There is a longstanding record of an achievement gap in reading performance between African American students and their Caucasian peers. In general, African American children are at risk for poor literacy outcomes (Craig & Washington, 2004b; Snow, Burns, & Griffin, 1998). They have repeatedly scored lower than their Caucasian counterparts on national measures of reading and writing (Lee, Grigg, & Donahue, 2007; Salahu-Din, Persky, & Miller, 2008). For example, 54% to 60% of fourth-grade African American children have not achieved basic competence in reading across the last 5 years, which is considerably more than the 22% to 25% of their Caucasian peers who failed to meet basic standards (Lee et al., 2007). Similarly, approximately 32% of fourth-grade African American students do not demonstrate basic competence in writing, compared to approximately 10% of their Caucasian counterparts (Salahu-Din et al., 2008).

The reason for the differences in literacy outcomes between African American and Caucasian children continues to elude experts. In recent years, researchers have sought to explain differences in performances between African American and Caucasian children on literacy and literacy-related tasks by examining the associations between degree of African American English (AAE) use and performance on written measures of morphological awareness. Additional purposes were to determine whether performance on the morphological awareness tasks (a) was affected by the transparency of morphologically related words and the type of task administered, (b) was associated with other literacy and literacy-related skills, and (c) explained unique variance on these latter abilities.

**Method:** Thirty fourth-grade African American children from low-income backgrounds were administered 2 morphological awareness tasks and completed norm-referenced measures of word-level reading, reading comprehension, spelling, phonemic awareness, and receptive vocabulary.

**Results:** The degree of AAE use was not associated with students' performance on the morphological awareness tasks. On these tasks, significantly higher scores were obtained on items that represented a transparent relationship between a base word and its derived form. The students' performance on the morphological awareness tasks was significantly and moderately related to their performance on the word-level reading, spelling, and receptive vocabulary measures. Morphological awareness scores explained significant unique variance on measures of word-level reading and spelling, above that predicted by performance on measures of phonemic awareness and vocabulary.

**Conclusion:** As shown in previous investigations of Caucasian children's morphological awareness skills, fourth-grade African American students' morphological awareness abilities are associated with select language and literacy skills. Professionals should capitalize on students' intact capabilities in morphological awareness during literacy instruction in an effort to maximize language and literacy performance for African American students.

**KEY WORDS:** morphological awareness, African American English, reading, spelling, phonemic awareness, vocabulary
between African American English (AAE) use and task outcomes. AAE is a dialect that varies systematically from Mainstream American English (MAE) along phonological and morphosyntactic dimensions (Craig & Washington, 2002). Examples of characteristic phonological features of AAE include postvocalic consonant reduction (e.g., mow for mouth), g dropping (e.g., waitin for waiting), substitution of d or f for the voiced and voiceless th (e.g., dis for this; bof for both), consonant cluster reduction (e.g., worl for world), and syllable deletion (e.g., came for became). Examples of characteristic AAE morphosyntactic features include the absence of grammatical inflections such as plural markers (e.g., Those are pretty flower), possessive markers (e.g., The boy_grandmother), past tense markers (e.g., He open_the door), and alternate constructions for subject verb agreement (e.g., We was first and negation (e.g., I don't have no money). (See Washington & Craig, 1994, for a more complete list and description of characteristic AAE features.) At question is whether these differences in dialect features lead to differential experiences with and performances on literacy and literacy-related tasks.

**Associations Between AAE Use and Literacy Skills**

**Reading.** There is equivocal evidence that AAE use is associated with literacy development. For example, several investigators have examined the effect of AAE use on children’s reading ability. Craig, Thompson, Washington, and Potter (2004) found that AAE use by their second- through fifth-grade African American students predicted the students’ performance on reading accuracy and rate on the Gray Oral Reading Tests—Third Edition (GORT–3; Wiederholt & Bryant, 1992). Students with higher use of AAE performed poorly overall compared to students with lower use of AAE as measured by dialect density from language samples. However, AAE use did not predict reading comprehension on the GORT–3. Connor and Craig (2006) found that African American preschoolers who frequently or infrequently used AAE performed stronger than students with moderate use of AAE on a measure of letter-word recognition skills, as well as on other literacy-related skills such as sentence imitation, rhyming, and vocabulary. These researchers suggested that the children who frequently or infrequently used AAE evidenced better language skills, supporting this contention with results on other measures of language. Finally, others have found that less frequent use of AAE in first grade relates positively to reading ability (Charity, Scarborough, & Griffin, 2004; Craig & Washington, 2004b). For example, Charity et al. found that higher degrees of MAE use by their kindergarten through second-grade children during sentence imitation were related to better reading achievement, even after controlling for memory ability. In summary, it appears that AAE use may be variably associated with some areas of literacy based on age, grade, task, and degree of dialect use.

**Spelling.** Similar inconclusive results have been found for the relationship between dialect use and children’s spelling skills. Terry (2006) investigated the effects of AAE use on spelling in first-, second-, and third-grade children who were either AAE speakers (>5% use of AAE) or MAE speakers (<1% use of AAE). Not all of the children were African American, and the students were from a range of socioeconomic status (SES) backgrounds. She found that the AAE-speaking children misspelled more dialect-sensitive patterns than the MAE-speaking children. For example, words with inflectional morphemes that potentially are affected by AAE features in speech were misspelled more frequently, such as ast or azt for asked. However, the results were tempered by the fact that the AAE-speaking children misspelled more words in total, including words that would not be affected by AAE features, suggesting that they may have been poorer spellers overall compared to their MAE-speaking peers.

Kohler et al. (2007) examined the association between AAE use and nonword spelling in first- and third-grade African American students who were primarily from low-income homes. The researchers found that children with higher use of AAE produced more nonword spelling errors, particularly in third grade, where typical developmental misspellings were not as prevalent. Again, the findings were mitigated by the overall poorer spelling abilities of these students. Thus, in both studies, it is difficult to differentiate the effects of AAE use on spelling from a general difficulty in spelling.

**Associations Between AAE Use and Other Literacy-Related Skills**

Reading and spelling are influenced by several underlying linguistic skills, including vocabulary, phonemic awareness, and morphological awareness (Apel, Masterson, & Hart, 2004). As such, some investigators have examined the association between AAE use and these skills as well. Presently, the findings are equivocal (Hart & Risley, 1995; Nittouer, 1996; Terry, 2006; Thomas-Tate, Washington, & Edwards, 2004).

**Vocabulary.** Larger vocabularies are positively related to later reading success (Cunningham, & Stanovich, 1987; Snow et al., 1998). Several studies have examined this relationship among African American students, although they have been complicated by difficulty in finding unbiased vocabulary assessment instruments for minority students (Stockman, 2000). Nonetheless, recent investigations have demonstrated that African American students who use less dialect in the early grades are more likely to have more positive reading outcomes in later grades. For example, Craig and Washington (2004a) examined the vocabulary of African American preschool through fifth-grade students. They found that students who were able to code-switch (speak less dialect) had larger vocabulary scores on the Peabody Picture Vocabulary Test—III (PPVT–III; Dunn & Dunn, 1997) than those who were not. Additionally, students with higher PPVT–III scores also demonstrated higher scores on standardized measures of reading achievement 1 year later. Similar findings were found by Charity et al. (2004). In their investigation of familiarity with school English among African American children in kindergarten through second grade, they found that students who were more familiar with school English had better scores on measures of vocabulary and reading than those who were less familiar. Currently, there appears to be homogeneity among researchers that African American students who perform better on standardized measures of vocabulary also perform better on standardized measures of reading. This pattern of performance seems to be impacted by the degree of dialect used by these students.

**Phonemic awareness.** Other investigators have examined the association between AAE use and phonemic awareness ability, a skill that is known to contribute to reading and spelling development, with differing outcomes (Connor & Craig, 2006; Kohler et al., 2007). AAE use has the potential to negatively impact phonemic awareness skills given the mismatch in some of the phonological features of AAE and MAE. For example, a common AAE feature is...
substitution of /f/ for /th/ in the final position of words. AAE-speaking children may thus perceive and represent that final sound differently than expected on assessments.

Kohler et al. (2007) investigated the effect of AAE use on the phonemic awareness skills of their first- and third-grade children by examining the children’s performance on portions of the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999). No differences were found between high-versus low-dialect groups. Thomas-Tate et al. (2004) obtained the same results with the CTOPP for their first-grade African American children who were AAE users. Indeed, the children’s scores on the CTOPP were similar to those of the normative population. However, on a second measure of phonemic awareness, the Test of Phonological Awareness (TOPA; Torgesen & Bryant, 1994), the children performed significantly lower than the normative population. Thomas-Tate et al. suggested that the poorer performance on the TOPA was due to its emphasis on manipulating final consonants, which are variably included in AAE, rather than a deficiency in this literacy-related skill. Thus, their study suggested that AAE use affected phonemic awareness ability when it was measured on a task with items that were heavily influenced by a specific AAE feature.

**Morphological awareness.** A small number of researchers have directly or indirectly examined the morphological awareness skills of African American children. Morphological awareness is the ability to consciously reflect on and manipulate the morphological units within words (Carlisle, 1995; McBride-Chang, Wagner, Muse, Chow, & Shu, 2005). Morphological units include base words (e.g., *cat*) or roots (e.g., *spect* — as in *inspection*), inflectional morphemes that provide additional information about time or number (e.g., *walked, cats*), and derivational morphemes that modify the word class and/or meaning of a base word (e.g., the verb *teach* becomes a noun when the derivational morpheme *er* is added to form *teacher*).

Morphological awareness ability has been assessed using a variety of measures (e.g., Carlisle, 2000; Green, 2004; Siegel, 2008). Some tasks require children to respond verbally, and others involve written responses. Tasks may require children to judge the semantic relatedness of two words (Are *moth* and *mother* related?). Others may require children to complete cloze tasks using a known base word to construct a derived form (Farm. The [farmer] was milking the cow.). To date, there appears to be no consensus on whether different tasks measure different aspects of morphological awareness and whether certain tasks are more challenging than others to complete. Intuitively, it would appear that tasks that require children to generate a base word and its derived form might prove more difficult than tasks requiring them to judge the relatedness between two given forms.

Morphological awareness skills have been shown to be positively associated with literacy development (Carlisle, 2000; Carlisle & Stone, 2005; Fowler & Liberman, 1995; Kemp, 2006; Nagy, Bernstein, & Abbott, 2006; Nagy, Bernstein, Abbott, Vaughan, & Vermeulen, 2003; Nunes, Bryant, & Bindman, 1997; Singson, Mahoney, & Mann, 2000). Across the elementary and middle school years, morphological awareness, and in particular, awareness of derivational morphology, is significantly and strongly associated with word-level reading (e.g., Carlisle & Stone, 2005; Siegel, 2008; Singson et al., 2000), reading comprehension (Carlisle, 2000; Siegel, 2008), and spelling (Kemp, 2006; Siegel, 2008). Additionally, morphological awareness and vocabulary are related because children can use their morphological awareness skills to decompose, or break down, multimorphemic words into their roots and affixes in order to access the meaning of unfamiliar words (Anglin, 1993; Carlisle, 2000).

In a set of studies designed to examine the relationship between morphological awareness ability and AAE use, Johnson and her colleagues (deVilliers & Johnson, 2007; Johnson, 2005) indirectly examined young African American children’s awareness for one inflectional morpheme, the third person *s* (*gets*), which is a linguistic marker that is frequently omitted in AAE. deVilliers and Johnson, for example, required children to answer questions about the stories that they read. The questions contained items in which the inflectional morpheme was the only linguistic device marking number (e.g., *Who just cut the bread? vs. Who just cuts the bread?*). Although the study did not directly measure morphological awareness (i.e., the task did not require the children to demonstrate explicit knowledge of inflectional morphology), some level of reflection on, or implicit knowledge of, inflectional morphology was required. Compared to their Caucasian peers who comprehended third person *s* by the age of 6, African American children did not appear to use the inflectional marker to aid comprehension of number. The findings suggested that AAE use affects comprehension of a specific linguistic marker, although tasks designed to assess directly the children’s awareness of this morphological inflection were not conducted.

In her investigation of African American children’s spelling skills, Terry (2006) required children to complete a spoken morphological awareness task. For this task, the children were required to complete a sentence using the inflected form of a base word (e.g., *The girl likes to samp everyday. Today, the girl samps. What did she do yesterday? Yesterday, she ______*). This task was a more direct measure of morphological awareness compared to the tasks that were used by Johnson and colleagues (deVilliers & Johnson, 2007; Johnson, 2005). On this task, the children using AAE performed poorer than the children using MAE, suggesting that AAE use may impact morphological awareness. Given that past investigations of morphological awareness indicate a strong relationship to word-level reading, reading comprehension, and spelling, the poorer performance of the AAE group provides one potential explanation for African American children’s poorer overall literacy outcomes.

Terry (2006) and deVilliers and Johnson (2007) examined direct and indirect awareness of inflectional morphology in their studies. The aim of each investigation was to examine whether morphological awareness ability was associated with specific AAE features that potentially affect spoken production of inflectional markers (e.g., final consonant deletion, *g* dropping). Awareness of derivational morphology (e.g., the knowledge of the relation between base and derived words) was not examined. Given that awareness of derivational morphology has been closely linked to reading and writing development and served as the major focus of most investigations of the relationship between morphological awareness and literacy development (e.g., Carlisle, 2000; Carlisle & Katz, 2006; Carlisle & Stone, 2005), the relationship between AAE use and derivational morphological awareness remains an important area to investigate. Carlisle and Katz examined the derivational morphological awareness abilities of a group of fourth-grade students who attended a school that reported a student body that was 60% African American. The researchers found that morphological awareness accounted for 41% of the variance on their norm-referenced measure of word-level reading, although other possible contributing factors, such as phonemic awareness, were not explored. The study was not designed.
to assess the relationship between AAE use and morphological awareness skills (i.e., dialect use was not measured) and, in fact, specific outcomes for the African American children were not reported separately. Thus, it is not possible to determine whether AAE use was associated with performance on the morphological awareness tasks.

**Purpose of Investigation**

Because of the importance of morphological awareness to reading, spelling, and vocabulary, a better understanding of the association between AAE use and morphological awareness may help explain why African American children continue to score below their peers on measures of reading and writing (Terry, 2006). Thus, the primary aim of this descriptive study was to examine the association between AAE use and morphological awareness ability in low-income, fourth-grade African American students, with a specific focus on the relationship between degree of AAE use and morphological awareness ability. Because past investigations of the relationship between AAE use and literacy and literacy-related skills have been hampered by the possible confounding variable of SES (Washington & Craig, 1998), we chose to keep SES level constant. Additionally, researchers have suggested that investigations of the association between AAE use and literacy development should focus on children from low-SES homes to ensure “authentic” use of AAE (de Villiers & Johnson, 2007). AAE is a social dialect. Thus, given the overrepresentation of African Americans among the poor in the United States (U.S. Census Bureau, 2004), housing segregation among the poor (U.S. Census Bureau, 2005), and higher use of AAE features among the poor, focusing on students from low-SES communities helps to ensure a more authentic sample of this population. Additionally, because past research has shown that fourth-grade students evidence a marked increase in morphological awareness for derived words (e.g., Carlisle & Fleming, 2003; Mann & Singson, 2003), we chose to investigate morphological awareness ability at this grade level. Our morphological awareness tasks examined knowledge of derivational morphology in order to be consistent with past investigations of morphological awareness in children of this age (e.g., Carlisle, 2000).

An additional aim was to examine the effect of phonological and orthographic transparency between base words and their derived forms on the students’ morphological awareness abilities. Phonological transparency represents the degree to which a base word is verbally produced within a derived form. Similarly, orthographic transparency relates to the extent that the base word is present orthographically in the derived form. In the word pair teach–teacher, the base word (teach) is both heard and seen in the derived word (teacher), representing a completely phonological and orthographic transparent relationship between the base and derived form. In the word pair music–musician, there is a phonological change in the base word; music is no longer heard in musician, creating a less phonologically transparent relationship. However, the orthographic form, music, remains the same. In the word pair nerve–nervous, the opposite is true; the base word is no longer orthographically transparent, but phonological transparency is maintained. Finally, the word pair five–fifth represents a completely opaque relationship because both the phonological and orthographic form of the base word are altered in the derived form.

We included both transparent and opaque derivations (i.e., derived forms for which the phonological and orthographic forms of the base word, or both, changed) in our study because past investigations of derivational morphological awareness have indicated that students demonstrate better performance on transparently derived words than on more opaque derivations (Carlisle, 2000; Carlisle & Stone, 2005; Mann & Singson, 2003). When derived forms contain less transparent relations with their base words, the semantic connection between the words is less obvious because of the mismatch in verbal and/or written production. Nontransparent relations may require additional cognitive resources for children to recognize the meaning connection between the words (Carlisle, 2000). We also sampled students’ morphological awareness skills using two tasks that varied in whether a base word was provided in print as a means to elicit a derivational form of the word. The two tasks were chosen to vary the presumed amount of challenge for determining a derived form and then spelling it. That is, when the base word is provided in print, the written form may provide additional cues for the derived form. Without the printed version of a base word, children must generate the spelling of a base word and then apply their knowledge of its form to the spelling of a related derived word.

A final aim of the investigation was to investigate the relationship between performance on morphological awareness tasks and responses on measures of reading, spelling, phonemic awareness, and vocabulary and whether morphological awareness ability uniquely contributes to reading and spelling skills in this population of children. This aim was based on the extant literature that demonstrates the strong relationship between morphological awareness and reading, spelling, and vocabulary development in Caucasian children (Carlisle, 2000; Carlisle & Stone, 2005; Mann & Singson, 2003; Templeton & Scarborough-Franks, 1985).

Specifically, the following research questions were asked:

- Does the degree of AAE use affect fourth-grade African American students’ performance on written morphological awareness tasks?
- Do African American students demonstrate different levels of morphological awareness skill based on (a) the transparent relationship between base words and their derived forms and (b) the type of task that is administered?
- What is the relationship between these students’ performance on written morphological awareness tasks and their performance on measures of reading, spelling, phonemic awareness, and receptive vocabulary?
- Do these students’ performances on measures of morphological awareness explain unique variance on measures of their reading and spelling skills?

Given that previous researchers have reported that degree of AAE use affects other language and literacy outcomes for African American students (e.g., Connor & Craig, 2006; Craig & Washington, 2004a; Kohler et al., 2007), we anticipated that these fourth-grade students would demonstrate variable performance based on their degree of AAE use. Specifically, we hypothesized that students with lower use of AAE would perform better than students with higher use of AAE on our measures of morphology.

Opaque relationships between base words and derived forms require a greater depth of awareness concerning the semantic connection between morphologically related words. Thus, for our second question, we anticipated that performance on morphological awareness tasks involving transparently derived forms would be
greater than performance on items involving opaque relations between
the base word and its derived form—a finding that would be consist-
ent with previous studies of morphological awareness (e.g., Fowler
& Liberman, 1995; Nunes et al., 1997), albeit mainly in Caucasian
populations. Additionally, because our tasks differed by whether the
children were provided with a written representation of a base word to
construct a derived form, we hypothesized that the children’s perform-
ance would differ depending on the demands of the task.

Previous investigations have demonstrated significant relations
between morphological awareness and other literacy and literacy-
related skills. For the third and fourth questions, we anticipated that
written morphological awareness abilities would be related to read-
ing, spelling, phonemic awareness, and vocabulary, regardless of
the results of our first research question. That is, whether the stu-
dents’ morphological awareness skills were affected by AAE, we
hypothesized that a significant relationship would be found between
their morphological awareness abilities and their literacy and literacy-
related skills. We also expected that morphological awareness
would explain unique variance on measures of reading and spell-
ing, which is consistent with previous reports (e.g., Carlisle, 2000;
Carlisle & Katz, 2006; Nunes et al., 1997).

**METHOD**

**Participants**

Thirty fourth-grade African American students participated in
this study. Students were recruited for participation through an
afterschool program in which they were enrolled at their school. All
fourth-grade students enrolled in the afterschool program were
given consent forms. Students who returned signed consent forms
and were present on days that the researchers administered the test
protocols were included in the study. Approximately 80% of the
eligible fourth-grade students returned consent forms and partici-
pated in the study. The group was composed of 18 boys and 12 girls
with a mean age of 10:0 (years;months, range = 8;11–11;11). All
of the students were enrolled in a public elementary school in a
southeastern state. According to district records, 90% of the students
in the school qualified for the free or reduced-price lunch program.
For all participants, English was the primary language. According
to teacher report, none of the students had an identified sensory, cog-
nitive, or physical impairment or was receiving special education
services. However, given the age range, it appeared that some of the
children had repeated an earlier grade. Parent/guardian consent as
required for human subjects’ protection was granted for all participants.

All of the students were administered the screening portion of the
Diagnostic Evaluation of Language Variation (DELV–s: Seymour,
Roeper, & de Velliers, 2003). The DELV–s was designed to identify
students who are speaking variations of MAE. Children’s responses
are scored according to the frequency of MAE features produced,
allowing them to be classified as speaking with strong, some, or no
variation from MAE. Terry, Connor, Thomas-Tate, and Love (2008)
cautions that there is potential for the DELV–s to misclassify
students into categories. To test this particular issue, they computed
a continuous variable (dialect variation; DVAR) based on student
responses on individual items. They found general agreement
between the DVAR scores and DELV–s categories. Students in the
MAE group achieved significantly lower DVAR scores ($M = 12.4$)
compared to students who demonstrated some variation from
MAE ($M = 50.3$) or strong variation from MAE ($M = 78.7$). These
differences were significant, demonstrating the relative validity
of the DELV–s categories.

In our study, two dialect groups were formed from the results
of the DELV–s: Group 1 ($n = 16$; mean age = 10;3) included chil-
dren whose speech strongly varied from MAE, and Group 2 ($n = 14$;
mean age = 9;8) included children whose speech did not vary, or
varied some, from MAE. It should be noted, however, that all students
were AAE speakers, as judged by a trained listener (second author).
The goal here was to create two groups of students who varied in the
degree to which they used AAE or were familiar with MAE. There
was a significant difference in age, accompanied by a large effect
size, between the two dialect groups, $t(28) = 2.19, p < .05, d = .81$.
The children who varied strongly from MAE (Group 1) were older.

**Procedures**

The tasks were administered individually across two sessions that
were held during the afterschool program, except for the spelling
task, which was administered in small groups of 4 or 5 students.
Testing occurred in a quiet room adjacent to the school’s library. The
order of the tasks was counterbalanced across students. A total of
four examiners administered the test battery. All of the examiners
were undergraduate or graduate students in a university commu-
nication sciences and disorders program who had participated in
instructional sessions that included specific instruction on test ad-
ministration before participant testing. The training also included
observations of practice task administration. Feedback was given
regarding task administration and corresponding protocol scoring
procedures. Additionally, detailed scripts were taught and practiced
for all tasks. Supervision during participant testing was conducted
by a speech-language pathologist (SLP) who was certified by the

**Tasks**

The students were administered a battery of tasks to measure their
morphological awareness, reading, spelling, phonemic awareness,
and receptive vocabulary skills. The morphological awareness tasks
were criterion-referenced measures based on the work of Carlisle
(2000) and Green (2004). Raw scores on these tasks were used for
all analyses. The remaining tasks were norm-referenced measures.
For these latter tasks, adequate reliability and validity were reported
in the respective administration manuals. Standard scores from these
tasks were used for all planned analyses.

**Morphological awareness tasks.** Two tasks were administered to
assess the students’ written morphological awareness skills. These
criterion-referenced tasks were based on measures that have been
used previously to investigate the morphological awareness abilities
of children who use MAE (e.g., Carlisle, 2000; Green, 2004). We
chose these tasks because they specifically assess knowledge of der-
ivational morphology; students in fourth grade typically demonstrate
an ability to think about base words and their derivations (Carlisle
& Fleming, 2003). Because knowledge of inflectional morphology
typically emerges in younger children, we did not assess inflectional
morphological awareness.

The two tasks consist of Part A and Part B of the Derivational
Suffix Test (DST; Green, 2004). In Part A (10 items), the stu-
dents were verbally presented with a base word (e.g., farm) and a
corresponding sentence that was missing the derived form of the base word (e.g., My uncle is a ________). The base word and the sentence also were presented in print. The students were instructed to write the word that was missing. For Part B (10 items), the students were verbally presented with a base word and were asked to spell it. They then were asked to use that word to complete a sentence requiring a derived form of the word. Thus, in Part B, the base word was not presented in print.

The items in Parts A and B of the DST varied in their phonological and orthographic transparency. In both parts of the DST, five of the target derived words were considered transparent derivations. Transparent derivations were defined as derivations that maintained the phonological production and orthographic spelling of the base word (e.g., ill–illness). The other five target derived words in each part represented “shift” derivations (Carlisle, 2000). For these items, the phonological production and/or the orthographic spelling of the base word was altered when constructing the derived form (e.g., nerve–nervous; deep–depth), resulting in more opaque relations. See the Appendix for stimuli that were marked as shift items.

In the past, researchers have reported word frequency effects on children’s performance on morphological awareness tasks (Carlisle & Katz, 2006; Carlisle & Stone, 2005). To ensure that possible differences between transparent and shift derivations were not due to differences in word frequency, we calculated the Standard Frequency Index (SFI; Zeno, Ivens, Millard, & Duvvuri, 1995) for each group of words. There was no difference in SFI for the transparent (M = 55.29) or the shift words (M = 52.57), t(18) = 9.78, p = .341, d = .44.

For both Parts A and B, an example item was provided to familiarize the student with the task. Presentation of Parts A and B was counterbalanced across participants. The scoring for Parts A and B differed. For Part A, the students’ responses for the derived form were scored on a 3-point scale. Correct responses that were accurately spelled received a score of 2. Correct responses that maintained the correct spelling of the base word but misspelled the suffix in the derived word (e.g., farmer for farmer) received a score of 1. Incorrect responses were scored as 0. Scoring for Part B also was based on a 3-point scale. Correct responses for the base and derived words that were spelled correctly were scored as 2. Correct responses that maintained the correct spelling of the base word but misspelled the suffix in the derived word, or correct responses for which the base and derived forms were similarly misspelled but the suffix was accurately spelled (e.g., friendy–friendlyly), received a score of 1. Incorrect responses were scored as 0. A total of 40 points was possible on the DST, equally split between the two parts. The Appendix includes a copy of Parts A and B of the DST.

Reliability in scoring for the two parts of the DST was determined by interrater agreement. The results on Parts A and B for 5 students (16% of sample) were rescored using the aforementioned scoring system. Interrater agreement was 100%.

Readability tasks. The Word Attack and Word Identification subtests of the Woodcock Reading Mastery Tests—Revised (WRMT–R; Woodcock, 1987) were used as measures of word-level reading ability and were combined to form a basic reading composite. The Word Attack subtest measured the students’ ability to sound out nonsense words; the Word Identification subtest measured their ability to recognize real words.

The Passage Comprehension subtest of the WRMT–R was used as a measure of reading comprehension. This task required the students to read a short passage and identify a word that was missing from a sentence that is contained in the passage.

**Spelling task.** The Test of Written Spelling—4 (TWS–4; Larsen, Hammill, & Moats, 1999) was used to assess the children’s spelling abilities. This spelling-to-diction task required the students to write a word when they were presented with the word verbally in isolation and within a sentence context.

**Phonemic awareness task.** The Elision subtest from the CTOPP was administered to assess the children’s phonemic awareness skills. This task required the students to say a word and then repeat it with one or more of the phonemes deleted.

**Receptive vocabulary task.** The Peabody Picture Vocabulary Test–III was administered to assess the children’s receptive vocabulary. The PPVT–III required the students to point to one of four pictures when they were presented with a word.

### RESULTS

The primary aim of this descriptive study was to investigate the morphological awareness skills of fourth-grade African American students. Descriptive statistics, which include the means and standard deviations for the morphological awareness tasks, as well as the children’s performances on the other literacy and literacy-related tasks, are provided in Table 1.

**Effect of Degree of AAE Use on Written Morphological Awareness Tasks**

Two independent-samples t tests were conducted to determine whether there were significant differences in performance on the administered tasks.

<table>
<thead>
<tr>
<th>Task</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphological awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DST, Part A (total)</td>
<td>8.67</td>
<td>3.80</td>
</tr>
<tr>
<td>Transparent items</td>
<td>6.73</td>
<td>2.45</td>
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<td>Shift items</td>
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<td>1.98</td>
</tr>
<tr>
<td>DST, Part B (total)</td>
<td>9.10</td>
<td>3.29</td>
</tr>
<tr>
<td>Transparent items</td>
<td>7.27</td>
<td>2.50</td>
</tr>
<tr>
<td>Opaque items</td>
<td>1.83</td>
<td>1.34</td>
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<tr>
<td>Reading</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WRMT–R Word Identification</td>
<td>102.87</td>
<td>8.57</td>
</tr>
<tr>
<td>WRMT–R Word Attack</td>
<td>105.33</td>
<td>10.00</td>
</tr>
<tr>
<td>WRMT–R Basic Reading Skills Cluster</td>
<td>104.90</td>
<td>9.82</td>
</tr>
<tr>
<td>WRMT–R Passage Comprehension</td>
<td>99.30</td>
<td>5.59</td>
</tr>
<tr>
<td>Spelling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWS–4</td>
<td>99.83</td>
<td>10.15</td>
</tr>
<tr>
<td>Phonemic awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CTOPP Elision</td>
<td>8.93</td>
<td>2.86</td>
</tr>
<tr>
<td>Receptive Vocabulary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPVT–III</td>
<td>88.75</td>
<td>12.61</td>
</tr>
</tbody>
</table>

**Note.** DST = Derivational Suffix Text (Green, 2004), WRMT–R = Woodcock Reading Mastery Tests—Revised (Woodcock, 1987), TWS–4 = The Test of Written Spelling—4 (Larsen, Hammill, & Moats, 1999), CTOPP = Comprehensive Test of Phonological Processing (Wagner, Torgesen, & Rashotte, 1999), PPVT–III = Peabody Picture Vocabulary Test—III (Dunn & Dunn, 1997).
two DST tasks for the two groups of AAE-speaking children (low AAE use vs. high AAE use). A Bonferroni adjustment (.05/2) was made to protect against a Type 1 error, resulting in an alpha level of .025. Results indicated that there were no significant differences in student performance for either morphological awareness task ($p > .05$). Although not a research question, we also examined whether the groups differed on the other literacy (basic reading skills composite, passage comprehension, spelling) and literacy-related measures (phonemic awareness, receptive vocabulary). We conducted a series of five independent t tests, again using a Bonferroni adjustment ($\alpha$ level = .01). Results revealed no group differences on any of these measures (see Table 2). Given these findings, the data for all subsequent analyses were collapsed; that is, all remaining analyses were performed using the scores from the whole group ($n = 30$).

### Effect of Transparency and Task on Morphological Awareness Skills

To examine possible transparency and task differences on the children’s performances on our morphological awareness tasks, a repeated measures, $2 \times 2$ analysis of variance (ANOVA) was conducted with the within-subjects factors of level of transparency (transparent vs. shift words) and task (Part A vs. Part B of DST). The dependent variable was the total score on the DST tasks. A significant main effect was found for transparency. The children obtained higher scores for transparent items ($M = 14.0, SD = 4.21$) than for shift items ($M = 3.77, SD = 2.91$), $F(1, 29) = 233.79, p < .001, \eta^2_p = .89$. The effect size for this difference was large. There was no significant effect for task, $F(1, 29) = .481, p > .05, \eta^2_p = .02$ (small effect size) and no significant interaction, $F(1, 29) = 1.52, p > .05, \eta^2_p = .05$ (small effect size).

### Relation Between Written Morphological Awareness Ability and Literacy and Literacy-Related Skills

To address our third research question regarding the relationship between morphological awareness ability and reading, spelling, phonemic awareness, and vocabulary skills, Pearson product-moment correlations were conducted. We combined the results of the two morphological tasks into a morphological composite score because of our previous finding of no main effect for task. Results revealed that morphological awareness ability was significantly related to word-level reading ($r = .65$), spelling ($r = .52$), and vocabulary ($r = .40$), contributing 42%, 28%, and 16%, respectively, of the variance on these measures. There was no significant relationship between morphological awareness and reading comprehension ($r = .21$) or phonemic awareness ($r = .29$). See Table 3 for a summary of these correlations.

Because there was a significant effect of transparency on the students’ performance on both parts of the DST, we conducted two additional correlation analyses, examining the relationship between morphological awareness on the transparent and shift items, aggregated across both morphological tasks and the literacy and literacy-related tasks (see Table 4). Significant associations were found between morphological awareness for the transparent items and word-level reading ($r = .52$) and spelling ($r = .37$), contributing 27% and 14% of the variance, respectively. A significant relationship was found between morphological awareness for the shift items and word-level reading ($r = .66$), spelling ($r = .58$), and phonemic awareness ($r = .53$). Thus, morphological awareness performance on the more opaque items contributed 44%, 33%, and 28% of the variance on these measures, respectively. All other correlations were nonsignificant.

### Contribution of Morphological Awareness Ability to Reading and Spelling Skills

To determine whether morphological awareness skills explained unique variance on measures of reading and spelling, a series of hierarchical multiple regression analyses were conducted with the criterion values of word-level reading (basic reading skills composite) and spelling (TWS–4). Passage comprehension was not used as a criterion variable because of the lack of significant findings in our correlation analysis. Given the significant moderate-to-strong correlations between morphological awareness and vocabulary and phonemic awareness reported above, as well as the literature supporting the importance of these factors for children’s literacy development (see National Reading Panel, 2000) the phonemic awareness and vocabulary scores served as predictor variables and were entered first into the regression model. The composite morphological score, a third predictor variable, was entered second into the model to determine whether it accounted for unique variance beyond that explained by the other two variables. In the first set of regression analyses, the criterion variable was the basic reading skills composite. Results revealed that the first model (i.e., phonemic awareness, vocabulary) significantly explained 29% of the variance in word-level reading.

Table 2. t tests comparing groups on the administered tasks.

<table>
<thead>
<tr>
<th>Task</th>
<th>t</th>
<th>p</th>
<th>df</th>
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<tbody>
<tr>
<td>Morphological awareness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part A (DST)</td>
<td>1.78</td>
<td>.09</td>
<td>(1, 28)</td>
</tr>
<tr>
<td>Part B (DST)</td>
<td>1.78</td>
<td>.09</td>
<td>(1, 28)</td>
</tr>
<tr>
<td>Reading</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WRMT–R Basic Reading Skills Cluster</td>
<td>.389</td>
<td>.70</td>
<td>(1, 28)</td>
</tr>
<tr>
<td>WRMT–R Passage Comprehension</td>
<td>1.27</td>
<td>.21</td>
<td>(1, 28)</td>
</tr>
<tr>
<td>Spelling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWS–4</td>
<td>–.40</td>
<td>.69</td>
<td>(1, 28)</td>
</tr>
<tr>
<td>Phonemic awareness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CTOPP Elision</td>
<td>1.34</td>
<td>.89</td>
<td>(1, 28)</td>
</tr>
<tr>
<td>Receptive vocabulary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPVT–III</td>
<td>–.78</td>
<td>.44</td>
<td>(1, 28)</td>
</tr>
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Table 3. Correlations among the administered tasks.

<table>
<thead>
<tr>
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<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<td>1. Morphological awareness composite</td>
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<tr>
<td>2. Basic skills reading composite</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>3. Passage comprehension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Spelling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Phonemic awareness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Vocabulary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05, **p < .01.
variance on children’s word-level reading (adj. \( r^2 = .24, p < .05 \)); the morphological awareness composite significantly explained an additional 21% of unique variance (adj. \( r^2 = .44 \)).

Because we found differences for students’ performances on the transparent and shift items, we followed up with two additional regression analyses. In both analyses, word-level reading remained the criterion variable. However, instead of entering the composite morphological score into the second model, the total score on the transparent items and the shift items was entered into the second model for the two regression analyses, respectively. Scores on the transparent items explained an additional 15% of the variance on the children’s word-level reading (adj. \( r^2 = .38, p < .05 \)) above phonemic awareness and vocabulary abilities. Similarly, scores on the shift items explained an additional 19% of the variance on the children’s word-level reading (adj. \( r^2 = .42, p < .05 \)) above that predicted by the other two literacy-related skills.

For the second series of regression analyses, the criterion variable was spelling. The same variables and order of variables used in the first regression were used for this analysis. Results revealed that the first model (phonemic awareness and vocabulary) explained 43% of the significant and unique variance on the spelling task (adj. \( r^2 = .39, p < .001 \), and the morphological awareness composite explained an additional 7%, although this did not reach significance (adj. \( r^2 = .45, p = .066 \)). Similarly, in the two subsequent regression analyses that were conducted, performance on the transparent and shift items did not explain any additional significant variance on spelling performance. See Table 5 for results of all regression analyses.

**DISCUSSION**

The main purpose of this study was to examine the morphological awareness skills of fourth-grade African American children and the association between AAE use and morphological awareness ability. Specifically, we were interested in whether degree of AAE use was related to students’ performance on measures of morphological awareness. We also examined whether the transparency of the relationship between the base word and its derived form and the type of morphological awareness task administered affected the children’s performance. Finally, we sought to examine whether these students’ performance on the morphological awareness tasks was related to other literacy and literacy-related skills, and whether it explained unique variance on these latter abilities.

**Effect of Degree of AAE Use on Written Morphological Awareness Tasks**

Our findings indicated that the degree of AAE use did not affect the students’ performance on our measures of morphological awareness.
awareness. Both groups responded similarly on both tasks. Our findings differ from past investigations of African American students’ language and literacy skills. Previous investigators have reported that African American children with a low degree of AAE use performed better on measures of reading, spelling, and receptive vocabulary than did those with a high degree of AAE use (Connor & Craig, 2006; Craig & Washington, 2004a; Kohler et al., 2007).

There are several possible reasons for the differences between past investigations and our study. First, because our derivational morphological awareness tasks focused students on the shared meaning between base words and their derived forms, it may be that any alterations that might occur to spoken derivational forms because of AAE use did not affect the children’s awareness of the morphological relationship between word pairs. Second, although previous investigations reported that AAE use affected children’s awareness of inflectional morphology (e.g., de Villiers & Johnson, 2007; Terry, 2006), these researchers did not examine whether degree of AAE use was associated with specific outcomes. Additionally, there is some question whether the difficulties observed were due to poorer literacy skills rather than use of AAE.

Finally, the differences may be due to the manner in which we assigned degree of AAE use. Only recently, researchers have begun to examine the association between AAE use and performance on literacy tasks by assigning students to levels of use based on a metric for identifying overall use of AAE features. Some investigators have used a measure of dialect density that calculates a ratio of AAE features used during oral reading, narration, or conversation (e.g., Connor & Craig, 2006; Craig et al., 2004; Kohler et al., 2007). Others have used professional judgment to determine AAE use (e.g., Thomas-Tate et al., 2004). Most recently, the DELV has become available as a tool for classification. Although experts agree that there are possible differences associated with these different measurement tools (see Oetting & McDonald, 2002), there is no consensus on which system is the most appropriate. Thus, it may be that different results would have been obtained if other classification schemes for identifying AAE use were used.

**Effect of Transparency and Task on Morphological Awareness Skills**

Similar to past reports (Carlisle, 2000; Green, 2004; Mann & Singson, 2003), our fourth-grade African American students demonstrated less facility on our task for writing derived forms that represented shifts in phonological and/or orthographic transparency. These more opaque relations between base words and their derivations require the student to consider to a deeper level the semantic connections that link those words. With shift words, there is less opportunity to capitalize on the phonological and/or orthographic similarities of the related base words. Our findings extend those of others regarding the ease or difficulty that children experience when they are engaged in derivational morphological awareness tasks that vary the transparent connections between base and derived words to African American students (Carlisle, 2000). Future investigations should continue to examine the influence of transparency on African American students’ performance on derivational morphological awareness tasks across several grades to document developmental changes in ability.

Interestingly, the type of task administered did not result in different outcomes. In Part A of the DST, the children were provided with a written model of the base word. In this task, they presumably could use this print representation as a model for their spelling of the derived word. In Part B, the students were required to write both the base word and its derivation. We presumed that this task would be more challenging, as the students needed to recall the spelling of the base word and then use that representation for their spelling of the derived form. Our participants demonstrated equal levels of performance on each task, indicating that reliance on a written model of a base word was not necessary to spell its derivation. Thus, the students’ demonstration of morphological awareness was independent of the availability of the printed form of a base word.

**Relation Between Written Morphological Awareness Ability and Literacy and Literacy-Related Skills**

Our students’ total scores on the DST were concurrently related to their word-level reading, spelling, and vocabulary scores ($r = .40$–.65). Additionally, their performance on the opaque items on our tasks was associated with their scores on the phonemic awareness task ($r = .53$). These moderate-to-strong correlations were similar to past reports of the association between Caucasian students’ morphological awareness ability and their literacy and literacy-related skills. For example, Siegel (2008) reported correlations of .49 to .51 on similar measures of word-level reading and spelling; Singson et al. (2000) found a correlation of .58 between word-level reading and morphological awareness. Our findings add to the literature on the relation of morphological awareness to other literacy and literacy-related skills by documenting this relationship in fourth-grade African American children. Previous investigations (see Carlisle & Katz, 2006, for a possible exception) have either not included African American children, not reported the percentage of the participants who were African American, or included only a small number of African American children within the sample. Thus, our study provides important initial evidence that morphological awareness is related to and explains variance in word-level reading and spelling for fourth-grade African American children.

The importance of the relationship between morphological awareness and word-level reading and spelling is emphasized when one considers the associations that have been found between the two other literacy-related skills, phonemic awareness and receptive vocabulary, and reading and spelling. Our correlation analysis revealed that our measure of phonemic awareness contributed similar variance to the measure of spelling as did morphological awareness, but considerably less to word-level reading (15% vs. 42%). Our measure of receptive vocabulary, the PPVT–III, contributed notably less variance than morphological awareness to both spelling (19% vs. 28%) and word-level reading (19% vs. 42%). In most cases, morphological awareness showed a stronger relation to literacy skills than these other linguistic skills.

Our finding that morphological awareness ability did not relate to reading comprehension was unexpected given past reports of the contribution of morphological awareness to reading comprehension (e.g., Carlisle, 2000; Siegel, 2008). The differences in findings may be due to the tasks that were used to assess both morphological awareness and reading comprehension. Although Carlisle reported that morphological awareness predicted reading comprehension, particularly in fifth-grade students, her findings were mainly due to the students’ performance on a task requiring the students to read morphologically complex words. Siegel required students...
to read and complete a written sentence by choosing one of four derived words presented (e.g., She hoped to make a good ______: impressive; impressionable, impression; impressively). Thus, in both studies, the participants needed to recognize the derivation rather than to generate and write a derived word, as in our study. Perhaps Carlisle’s and Siegel’s tasks encouraged greater focus on the meaning of the words, rather than the form, thus leading to a stronger association with reading comprehension. Additionally, the task that was used for measuring reading comprehension represented a cloze procedure for which children read a short passage and filled in a missing word. Perhaps other measures that require extended responses that demonstrate the factual and inferential knowledge gained from reading would be more discriminating of reading comprehension abilities and yield different results. In the future, investigators should consider administering a variety of morphological awareness and reading comprehension tasks to determine whether they relate differentially when measuring these skills.

Additionally, given that the participants performed well within the average range on the norm-referenced measures of reading and spelling, it remains unknown whether similar results would be obtained with students with lower than average literacy skills. Researchers may wish to examine the relationship between morphological awareness and literacy skills in African American students who have been identified as deficient in their literacy abilities.

Contribution of Morphological Awareness Ability to Reading and Spelling Skills

The students’ composite morphological awareness score explained unique variance on our measures of word-level reading. The amount of unique variance (21%), above that explained by phonemic awareness and vocabulary, was considerable. Similar results were found when we separately examined the amount of unique variance explained by performance on the transparent (15%) and opaque (19%) items. Our findings are consistent with previous investigations. For example, Siegel (2008) found that morphological awareness explained approximately 12% to 14% of unique variance on measures of word-level reading. Our results extend these previous findings of the contributions that morphological awareness makes to the literacy development of fourth-grade African American students.

In the present study, morphological awareness did not explain significantly unique variance on our measure of spelling. This finding is in contrast to that of Siegel (2008), who reported that morphological awareness explained 16% of unique variance, above that explained by phonemic awareness, on a similar measure of spelling. The disparity between these findings may be due to differences in the words that were targeted by each spelling measure. It also may be that there is reduced sensitivity to developmental differences when using standard scores from the TWS–4. To assess this latter possibility, we conducted a post hoc regression analysis using the TWS–4 raw scores as the criterion variable. After again controlling for phonemic awareness and vocabulary scores, we found that morphological awareness explained significant unique variance on the spelling task (adj. $r^2 = .17, p < .05$), which is a finding highly similar to Siegel (2008). Taken as a whole, our findings suggest that, as with previous investigations of Caucasian children, fourth-grade African American students’ morphological awareness skills account for a considerable amount of the variance on measures of word-level reading and spelling.

Limitations and Suggestions for Future Research

Our initial findings are tempered by several limitations of the study. First, our participant sample was restricted in number and grade level. Using a larger sample of children, Connor and Craig (2006) established that high or low use of AAE, but not moderate use, led to better performance on a measure of word identification. A larger sample of participants would have allowed us to conduct this more fine-grain analysis of the effects of AAE. In addition, as mentioned earlier, a wider range of grade levels might reveal developmental differences in the effects of AAE use on morphological awareness. It is worth noting, however, that the students in this study represented a 3-year age range. Although the effect of age on morphological awareness was not an aim of the study, it also is worth noting that the two groups of students, who differed significantly by age, did not differ on the DST or on any of the other literacy or literacy-related tasks.

Our participants were almost uniformly from low-income homes as determined from aggregated information obtained from the school the children attended. However, because state regulations preclude public schools from releasing home income information for individual students, we could not determine definitively that all of the children in the study qualified as low SES. With information about each individual child, and using a variety of SES indicators (Qi, Kaiser, Milan, & Hancock, 2006), our conclusions concerning the morphological awareness skills of low-SES, fourth-grade African American children would be more secure.

Because our sample was primarily from low-SES homes, it is unknown whether similar results would be found for African American students from other SES backgrounds; in the future, researchers should examine possible associations between SES and morphological awareness skills. Previous research has found that the SES level can affect African American children’s performance on other literacy and language measures (e.g., Hart & Risely, 1995; Horton-Ikard & Weismer, 2007; Washington & Craig, 1998). When differences in language and literacy skills are found to be due to SES, students from lower SES backgrounds typically perform poorer than their middle-SES peers. In our study, our students demonstrated mean scores on most norm-referenced measures that were similar to the normative populations for those tests, suggesting average literacy and literacy-related skills compared to the general population of children their age. These students were enrolled in a school that received a high degree of attention, instructional support, and research activity due to local university researchers’ interests. The students also attended an afterschool program that emphasized additional academic work besides a focus on nonacademic activities. Thus, it may be that the school was not representative of some schools with primarily low-income students. Nevertheless, our preliminary results suggest that low-SES, fourth-grade African American students can present with literacy and literacy-related skills commensurate with reports of students from other SES levels and cultures—a finding that is contrary to assumptions that are often made about this population.

Finally, as mentioned previously, it may be that different results would have been obtained if other classification schemes for identifying degree of AAE use were used. In the future, investigators may wish to examine whether different measurement tools for documenting degree of AAE use result in a different relationship between degree of AAE use and morphological awareness ability.
Clinical Implications

Our findings suggest that the degree of AAE use did not affect fourth-grade African American students’ performance on written morphological awareness tasks. Additionally, the relationship between morphological awareness ability and literacy skills in this student population was similar to past reports for MAE-speaking students. These findings, once corroborated through additional investigations, as suggested above, provide the impetus for including and, indeed, exploiting these skills in instruction to improve the literacy skills of African American students. Recommendations for including morphological awareness instruction in general education instruction and speech/language intervention are readily available (e.g., Bear, Invernizzi, Templeton, & Johnston, 2007; Masterson & Apel, 2007; Wasowicz, Apel, Masterson, & Whitney, 2004). SLPs can use these suggestions in their roles as consultants to general and special education professionals and within their own clinical services.

The clinical implications of two specific findings also are worth noting. First, all students demonstrated greater difficulty on the morphological awareness task for items that represented more opaque relations between a base word and its derived form. Second, the students’ performance on those same items explained more variance on measures of word-level reading, spelling, and vocabulary than did their performance on the transparent items or all items combined. Together, these findings are intriguing and have specific assessment and instructional implications. Currently, there are no norm-referenced measures of morphological awareness similar to those used in this study. When SLPs use a criterion-referenced measure similar to the DST, they should be mindful of the difficulty level of the individual items. Additionally, when focused on improving students’ morphological awareness skills, SLPs should initially target base words and their derived forms that represent transparent relations, with a long-term goal focused on facilitating awareness of more opaque relations between base and derived words, as these appear to be more markedly associated with literacy skills.

In summary, this investigation revealed that degree of AAE use did not affect fourth-grade African American children’s performance on a written morphological awareness task, and their morphological awareness skills were related to and explained unique variance on measures of reading and spelling. Our study is the first to document African American students’ derivational morphological awareness skills and the impact that these skills have on literacy skills. As children progress through the educational system, the words in texts become increasingly more morphologically complex; one estimate is that 60% of the words they encounter will be multimorphemic (Nagy & Anderson, 1984). When students learn to recognize more complex words on the basis of their constituent parts, reading, spelling, and vocabulary skills increase (Anglin, 1993; Carlisle & Stone, 2005). Based on the findings of this preliminary study, fourth-grade African American students demonstrate these skills. Professionals should capitalize on these intact capabilities in their instruction in an effort to narrow the achievement gap that has been observed between African American and Caucasian students.

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APPENDIX. PARTS A AND B OF THE DERIVATIONAL SUFFIX TEST

Part A
Ex: farm: My uncle is a _______________________.
1. ill: Maria worried about her ____________________.
2. quick: Sheila had to work ____________________.
3. nerve: I got ____________________.*
4. five: A line formed and Sue was ____________________.*
5. swim: Kim wanted to improve her ____________________.
6. victory: Marco’s soccer team was ____________________.*
7. music: Keisha wants to be a ____________________.*
8. accept: Your behavior is not ____________________.
9. begin: Juan had to start at the ____________________.
10. long: He used the ruler to measure the table’s ____________________.*

Part B
Ex: (friend): That teacher is very ____________________.
1. (warm): He chose the jacket for its ____________________.
2. (teach): He was a good ____________________.
3. (permit): Father refused to give ____________________.*
4. (appear): He cared about his ____________________.
5. (remark): The speed of the car was ____________________.
6. (protect): She wore glasses for ____________________.*
7. (revise): This paper is her second ____________________.*
8. (deep): The lake was well known for its ____________________.*
9. (active): He was tired after so much ____________________.*
10. (wash): Put the laundry in the ____________________.


*Shift item.