-clause The wh-clause is followed by a subject-verb, rather than an infinitive	"this *where they live at*" "I don't know *what it called*"
Noun phrase complement Utterances in which a full subject and predicate clause replaces the noun phrase, usually in the object position of the main clause	"I told you *there's a Whopper*" "I think *this'll work*"
Let(s)/Lemme and infinitive Utterances in which *let, let's* or *lemme* introduce the main clause	"*lemme* do it" "*let's* share these"
Relative clause Utterances in which a noun or pronoun in the main clause is modified by another clause.	"that's the noise *that* I like" "where the ghost you gotta put in"
Infinitive with a different subject Utterances containing verb infinitives in which the subject of the infinitive is different from the subject of the verb in the main clause.	"the bus driver told the kids *to stop*" "why you don't want nobody to put it too close to your mouth?"
Unmarked infinitive Utterances containing verb infinitive verbs with the *to* omitted in which the main verb lexically *was let, help, make,* or *watch*.	"I help *(to) braid* it sometimes" "are you gonna let her *(to) wear* these?"
Wh-infinitive clause Two clauses linked by a wh-pronoun such as *what, when, where*, or *how* in which an infinitive verb follows the wh-form.	"she know *how to do a flip*"
Gerunds and Participles Utterances containing nouns formed from verbs + ing, or adjectives formed from verbs and ending in *ed, t, en*, etc., respectively.	"they saw *splashing*" "it get *rainy*"
Tag questions Clauses added to the end of the main clause that are all positive or that contrast positive and negative relationships between clauses.	"these the french fries*, ain't it?*" "she got new clothes, *don't she?*"
Clauses joined by conjunctions The combining of clauses using the listed coordinate and subordinate conjunctions to link co-referential nouns in subject or object sentence roles.	and: "this one happy and that one happy" but: "I like Michael Jordan but he ain't playin' on the team no more" so: "that go right there so it can shoot him" if: "nothing can stop me if I got this" because: "it ain't gonna come out because it's stuck." since: "I'll open the stuff for them since they don't know how to do it." before: "put him in there before he comes back out" when: "when you done with this you get to play with this one?" until: "I didn't know it until my brother said it" while: "they could be here while we's fixin' it, can't they?" like: "act like we already cook ours"

Table 3. Complex syntax types and examples (Arndt & Scheule, 2013).

Complex Syntax Type	Example
Coordinate conjunction clauses	*I went to the store and bought a new dress.*
Subordinate conjunction clauses	*I went to the store because I needed a new dress.*
Reduced infinitives	*I wanna go home.*
Let's clauses	*Let's go home; Let me have that.*
Marked infinitives	*He wanted to go to the store.*
Unmarked infinitives	*He made Mary leave.*
wh-nonfinite complement clauses	*He doesn't know where to go.*
Full propositional complements	*Mary knew the boys would leave at 4:00.*
wh-finite complement clauses	*I wondered where we were going on Saturday.*
Relative clauses	*The man who/that crashed the car is in jail.*
Nominal or headless relative clauses	*Whoever wants to leave needs to get in the car.*
Participle clauses	*He looked for her wandering around the store.*

Data Reduction

Participants in this study completed spoken and written language samples. Testing was completed on an individual basis. Spoken and written language samples were elicited during one visit. Complex syntactic structures, lexical diversity measurements, tier 2 and 3 vocabulary words were measured. Descriptions of sample measurement scoring procedures follow.

Spoken and written language samples were transcribed and checked for accuracy. Utterances were coded as complex syntax and assigned a unique code (i.e. [cs] for complex syntax if they contained at least one complex syntax token defined as any of the forms in Tables 2 and 3. Second, [cs] utterances were examined further and given another unique code (e.g., [sc] for subordinate clause, [si] for marked infinitive clauses). In the following example, the codes [cs] and [si] would be assigned: Jamia is

not going to the dance because when she wanted to get her dress, her mom had to go to work. Following the coding for types of complex syntax, a frequency of occurrence count was completed for use of complex syntactic structures in both the spoken and written samples.

Participants' spoken and written samples were calculated for type and frequency of use for AAE features. Each adolescent was classified as either a high or low AAE user based on Craig and Washington's (1994, 1995) definitions. Participants were considered as high AAE users when AAE features occurred in more than 24% of their utterances and as low AAE users when AAE features were identified in less than 11% of their utterances.

Lexical diversity was measured for each participant by calculating a TTR. The number of different words used was divided by the total

number of words for spoken and written samples. A frequency count of vocabulary words was completed, and words were categorized as either tier 2 or tier 3 words based on Beck and McKeown (2002, 2013). A doctoral student in CSD was trained to score each language measure. Interrater reliability for each measure was calculated for 25% of the samples. Agreement was 95% or above for all measures. Disagreements were resolved through discussion.

Data Analyses

This study investigated the association between AAE and lexical diversity throughout the language system as measured by Type Token Ratios, and literate vocabulary in spoken and written language in young adolescent students. Spoken and written language samples were analyzed to determine prevalence of AAE use, the number of complex sentences used, TTR, and number of Tier 2/3 vocabulary words.

Analyses of Variance (ANOVA) were used to compare AAE users (high, moderate, low) use of complex syntax, lexical diversity, and Tier 2/3 words. Pearson correlation coefficients used to determine the relationship between AAE use and the language measures (clause density, TTR, Tier 2/3 use). Significance levels were set at .05.

RESULTS

Three research questions were addressed in this study. The first question considered the use of complex sentences for low, moderate, and high users of AAE. The 32 participants were assigned to the three usage groups following the guidelines set by Washington and Craig (1994). To ensure that the participants were evenly divided into three groups, the percent of usage of AAE varied slightly from the ones used by Washington and Craig. AAE use ranged from 3-33%. High use was defined as above 20%, moderate use 12-19%, and low use below 11%. These data are presented in Table 4.

Table 4. **Mean (M) percentage frequencies and standard deviations (SD) of utterances containing AAE forms for each group and the combined groups.**

	Groups			
	High (n=10)	**Moderate** (n=12)	**Low** (n=10)	**Combined** (n=32)
M	24.9	13.9	7.7	15.4
SD	3.8	2.2	2.6	7.5
Range	20-33	0-11	12-19	0-33

Tables 5 and 6 present the means and SDs for the language measures for the three groups of AAE users. As can be seen in these tables, AAE use was relatively comparable for the three measures, clause density, TTR, and lexical usage. One-way ANOVAs confirmed that there were no significant group differences for these measures (p >.10) (Table 7).

Table 5. Means(M) and Standard Deviations (SD) for Clausal Density, Type-Token Ratio, Tier2/3 Words in Spoken Samples for High, Moderate, and Low AAE Users.

	Measures		
	Low	**Moderate**	**High**
Clause Density			
M	1.60	1.63	1.73
SD	0.18	0.12	0.20
TTR			
M	0.52	0.48	0.49
SD	0.07	0.03	0.05
Tier 2 Words			
M	5.63	5.80	9.00
SD	3.88	3.72	4.18
Tier 3 Words			
M	0.13	1.13	0.78
SD	0.35	1.72	1.39

Table 6. Means (M) and Standard Deviations (SD) for Clausal Density, Type-Token Ratio, Tier 2/3 Words in Written Samples for High, Moderate, and Low AAE Users.

	Measures		
	Low	**Moderate**	**High**
Clause Density			
M	1.62	1.73	1.58
SD	0.39	0.34	0.23
TTR			
M	0.46	0.46	0.47
SD	0.08	0.05	0.04
Tier 2 Words			
M	4.00	3.41	1.90
SD	5.07	3.28	2.23

Table 7. One-Way Analysis of Variance for AAE, Clausal Density, TTR, Tier 2 and Tier 3 Words.

Source	df	SS	MS	F	p
Between Groups					
Clausal Density (Spoken)	2	0.057	0.057	2.097	0.141
Clausal Density (Written)	2	0.141	0.071	0.633	0.538
TTR (Spoken)	2	0.012	0.006	2.385	0.11
TTR (Written)	2	0.0	0.0	0.069	0.934
Tier 2 Words (Spoken)	2	45.5	22.75	1.423	0.257
Tier 2 Words (Written)	2	23.7	11.84	0.868	0.431
Tier 3 Words (Spoken)	2	1.609	1.609	0.775	0.47

Table 8 presents the correlational analyses between AAE use and the four language measures for the spoken and written samples. As can be seen in this table, 23 significant low- moderate relationships were found for clause density and Tier 2 words for the spoken samples and TTR for the written samples.

Table 8. Pearson Product-Moment Correlations between AAE, Clausal Density, TTR, Tier 2 Words, and Tier 3 Words.

Measure	Spoken Language	Written Language
Clausal Density	.36*	-.18
TTR	-0.26	.32*
Tier 2 Words	.34*	-.22
Tier 3 words	.13	

 n=32
*p < 0.05 (two-tailed).

In the spoken samples, the most AAE frequent structures were appositive pronouns (81 %), "fitna/sposeda/bouta" and subject-verb agreement errors (78%). More than half (56 %) of the students used zero past tense forms. AAE structures were used much less frequently in the written samples. Subject-verb agreement errors were found in 28% of the student writing samples whereas appositive pronouns occurred in 22% of the samples. The remaining forms were used less often.

Of the 17 AAE forms included in this study, 13 appeared at least twice during elicitation of the spoken samples: multiple negations, "fitna/sposeda/bout"a, subject-verb agreement,

zero copula/auxiliary, zero past tense, regularized reflexives, zero plural, appositive pronouns, undifferentiated pronouns, invariant "be", double modal, indefinite article "a", and remote past "been." Those AAE forms not used in the spoken samples included "ain't," zero cop?, "to," zero "ing", and remote past "been." In the written samples, 8 of the 17 AAE forms were used at least twice: multiple negation, "fitna/sposeda/bouta", subject-verb agreement, zero copula/auxiliary, zero past tense, regularized reflexives, zero plurals, appositive pronouns, zero "ing,' undifferentiated pronouns,

and indefinite article "a." The remaining forms were not included in the written samples. These data are presented in Tables 9 and 10.

Tables 11 and 12 present the frequency of complex syntax forms found in spoken and written utterances. Conjunctions, noun phrase complements, simple infinitives, and relative clauses were used by all 32 students in spoken samples in this study. Clauses joined by conjunctions were used by all 32 participants in written samples.

Table 9. Frequency of AAE Use (Spoken Utterances).

AAE	
Types	Number of Participants
Appositive Pronouns	26
Subject-verb Agreement	25
Fitna/sposeda/fitna	25
Zero past tense	18
Zero copula/auxiliary	17
Undifferentiated pronoun case	13
Multiple negagion	11
Zero plural	10
Indefinite article "a"	8
Zero possessive	8
Invariant "be"	6
Double modal	3
Regularized reflexive	2

Table 10. Frequency of AAE use (Written Utterances).

AAE	
Types	Number of Participants
Zero past tense	9
Subject verb agreement	9
Appositive pronoun	7
Multiple negation	5
Zero copula/auxiliary	5
Zero plural	3
Indefinite article "a"	3
Undifferentiated pronoun case	2

Table 11. Frequency of Complex Syntax Forms (Spoken Utterances).

Complex Syntax	
Types	**Number of Participants**
Clauses joined by Conjunctions	32
Noun Phrase Complements	32
Simple Infinitives Same Subject	32
Relative Clauses	32
Noninfinitive Wh- Clauses	30
Infinitive Different Subjects	27
Gerunds/Participles	20
Wh- Infinitives	7
Tag Questions	6
Unmarked Infinitives	2

Table 12. Frequency of Complex Syntax Forms (Written Utterances)

Complex Syntax Types	
Types	**Number of Participants**
Clauses joined by Conjuctions	32
Simple Infinitives Same Subject	25
Noun Phrase Complements	20
Noninfinitive wh- clauses	13
Infinitive Different Subject	10

DISCUSSION

The purpose of the current research was to investigate the relationship between AAE, complex syntax, and lexical diversity in adolescent African American English-speaking students. Three research questions were posed. The first one questioned whether there was a significant difference in AAE use and complex syntax, TTR, and Tier 2/3 words in low, moderate, and high users of AAE. No significant group differences were found with any of these measures. AAE use was not significantly related to the prevalence of complex syntactic structures between groups. Recall that Craig and Washington (1994) found that high users of AAE used more complex sentences than moderate and low AAE users. The different ages of the students in the both studies may be one explanation for the discrepant findings. Children in the Craig and Washington studies were 4- and 5-year-old preschoolers whereas in the present study, students were 12-13-year-old middle schoolers. Although the range of AAE was comparable in the studies, younger children were in a stage of language development when complex syntax is still developing and variable. By the time children reach middle school, there is much less variability in the use of complex syntax. All 32 students in the present study used the four most common complex syntactic structures (conjunctions, noun phrase complements, simple infinitives, relative clauses). Complex syntax thus might be related to AAE when aspects of language are still developing, but this relationship disappears as children's language proficiency increases.

The second research question considered the relationship between AAE use and complex syntax, TTR, and Tier 2/3 words in low, moderate, and high users of AAE. Significant low-moderate correlations were found between AAE use and complex syntax (r=.36), and Tier 2 words (r=.34) for spoken samples and TTR (r=.32) for the written samples. Craig and Washington (1994) found a positive relationship (r=.44) between the amount of complex syntax

and the amount of AAE children used. They suggested that high AAE use may be an indication of more advanced language ability. If true, high AAE users would be expected to use more Tier 2 and Tier 3 words. Although the overall relationship between Tier 2 words and AAE use was in the low-moderate range, when divided into low, moderate, and high user groups, there were no significant differences in either spoken or written sentences.

The absence of any significant relationship between AAE use and vocabulary use may reflect the topics students were asked to talk and write about. Students typically talked about and wrote about movies, television shows, and videogames. Perhaps if students were tasked to talk or write about academic subjects (e.g. history or science), word use would have been different. As with the previous findings for complex sentences, it may be that AAE use does not impact vocabulary use to the degree that has been suggested by the Craig and Washington studies.

The third research question addressed the prevalence of particular AAE forms and complex syntactic structures used by middle school students. Craig and Washington (1994) found that zero copula/auxiliary and subject-verb errors were used by all the children in the high and moderate AAE user groups and by over 75% of the low AAE users. Jackson and Roberts (2001) found that zero copula/auxiliary was used by over 95% of the children and subject-verb agreement errors were produced by over 60% of the children in their study. In the present study, frequently used AAE types included appositive pronouns (81%), subject-verb agreement errors (78%), fitna/sposeda/bouta (78%), zero past tense forms (56%), and zero copula (53%) in spoken sentences. The use of zero copula and subject-verb agreement appears to be frequently found in users of AAE; however, the frequency of occurrence was higher in younger children than in the adolescents in this study. As children mature, they code-switch and the frequency of occurrence for these forms diminishes.

The types of complex syntax forms found in this study were consistent with findings from previous studies (Craig & Washington, 1994; Jackson & Roberts, 2001). Craig and Washington found frequent use of simple

infinitives (64%) and noun phrase complements (44%), whereas Jackson and Roberts found frequent use of simple infinitives (63% for 3-year olds and 66% for 4-year olds) and conjoined clauses (35% for 3-year olds and 51% for 4-year olds). Not surprisingly, preschool children produced fewer relative clauses than the older students in the present study. Conjunctions, noun phrase complements, simple infinitives, and relative clauses were used by all 32 students in this study.

Limitations and Future Research

The current study had a number of limitations. First, it was conducted on 7th grade students and did not include other age groups. Second, the number of written sentences was limited which may have impacted the number of exemplars for complex syntax, vocabulary, and AAE use. Third, participant responses may have also been influenced by characteristics of the evaluator. In addition, subjects were assessed during one visit in one situational context. This study was also limited to examining the relationship between AAE, complex syntax, and lexical diversity. Future studies should consider including varied age groups, providing increased opportunities for production of linguistic structures, including familiar same age peers, and assessing participants in more than one speaking context during more than one visit. Future studies should also examine how AAE changes overtime and continue to search for solutions for closing the educational gap between African American and mainstream children.

Second, the number of written sentences was limited in this study. This may have impacted the number of exemplars for complex syntax, vocabulary, and AAE use. Written samples containing a minimum of ten sentences were collected from each student's language arts teachers. Additional sentences would have provided the opportunity for more use of varying types of complex syntax, vocabulary types, and AAE features.

Third, spoken samples were collected by an adult during one visit. Studies have shown that the context within which samples of language are obtained can result in considerable variation

in the language of young children (Gallagher, 1983). Context may also be a consideration for older children as well. Familiarity with the evaluator may also impact performance. In this study, spoken samples were collected during one visit with an unfamiliar adult in the school setting. This may have influenced the participant's spoken productions. Involving same age peers may have resulted in increased amounts and types of AAE, complex syntax, and vocabulary. Future studies should consider collecting language samples in a variety of contexts in more than one visit to provide increased opportunities for use of AAE, complex syntax, and diverse vocabulary. Including same age peers to communicate with the participants may have resulted in increased amounts and types of AAE, complex syntax, and vocabulary.

CONCLUSIONS

The purpose of the current research was to examine language proficiency in adolescents who use AAE. Three research questions were posed that considered the influence of AAE use on complex syntax and lexical diversity in low, moderate, and high AAE users. There were no significant differences in syntactic complexity, TTR, and vocabulary use as a function of AAE use. The only significant correlations between AAE use and these measures were in the low moderate range (r = .32-.36). The findings of this study were thus inconsistent with previous studies by Craig and Washington (1994, 1995), but were consistent with the more recent study by Jackson and Roberts (2001). Future studies should continue to examine how AAE changes over time and how AAE use may influence syntactic and lexical aspects of language.

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