

Relations between dialect variation, grammar, and early spelling skills

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Abstract. Relationships among African American English (AAE), linguistic knowledge, and spelling skills were examined in a sample of 92 children in grades one through three whose speech varied in the frequency of morphosyntactic AAE features. Children were separated into groups of high (AAE speakers) and low (standard American English, SAE, speakers) use of AAE features in speech, and asked to produce, recognize, and spell four inflected grammatical morphemes because variable omission of these endings in speech is a morphosyntactic characteristic of AAE. The groups differed in their spelling and elicited spoken production of inflections, but not recognition of these forms. AAE speakers omitted the inflections more often at each grade. Density of morphosyntactic AAE features in speech was related directly to spelling inflections, but this effect was mediated by children's understanding of standard grammatical forms.

Key words: African American English, Dialects, Grammar, Morphosyntactic Knowledge, Spelling

Introduction

Writing is not speech written down. Correspondences between spoken and orthographic representations of phonology, grammar, and vocabulary are not always direct, because print conventions do not always map to speech sounds, because speaking and writing are different language registers, and because social and regional language variations often are not reflected in standard written language systems. While all children must learn to negotiate mismatches between speech and print in order to become good readers and writers, this process may be particularly problematic for children whose spoken language differs substantially from standard written forms. This study explored this issue for children who speak African American English (AAE).

AAE is a dialect of American English whose rules for language form, content, and use differ from those typically encountered in school discourse and written English (hereafter referred to as standard American English, SAE). AAE is not incorrect or bad English; rather, it is a distinct

linguistic system that expresses semantic and syntactic information in alternative ways. AAE and SAE are not distinguished by the absence or presence of specific features, but rather by the frequency and contexts in which these forms occur. Further, African American children vary in the density of AAE features produced in their speech, which is associated with gender and socioeconomic status (Charity, Scarborough, & Griffin, 2004; Washington & Craig, 1998; Washington, Craig, & Kushmaul, 1998).

Sociolinguists have documented many AAE features and detailed descriptions can be found in Green (2004), Kamhi, Pollock, and Harris (1996), Mufwene, Rickford, Bailey, and Baugh (1998), and Washington and Craig (2002). Frequently cited AAE features in child and adult speech include morphosyntactic features, such as variable inclusion of grammatical morphemes (e.g., *want* vs. *wanted*) and the copula (e.g., *he big* vs. *he is big*), and phonological features, such as optional devoicing or deletion of final stop consonants (e.g., *buh* vs. *but*) and reduction of final consonant clusters (e.g., *fas* vs. *fast*).

For many years, researchers have speculated that the reading and writing difficulties that many African American children experience in school may be related to differences between AAE and SAE (Baratz & Shuy 1969; Craig & Washington, 2004; Dillard, 1972; Harris, Kamhi, & Pollock, 2001; Kamhi et al., 1996; Labov, 1972; Taylor, 1986). As a group, African American children, especially those from low socioeconomic status backgrounds, experience lower academic achievement, higher rates of placement in special education and remedial programs, and poorer educational outcomes than their peers (Markowitz, Garcia, & Eichelberger, 1997; NABSE & ILIAD Project, 2002; National Center for Education Statistics, n. d.). Further, it is estimated that more than half of African American children attending urban schools speak AAE fluently upon school entry, and that the majority of African American children, irrespective of socioeconomic status, speak AAE to some extent (LeMoine, 2001; Washington, 1996). Investigations of the relations between AAE use and literacy and language performance are both timely and necessary.

The mechanisms through which AAE use may influence academic performance remain unclear. Often termed *dialect interference* theories, two distinct, though not mutually exclusive, perspectives have emerged from work in this area. Some hypothesize that negative attitudes towards AAE use by teachers are related to academic failure, and that teachers perceive AAE speakers to be deficient, "at-risk", or low achievers, leading to low expectations, inappropriate assessment and instruction, and negative interactions with students (Goodman & Buck, 1973; Ogbu, 1995; Smitherman, 1986; Strickland, 1995). Others suggest that linguistic

mismatches between AAE and SAE could hamper performance by creating confusion as children learn phoneme-grapheme correspondences, grammatical forms, and lexical items, thereby adding additional linguistic and cognitive work to literacy tasks (Harris et al., 2001; Labov, 1995).

In early research conducted prior to the 1980s, inconsistent associations were found between AAE use and reading and writing. Several recent investigations, however, have found support for a relationship between dialect differences and literacy achievement. Charity et al. (2004) found that African American children's production of standard phonological and morphosyntactic forms on a sentence repetition task was correlated with word recognition, decoding, and reading comprehension in kindergarten through second grade. Craig, Thompson, Washington, and Potter (2004) found that the degree to which African American children used such AAE features while reading a text aloud was related to their accuracy and rate scores on the passage. Even in adults, a relationship between AAE usage and spelling patterns has been observed (Treiman, 2004).

To date, relatively little is known about the relations between dialect use and spelling skills among children who are learning to read and write. In one early study, Kligman and Cronnell (1974) found that African American and White children's production of both standard and AAE phonological and morphosyntactic forms during sentence imitation was related to overall spelling accuracy on a dictation task. Yet linguistic variation may have a particularly strong influence on young children because beginning readers and writers rely heavily on their knowledge of spoken language to represent sounds and lack a full understanding of the relations among phonology, morphology, syntax, and spelling. Although English has an alphabetic writing system, it has a deep orthography in which both morphology and phonology govern spelling. For example, not only must children learn that *-ed* is necessary to convey past tense meaning, but they also need to understand that *-ed* has three allomorphic sounds that are represented with the same spelling.

This complex system is particularly difficult for beginning spellers to master. Both traditional theories of spelling development and research investigations suggest that typically-developing children learn to represent inflections correctly and consistently by third grade (age 8 or 9), in conjunction with increasing reading skill, grammatical and orthographic knowledge, and classroom instruction (Beers & Beers, 1992; Ehri, 1997; Gentry, 1982; Henderson, 1981; Nunes, Bryant, & Bindman, 1997; Read, 1986; Rubin, 1988). Further, children with oral language and learning disorders seem to have specific difficulties in processing inflections, which is most evident in their omission of these morphemes in both speech and

writing (Carlisle, 1996; Johnson & Grant, 1989; Hauerwas & Walker, 2003; Vogel, 1983; Wiig, Semel, & Crouse, 1973; Windsor, Scott, & Street, 2000).

For AAE speakers, understanding the relations between grammar and spelling may be even more challenging because of linguistic mismatches between AAE and SAE. Variable oral production of many inflected endings is characteristic of AAE (Washington & Craig, 2002). Children may, for instance, sometimes say *Yesterday he walked* and sometimes say *Yesterday he walk*. In addition, inflections are often not represented in written texts produced by African American children and adults (Kligman & Cronnell, 1974; Scott & Rogers, 1996; Sullivan, 1971). Kligman and Cronnell (1974) found that for second graders who spoke AAE, morphosyntactic forms like inflections were more difficult to spell than phonological features like final consonant clusters.

The present study explored children's knowledge of four regular inflected morphemes: past tense *-ed*, present progressive *-ing*, third person singular *-s*, and noun plural *-s*. It was hypothesized that typically-developing children in grades one through three who used many AAE features in their spontaneous speech would show less proficiency than their classmates in spelling and elicited oral production of these inflections, and that their errors would reflect AAE morphosyntax. Conversely, AAE speakers were not expected to have more difficulty recognizing these inflections. Their print knowledge was expected to be similar to that of their peers and to aid in recognition of these forms above and beyond speech differences. It was also hypothesized that as development progresses, AAE speakers would show increasing proficiency in their spelling, elicited oral production, and written recognition of inflections. Relationships between oral and written mastery of inflectional morphemes were also anticipated. A final goal of the study was to examine the relative contribution of young children's spoken AAE use to their growing language and literacy knowledge.

Method

Participants

A total of 116 students were recruited to participate in this study. Children were excluded from participation if they were non-native English speakers or bilingual, if they had been retained in grade, or if they had a history of speech, hearing, language, or learning disorders. Children were also excluded if they achieved standard scores below 85 or above 115 on

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the Spelling subtest of the *Wide Range Achievement Test, 3rd Edition* (WRAT3; Wilkinson, 1993), indicating that they did not have grade-appropriate spelling achievement.

Ten students were excluded from participation because their WRAT3 raw scores were too high for grade level; three were excluded because their scores were too low. Of the remaining 103, 11 were excluded to maintain a similar number of participants at each grade level who had similar WRAT3 raw scores. The remaining sample included 92 children, 37 boys and 55 girls, from various ethnic backgrounds. There were 31 first graders, 30 second graders, and 31 third graders. All of the participants were considered to be typically-achieving students by their teachers.

The students attended 13 schools from two neighboring districts, one suburban and one urban, in the Midwestern U.S. The schools had similar spelling curriculums, with formal instruction for approximately 30 minutes per day beginning in the first grade. All participating schools served children from diverse ethnic and socioeconomic backgrounds, with the percentage of students eligible for the federal lunch program ranging from 20 to 50%.

Dialect difference groups

Dialect use was assessed by analyzing a narrative language sample. Children were asked to tell a story about a time when they were either hurt or in trouble. Their responses were audio-recorded and transcripts were scored for the occurrence of individual morphosyntactic AAE features. A Dialect Density Measure (DDM, Washington & Craig, 2002) was computed for each language sample by dividing the number of morphosyntactic AAE features used by the number of words in the overall sample. Phonological AAE features were not included. In young children, DDM is typically 5–15% and rarely more than 20% during spontaneous discourse (Washington & Craig, 2002). The 45 participants who produced narratives with a DDM of 5% or greater were classified as AAE speakers. All of these students were African American. The remaining 47 students, who produced narratives with a DDM less than 1%, were classified as SAE speakers. Children in the second group were from various ethnic backgrounds, including 11 African American children. A comparison of these two groups is provided in Table 1.

Materials

Spelling of inflections

Spelling accuracy for the targeted inflections was examined with a 25-item sentence dictation task given in traditional spelling test format (see

Table 1. Mean groups' ages, dialect density measures, and performance on the tasks (standard deviations in parentheses).

	Grade 1		Grade 2		Grade 3	
	AAE	SAE	AAE	SAE	AAE	SAE
<i>N</i>	15	16	15	15	15	16
Age (years)	6.6 (0.3)	6.5 (0.3)	7.7 (0.3)	7.6 (0.3)	8.7 (0.4)	8.6 (0.3)
Dialect Density (%)	7.9 (2.2)	0.1 (0.3)	6.7 (2.5)	0.0 (0.1)	6.9 (1.7)	0.1 (0.4)
WRAT3 (standard score)	98.5 (8.6)	106.4 (8.0)	100.2 (6.9)	103.1 (8.2)	97.8 (6.6)	105.6 (8.9)
Reading Base Words	26.2 (19.6)	59.2 (28.9)	86.2 (14.1)	98 (4.1)	96.7 (5.9)	97.7 (6.4)
Spelling Inflections	26.4 (11)	42.7 (18.9)	51.8 (27.7)	80.7 (18.7)	68 (28.5)	94.6 (6.3)
Spelling Other Patterns	20.4 (17.8)	39.6 (24)	66.8 (13)	75.1 (15.9)	79.1 (15.4)	83.5 (14)
Productive Morphology	33 (9)	66.6 (6.3)	44.3 (19.7)	75 (9.6)	55.3 (10.6)	83.8 (11.9)
Orthographic Recognition	24.3 (8.4)	36.3 (14.1)	38 (13.1)	54.3 (17)	52 (14.1)	55.3 (17.8)

Note. Unless otherwise noted, all scores are represented as percentage of correct responses.

Appendix A). There were a total of 10 instances of each inflection, and targeted words were not emphasized during dictation. Mean length of the sentences was 4.9 words. Only spellings of the targeted inflections were scored. The base morphemes of the target words were chosen because they are present in the oral and written vocabulary of primary-grade children. Many were also used in the children's reading and spelling lessons. In addition, the target words illustrated multiple allomorphs (i.e., /t, d, id/ for *-ed*) and orthographic structures (i.e., doubling rule, silent e rule, no change) for each ending. Because AAE speakers tend not to produce inflections orally when they are followed by a consonant or nothing at all (Green, 2004; Stockman, 1996), one half of the inflections were followed by a vowel, and all endings were preceded by a consonant. This task was administered in small groups.

Inflections were scored for the percentage spelled correctly. In addition, incorrect spellings were classified as: phonetic error (spelled phonetically); non-phonetic error (spelling was phonetically incomplete or phonologically unrelated to the target ending), omission (only the base word was spelled); morphological substitution (an alternative inflection was used and correctly spelled); or other error. The percentages for each error were also scored.

Spelling of other patterns

Spelling accuracy was also scored for 31 dialect-neutral orthographic patterns that occurred in words on the dictation task (see Appendix A). These included consonant digraphs and trigraphs (such as *wr*, *sh*, *ch*, *ck*) and vowel patterns (such as *ee*, *ou*, *ir*). Like inflected endings, these patterns are not entirely transparent and require some orthographic knowledge to spell correctly. Percentage spelled correctly was scored.

Productive morphology

Oral production and understanding of the targeted inflections was measured with a productive morphology task adapted from Hauerwas and Walker (2003), which required the application of inflected morpheme rules to nonwords in sentences (see Appendix B). For example, the researcher said, "Say *samp*. (child repeats.) The girl likes to *samp* everyday. Today, the girl *samps*. What did she do yesterday? Yesterday, she s_____." There were six practice items (three with real words and three with nonwords) followed by 20 test items. The total number correct, as well as the number of morphological substitutions of another inflection and omissions of the inflection, was scored.

Orthographic recognition

Knowledge of common orthographic patterns for the targeted inflections was measured with a nonword multiple-choice task adapted from Treiman (1993; see Appendix C). On each trial, a nonword was dictated and used in a sentence to signify the use of inflections. For example, the researcher said, "Gaked. David *gaked* his bike. *Gaked*." Then, the child was asked to decide which of three spellings (*gakked*, *gakt*, *gaked*) best represented the nonword that the examiner had dictated. The choices represented a phonetic, an orthographically incorrect, and an orthographically correct representation of the nonword, with order varied across items. This task was administered in small groups. The total number correct on the 20 test items was scored.

Word reading

To determine whether children's reading skill was related to spelling accuracy, the participants were asked to read aloud the base morpheme of each of the 40 targeted words from the sentence dictation task (see Appendix). This task was administered individually, and the total number correct was scored.

Procedure

Testing was done at the beginning of the academic year, with each child completing all of the tasks within 2 weeks. Children were tested in two 20-minute individual sessions, one of which included the language sample and the other the productive morphology and word recognition tasks. In one 40-minute group session the WRAT3, sentence dictation, and orthographic recognition tasks were given. Task order was fixed within each session, and the order of sessions was randomized across participants. Sessions were conducted before, during, and after regular school hours.

Inter-rater reliability was evaluated for the oral language sample and the sentence dictation task. Responses from 20% of the participants in each dialect group at each grade were randomly chosen to be coded independently by a second rater who was familiar with the method of analysis and the phonological and morphosyntactic features of AAE. For the language samples, point-to-point comparisons for AAE features and tokens resulted in 90.9% agreement; for the spelling task, there was 92.8% agreement.

Results

Scores on all measures were first examined for dialect group and grade level differences. Correlation and regression analyses were then used to

examine in greater depth the relationships among dialect differences, spelling of inflections, and morphosyntactic and orthographic knowledge.

Preliminary analyses

Because gender has been associated with variation in the density of AAE use among African American children, DDM scores were examined for mean group differences. The results of a one-way ANOVA were not significant ($\eta^2 = .04$). Therefore, the performances of boys and girls were grouped in the analyses.

Spelling accuracy was also analyzed separately for each inflection. There was a ceiling effect for *-ing*, which was spelled correctly 84% of the time, compared to 50.8% for past tense *-ed*, 62.9% for plural *-s*, and 69.5% for third person singular *-s*. Therefore, data for *-ing* were not examined further. Preliminary analyses of the remaining inflections showed no interactions of inflection type with dialect group. Therefore, accuracy and error scores were summed for these inflections, creating composite measures that were used in subsequent analyses.

Comparisons of AAE and SAE groups

Tables 1 and 2 provide a summary of performance on all measures at each grade level for children in the two dialect groups.

Overall literacy skill

Although all participants in both dialect groups had earned standard scores between 85 and 115 on the WRAT3 Spelling measure, a group difference

Table 2. Mean percentage of responses for each type of spelling error on the sentence dictation task (standard deviations in parentheses).

	Grade 1		Grade 2		Grade 3	
	AAE	SAE	AAE	SAE	AAE	SAE
Phonetic	23.6 (10.9)	29.2 (18)	12.4 (9.3)	10.4 (16)	3.1 (4.5)	3.6 (1.3)
Omission	36.2 (14.9)	20.2 (15.9)	28.7 (21.3)	6.2 (5.5)	24 (21.4)	3.8 (4.7)
Non-phonetic	10.7 (6.6)	4.6 (5.4)	6.2 (7.4)	1.1 (1.6)	1.8 (2.1)	0
Morphological substitution	2.4 (2.3)	2.7 (4.1)	0.9 (2.0)	1.1 (2.4)	2.7 (5.2)	0.4 (1.1)
Other	0.7 (2.6)	0.6 (2.5)	0	0.4 (1.2)	0	0

was obtained when those standard scores were entered into a two (dialect group) \times three (grade) ANOVA, $\eta^2 = .14$, $F(1, 86) = 13.80$, $P < .001$. No main effect for grade or interaction was found. Similarly, the SAE group's mean exceeded the AAE group's on the experimental word reading measure, $\eta^2 = .20$, $F(1, 86) = 20.97$, $P < .001$. This difference was qualified by a grade effect, $\eta^2 = .72$, $F(2, 86) = 109.01$, $P < .001$, and a group \times grade interaction, $\eta^2 = .16$, $F(2, 86) = 8.03$, $P < .001$, indicating that the group difference was larger in first grade than in the older grades.

Because raw scores on the WRAT3 Spelling subtest and the experimental word reading measures were correlated highly ($r = .82$, $P < .001$), a composite score was derived using Principal Components analysis. This literacy composite was used as a covariate in some analyses in order to adjust for the observed dialect group differences in literacy skills that do not specifically depend on children's knowledge of grammatical inflections.

Spelling

Accuracy of spelling on the dictation task was analyzed in a two \times two \times three mixed model ANOVA with the type of spelling pattern (inflections vs. other) as the within-subject repeated measure and with dialect group and grade as the between group factors. Main effects were found for group, $\eta^2 = .23$, $F(1, 86) = 25.08$, $P < .001$, and grade, $\eta^2 = .63$, $F(2, 86) = 73.29$, $P < .001$, reflecting higher spelling accuracy by the SAE group and improvement in spelling from grade to grade. These effects were qualified by interactions of group with type, $\eta^2 = .14$, $F(1, 86) = 13.43$, $P < .001$ and a group \times type \times grade interaction, $\eta^2 = .11$, $F(2, 86) = 5.03$, $P < .01$. As shown in Figure 1, beyond first grade, the differences between dialect groups were much more pronounced for morphological inflections than for orthographic patterns that are not associated with differences between spoken AAE and standard forms.

Spelling errors. Errors in the spelling of inflections were also examined. Analyses were conducted only for phonetic spellings and omissions because non-phonetic spellings and morphological substitutions of inflections were rare (see Table 2). Two (dialect group) \times three (grade) ANOVAs yielded main effects for dialect group in the omission of inflections ($\eta^2 = .30$, $F(1, 86) = 37.14$, $P < .001$), as AAE speakers produced fewer inflections than SAE speakers. Grade effects were also found for omissions ($\eta^2 = .15$, $F(2, 86) = 7.27$, $P < .001$) and phonetic spellings ($\eta^2 = .44$, $F(2, 86) = 33.67$, $P < .001$). Post hoc Tukey tests indicated that the number of omissions decreased between first and second grades, while the number of phonetic spellings decreased between

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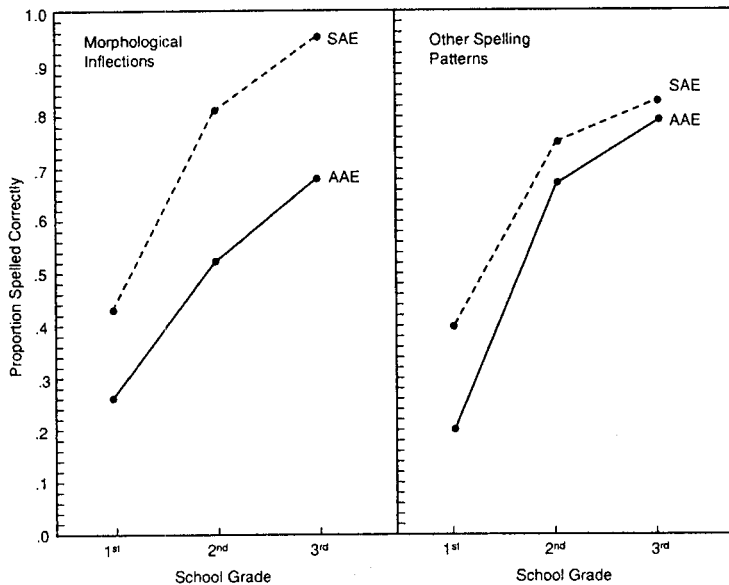


Figure 1. Spelling of inflections and consonant and vowel patterns by dialect group and grade.

each grade level. No interaction effects were found. When the literacy composite was included as a covariate in the analyses, dialect group effects remained for omissions ($\eta^2 = .14$, $F(1, 85) = 13.53$, $P < .001$) and grade effects remained for phonetic spellings ($\eta^2 = .11$, $F(2, 85) = 5.01$, $P < .01$). No interaction effects were found.

Contexts for representing inflections. Because inflections appear to be produced inconsistently in AAE, it is unclear whether their variable presence reflects absence of the marker (i.e., it is not present in the child's mental representations of words) or optional presence of the marker (i.e., it is produced in some contexts). There is some evidence that AAE speakers tend not to produce inflections orally when they are followed by a consonant or nothing at all (Stockman, 1996). Therefore, the contexts in which AAE speakers represented inflections in writing, by spelling them correctly or phonetically, were also examined.

A two (context: vowel or consonant) \times three (grade) ANOVA yielded significant effects for context ($\eta^2 = .31$, $F(1, 42) = 42.71$, $P < .001$) and grade ($\eta^2 = .14$, $F(2, 42) = 3.35$, $P < .05$). AAE speakers were more likely to represent inflections if they were followed by a vowel

(mean = 69.8%, $SD = 23.6$) than by a consonant or nothing (mean = 62.6%, $SD = 27.8$). SAE speakers did not show this context sensitivity ($\eta^2 = .05$). No interaction with grade was found, suggesting that inflections were easier to represent preceding vowels for AAE speakers at each grade level.

Morphosyntactic and orthographic knowledge

Productive morphology and orthographic recognition scores were analyzed in separate two (dialect group) \times three (grade) ANOVAs. Effects for dialect group ($\eta^2 = .64$, $F(1, 86) = 154.89$, $P < .001$ and $\eta^2 = .12$, $F(1, 86) = 12.18$, $P < .001$) and grade ($\eta^2 = .33$, $F(2, 86) = 21.37$, $P < .001$ and $\eta^2 = .33$, $F(2, 86) = 21.08$, $P < .001$) were found for the two measures, respectively. SAE speakers outperformed AAE speakers on both tasks. Post hoc Tukey tests indicated that performance on the productive morphology task improved with each grade level, while performance on the orthographic choice task improved between first and second grade. No significant interaction effects were found. When ANCOVAs controlling for differences in overall literacy levels were conducted, significant dialect group differences were found for productive morphology ($\eta^2 = .55$, $F(1, 85) = 102.56$, $P < .001$) but not orthographic recognition. No significant grade or interaction effects were found.

Errors on the productive morphology task were also analyzed. For morphological substitutions, means were 18.2% ($SD = 9.5$) for SAE speakers and 21.8% ($SD = 10.2$) for AAE speakers. For omissions of the inflections, means were 6.7% ($SD = 7.6$) for SAE speakers and 34% ($SD = 18.3$) for AAE speakers.

Two (dialect group) \times three (grade) ANOVAs yielded main effects for dialect group in the number of omissions ($\eta^2 = .54$, $F(1, 86) = 101.26$, $P < .001$). Grade effects were also found for both the number of omissions ($\eta^2 = .16$, $F(2, 86) = 8.12$, $P < .05$) and morphological substitutions ($\eta^2 = .07$, $F(2, 86) = 3.46$, $P < .01$). Both error types decreased between first and third grade. No interaction effects were found. When the literacy composite was included as a covariate in the analyses, only dialect group effects remained for omission of inflections ($\eta^2 = .43$, $F(1, 85) = 64.93$, $P < .001$). No grade or interaction effects were found. In sum, both AAE and SAE speakers had difficulty producing inflections for novel words. However, while substitution errors were common for children in both groups, AAE speakers also omitted inflections more frequently than SAE speakers, even after controlling for differences in overall literacy skill.

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Relations between spelling inflections and morphosyntactic and orthographic knowledge

Partial correlations, controlling for grade level, revealed significant relations between correct spelling of inflections and performance on the productive morphology, orthographic recognition, and word recognition measures (see Table 3). These relationships were further explored with a hierarchical regression analysis in which correct spelling of inflections was the outcome measure (see Table 4). Grade-adjusted regression residual scores for each variable were used for these analyses to control for the influence of grade-level differences in performance. The literacy composite was entered first and accounted for 39.5% of the variance. Productive morphology accounted for an additional 5.7% of the variance

Table 3. Partial correlation coefficients, controlling for grade, for the entire sample (above the diagonal) and subsample of 56 African American children (below the diagonal).

	1	2	3	4	5	6
1. Spelling Inflections	—	.60***	.51***	.41**	.50***	.63***
2. Spelling Other Patterns	.55***	—	.30**	.51***	.79***	.76***
3. Productive Morphology	.46***	.32**	—	.35**	.40***	.45***
4. Orthographic Recognition	.35**	.51***	.36**	—	.44**	.48***
5. Reading Base Words	.47***	.82***	.37**	.44***	—	.60***
6. WRAT3 (raw score)	.57***	.82***	.37***	.49***	.64***	—
7. Dialect Density	-.40**	-.16	-.64***	-.28*	-.25	-.14

* $P < .05$, ** $P < .01$, *** $P < .001$.

Table 4. Summary of hierarchical regression analyses for variables predicting correct spelling of inflected endings.

Variable	ΔR^2	B	$SE\ B$	β
Step 1	0.40***			
Literacy composite		0.63	0.08	0.63***
Step 2	0.06**			
Literacy composite		0.50	0.09	0.50***
Productive morphology		0.27	0.09	0.27**

Note: Grade-adjusted regression residual scores were used for each variable.

** $P < .01$, *** $P < .001$.

at the next step, while orthographic recognition did not contribute significant additional variance.

Relations between spelling inflections, morphosyntactic knowledge, and dialect density

Thus far the analyses have shown that for children in grades one through three, after accounting for differences in overall literacy levels, (a) the ability to spell inflected morphemes correctly is related to their elicited oral production and understanding of these standard forms and (b) SAE speakers significantly outperform AAE speakers in both these skills. A final set of analyses considered whether there is a relationship between children's AAE use and these skills. If a relationship exists, it would further support the hypothesis that children's dialect use is related to their literacy performance.

The method of defining AAE use in this study produced a wide range of DDM scores for the African American children, but not the other students. Therefore, these analyses included only the 56 African American children who participated in the study. Note that of these students, 45 were classified initially as AAE speakers by the sampling criteria, while 11 were classified as SAE speakers. DDM scores ranged from 0 to 14.5%.

Partial correlations, controlling for grade level, revealed significant negative associations between DDM and correct spelling of inflections, productive morphology, and orthographic recognition (see Table 3). Although performance on the word recognition measure was not predicted well by DDM, it did approach significance. Regression analyses with correct spelling of inflections as the outcome measure were also conducted using grade-adjusted regression residual scores for each variable (see Table 5). In the first simple regression, DDM accounted for 14.5% of the variance in spelling inflections. However, in a second regression analysis with both DDM and productive morphology, only the latter contributed to the variance in spelling (22.3%).

These results suggest a mediating function for elicited production and understanding of standard grammatical forms in the relation between DDM and spelling inflections (see Figure 2). According to Baron and Kenny (1986), a variable may function as a mediator when (a) the independent variable predicts it (e.g., DDM and productive morphology are correlated), (b) it predicts the dependent variable (e.g., productive morphology and correct spelling of inflections are correlated), and (c) the relationship between the independent and dependent variables disappears

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Table 5. Summary of regression analyses for variables predicting correct spelling of endings among African American children.

Variable	ΔR^2	<i>B</i>	<i>SE B</i>	β
Model 1	0.15**			
Dialect density		-11.90	3.93	-0.38**
Model 2	0.22**			
Productive morphology		0.42	0.18	0.36**
Dialect density		-4.74	4.89	-0.15

Note: Grade-adjusted regression residual scores were used for the productive morphology and spelling measures.

** $P < .01$, *** $P < .001$.

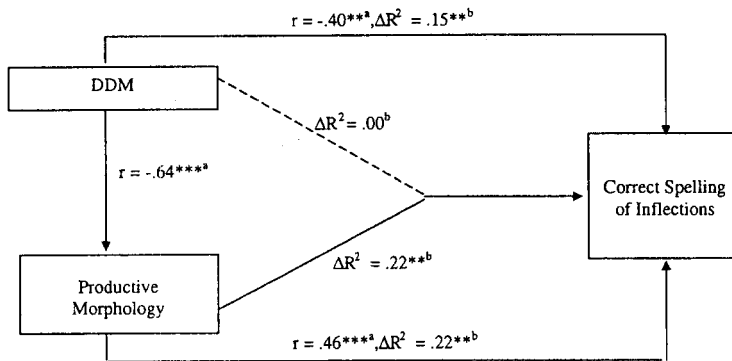


Figure 2. Mediating relations between dialect density and spelling inflections among African American children. Note: * $P < .05$, ** $P < .01$, *** $P < .001$; ^a partial correlation controlling for grade; ^b regression using grade-adjusted residual scores.

or decreases when the mediator's role is taken into account (e.g., the effect for DDM is smaller in a hierarchal regression analysis with productive morphology than in a simple regression of DDM on correct spelling of inflections).

Discussion

The purpose of this study was to explore how beginning readers and spellers whose speech includes many AAE features negotiate linguistic mismatches between their spoken and written language. Grammatical

inflections were of particular interest because their production is variable in spoken AAE but necessary for standard speech and print conventions. Several hypotheses were proposed about children's knowledge of these forms and its relation to spelling skill and differences in spoken AAE use.

As hypothesized, young AAE speakers showed less proficiency in spelling and elicited oral production of inflections than SAE speakers. Conversely, beyond first grade, the groups did not differ in their spelling of consonant and vowel patterns that are not associated with differences between spoken AAE and standard forms. At the first grade level, however, SAE speakers spelled both dialect-sensitive and dialect-neutral patterns better than AAE speakers, suggesting that they may have been better spellers overall. While wide variation in spelling skills may be expected in the first grade, this finding does limit the interpretation of the results.

Error analyses revealed oral and spelling performance patterns that are consistent with linguistic differences between AAE and SAE. For example, the dialect groups differed primarily in the absolute number of omissions of inflections both in speech and writing, with AAE speakers producing fewer inflections. AAE speakers were also more likely to represent inflections in writing if they were followed by a vowel sound, while SAE speakers did not share this context sensitivity. Finally, though AAE speakers were not predicted to have more difficulty with the orthographic choice task than their peers, dialect group differences were found. While, AAE speakers' poorer word recognition and spelling skills explained some of the variance in performance, this task required both orthographic and grammatical knowledge of standard forms to complete successfully and AAE speakers appeared to have specific difficulty understanding and using standard morphosyntactic forms in speech.

Although similar findings have been reported (Kligman & Cronnell, 1974; Sullivan, 1971), much of this work compared older African American and White children who differed substantially in reading achievement, socioeconomic status, and schooling experiences. Findings of group differences could be attributable to any one of these factors alone. The results of this study suggest that even when many of these secondary factors were considered, AAE and SAE speakers still differed in their spelling and oral production of inflections, and differences in their errors were reflective of linguistic mismatches between AAE and SAE.

AAE and SAE speakers were also expected to show increasing spelling skill and morphosyntactic and orthographic knowledge. Grade effects on each of these measures confirmed this hypothesis, with elicited oral and

written production of inflections improving across each grade level and orthographic recognition improving between first and second grade. However, the cross-sectional design implemented in this study allows only for inferential analysis of developmental trends in performance. In addition, the ability to spell inflections correctly was related to oral production and written recognition of these forms, though only the former withstood controls for differences in grade and overall literacy levels. Similar findings have been reported in the literature (Beers & Beers, 1992; Hauerwas & Walker, 2003; Nunes et al., 1997; Ramer & Rees, 1973; Rubin, 1988), and suggest that both AAE and SAE speakers rely on their oral grammatical understanding of standard morphosyntactic forms to spell them.

Finally, this study sought to explore the relations between children's use of various morphosyntactic AAE forms in spontaneous speech and their spelling skills. The African American children in this study varied considerably in the degree to which they produced AAE forms in speech samples (as measured by DDM) and their relative AAE use was related to their elicited oral production, written recognition, and spelling of inflections. Unlike other studies (Charity et al., 2004; Craig et al., 2004), DDM was not related to word recognition; however, the participants in this study were selected from a narrow range of achievement levels, while this range was much broader other investigations.

Both DDM and elicited oral production of inflections were good predictors of spelling in separate regression analyses. However, only the later relationship maintained significance in combined analyses. These results are similar to recent findings of a direct association between variation in AAE use and reading performance among African American children in the primary grades (Charity et al., 2004; Craig et al., 2004), but also extend these findings to consider the relations between dialect variation and other language skills that support reading and spelling acquisition.

Overall, the results of this study support and extend previous investigations of the relations between linguistic knowledge, literacy skill, and dialect variation. The results are consistent with the linguistic perspective on dialect interference in African American children's reading and writing skills. The majority of African American children in this study did appear to have more difficulty spelling dialect-sensitive (e.g., inflections) as compared to dialect-neutral (e.g., consonant and vowel patterns) orthographic patterns than their peers, and their errors were consistent with linguistic mismatches between spoken AAE and standard written forms. Meanwhile, a direct relation between spoken AAE use and correct spelling of inflections appeared to be mediated by children's oral

production and understanding of standard grammatical forms, suggesting that interference may also occur at a more fine-grained level of linguistic knowledge.

Exploring the relations between dialect variation and children's implicit and/or explicit understanding of standard linguistic forms and rules may help to clarify the mechanism(s) by which dialect differences interfere with reading and writing performance. Perhaps young children's relative use of AAE and standard forms in spontaneous discourse is indicative of their sensitivity to language in general. Charity et al. (2004) propose a similar hypothesis, referring to this sensitivity as *dialect awareness*. Like other metalinguistic abilities known to support and be reinforced by literacy acquisition, the researchers suggest that children's relative awareness of linguistic variation in their speech communities may reflect a general ability to think about and manipulate language. Being more attuned to language, children who are more aware of this linguistic variation may experience less interference from dialect mismatches and therefore, experience less difficulty learning to read and write. The results of this study are consistent with this hypothesis, as a measure of relative AAE use was negatively related to children's production and understanding of standard grammatical forms in novel contexts (arguably a measure of metalinguistic skill) and the ability to spell inflections correctly.

The results of this study also highlight the importance of exploring these complex relationships early in literacy development. Many previous investigations of dialect interference included older children and adults, while the results of this study and other recent investigations suggest that linguistic variation has particular bearing on beginning readers and writers understanding and use of standard forms. Research involving young children may be especially informative to discussions of the relative importance of dialect variation in both literacy acquisition processes and instructional practices.

In addition, the results of this study emphasize the importance of exploring various types of language and literacy skills among diverse students. While the majority of dialect interference studies have explored various aspects of reading skill, African American children in this study experienced particular difficulty with oral and written tasks that tapped morphosyntactic knowledge. This group of students may benefit especially from instruction that emphasizes written language and linguistic skills, in addition to word recognition skills.

The results of this study do not definitively posit a causal relationship between spoken AAE use and literacy performance among African American children. While mismatches between spoken AAE and

standard forms seemed to account for some linguistic and spelling skill differences in this study, alternative hypotheses may explain the performance differences observed between AAE and SAE speakers. For example, children's vocabulary skills were not explored in this study, and vocabulary knowledge may be related to differences in children's ability to spell morphologically complex words (Fowler & Liberman, 1995).

The results are also tempered by lack of evidence on many sociolinguistic variables that could explain the observed relations, including differences in the quality and quantity of instruction, differences in home and school language and literacy experiences, teacher biases against AAE users, and socioeconomic differences. These sociolinguistic variables may explain the differences in overall spelling and reading achievement that were observed; however, the groups' similar performance on dialect-neutral orthographic patterns suggests that linguistic mismatches between AAE and standard forms influence performance on the experimental tasks above and beyond other sociolinguistic factors. The results are also confined to a limited set of AAE features, while other morphosyntactic or phonological features of AAE may be particularly important to consider in these relationships. Finally, intervention studies would be needed to fully account for any causal relations between spoken dialect variation and literacy performance.

Though the data presented here cannot indicate a cause-and-effect relationship between dialect group differences in linguistic knowledge and spelling skills and linguistic differences between AAE and standard forms, the results suggest that a relationship does exist that has implications for early literacy achievement among African American children. Investigations of the role of dialect variation in literacy acquisition and achievement are both relevant and necessary. New perspectives on these complex issues may benefit future discussions on the difficulties many African American children experience with reading and writing, and ultimately inform instructional approaches necessary to improve academic achievement.

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Appendix A

Items on the Sentence Dictation Task

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- | | |
|--|--|
| 1. I <u>smiled</u> at him. | 14. I <u>baked</u> a pie. |
| 2. She <u>hopes</u> I am <u>sleeping</u> over. | 15. He <u>misses</u> our <u>friends</u> a lot. |
| 3. Mom <u>painted</u> my <u>nails</u> again. | 16. She is <u>holding</u> a doll. |
| 4. She is <u>wrapping</u> a box. | 17. A dog <u>licked</u> her <u>hands</u> . |
| 5. He <u>hates</u> <u>when</u> they are <u>yelling</u> . | 18. Mom <u>washes</u> my <u>shirts</u> . |
| 6. He <u>thinks</u> I am <u>moving</u> away. | 19. Dad is <u>hitting</u> a ball. |
| 7. I <u>patted</u> a cat's head. | 20. He <u>lives</u> in Texas. |
| 8. Mom is <u>shopping</u> for <u>dresses</u> . | 21. Dad <u>grabbed</u> our <u>lunches</u> . |
| 9. Dad <u>laughs</u> when he is <u>joking</u> . | 22. He is <u>kicking</u> <u>rocks</u> outside. |
| 10. I <u>dropped</u> the <u>plates</u> again. | 23. Mom <u>helped</u> our teacher. |
| 11. Mom <u>watches</u> when she is <u>dancing</u> . | 24. School <u>ends</u> in June. |
| 12. I <u>tasted</u> the food. | 25. The <u>roses</u> <u>smelled</u> good |
| 13. She <u>rides</u> <u>horses</u> after school. | |
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Note: Targeted inflections are underlined. Targeted consonant and vowel patterns are bolded.

Appendix B

Items on the Productive Morphology Task

1. Say samp. ____ The girl likes to samp everyday. Today she samps. What did she do yesterday? Yesterday, the girl s _____. (Past Tense/t/, no change)
2. Say ruck. ____ This is a ruck. This is also a ruck. There are 2 r _____. (Plural/s/, no change)
3. Say bap. ____ The man likes to bap everyday. Yesterday, he bapped. What does he do today? Today, the man b _____. (3rd person singular/s/, no change)
4. Say lat. ____ The man likes to lat everyday. Yesterday, he lattted. What is he doing today? Today, the man is l _____. (Present Progressive, doubling)
5. Say gake. ____ The lady likes to gake everyday. Today she is gaking. What did she do yesterday? Yesterday, the lady g _____. (Past Tense/t/, silent E)

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6. Say tupe. ____ The players like to tupe everyday. Yesterday, they tuped. What are they doing today? Today, the players are t _____. (Present Progressive, silent E)
7. Say tob. ____ The machine likes to tob everyday. Today the machine tobs. What did the machine do yesterday? Yesterday, the machine t _____. (Past Tense/d/, silent E)
8. Say kud. ____ The girl likes to kud everyday. Yesterday, she kuded. What does she do today? Today the girl k _____. (3rd person singular/z/, no change)
9. Say vag. ____ This is a vag. The boy saw a big vag, a small vag, and a long vag. The boy saw 3 v _____. (Plural/z/, no change)
10. Say gib. ____ The boy likes to gib everyday. Yesterday, he gibbed. What is he doing today? Today, the boy is g _____. (Present Progressive, doubling)
11. Say mibe. ____ The lady likes to mibe everyday. Yesterday, she mibed. What does she do today? Today, the lady m _____. (3rd person singular/z/, silent E)
12. Say taze. ____ This is a taze. All the kids have a taze. They have 5 t _____. (Plural/schwa z/, silent E)
13. Say fose. ____ The couple likes to fose everyday. Yesterday, they fosed. What did they do today? Today the couple f _____. (3rd person singular/schwa s/, silent E)
14. Say mult. ____ The girl likes to mult everyday. Today she mults. What did she do yesterday? Yesterday, the girl m _____. (Past Tense/schwa d/, no change)
15. Say pide. ____ This is a pide. This is also a pide. There are 2 p _____. (Plural/z/, silent E)
16. Say beft. ____ The man likes to beft everyday. Yesterday, he befted. What is he doing today? Today, the man is b _____. (Present Progressive, no change)
17. Say tade. ____ The boys like to tade everyday. Today they are tading. What did they do yesterday? Yesterday, the boys t _____. (Past Tense/schwa d/, silent E)
18. Say bix. ____ The boy likes to bix everyday. Yesterday, he bixed. What does he do today? Today the boy b _____. (3rd person singular/schwa s/, silent E)
19. Say fatch. ____ This is a fatch. The boy has an old fatch and a new fatch. He has 2 f _____. (Plural/schwa z/)
20. Say dete. ____ The kite likes to dete everyday. Yesterday, it deted. What is the kite doing today? Today, the kite is d _____. (Present Progressive, silent E)

Appendix C

Items on the Orthographic Recognition Task

1. Mike (samped, sampt, sampped) the ball.
2. The (rucks, ruckz, ruckes) are swimming.
3. Mom (baps, bapz, bapes) the car.
4. Sara is (latting, latten, lating) a book.
5. David (gaked, gakt, gakked) his bike.
6. Dad is (tuping, tuppín, tuppín) our house.
7. Aisha (tobbed, tobd, tobed) my lunch.
8. Jason (kuds, kudz, kudes) the dog.
9. The (vags, vagz, vages) are flying.
10. Katie is (gibbing, gibbin, gibing) fast.
11. John (mibes, mibz, mibs) to school.
12. The children like to wear (tazes, tazis, tazes).
13. Nicole (foses, fosis, foss) a cake.
14. James (multed, multid, multted) a movie.
15. We play with our (pides, pidz, pids) after school.
16. Maria is (befing, beften, befting) a picture.
17. My brother (taded, taddid, tadded) the video games.
18. Anthony (bixes, bixis, bixs) with his friends.
19. My (fatches, fatchis, fatchs) are dirty.
20. Mary is (deting, detten, detting) to camp.

Note: The correct nonword is underlined.

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