AN EXAMINATION OF THE RELATIONSHIP BETWEEN MORPHOSYNTACTIC AND PHONOLOGICAL NONSTANDARD DIALECT FEATURES AND LITERACY SKILLS AMONG AFRICAN-AMERICAN CHILDREN

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Abstract

A troubling achievement gap persists in the United States, such that African-American children generally read less well than do their European-American and Asian-American peers. Often-overlooked contributors to the achievement gap arer the systematic differences between African-American English (AAE) and Standard American English (SAE), and the additional cognitive effort likely required for nonstandard speakers to master written English.

Study 1 examines the degree to which the phonological and morphosyntactic nonstandard dialect density of African-American children are able to predict their literacy skills. 67 African-American children in grades one through four were administered a battery of literacy tests. Both phonological (PDD) and morphosyntactic (MDD) dialect density measures were derived from sociolinguistic interview. Correlation and regression analyses revealed that PDD and MDD are negatively predictive of literacy skills. PDD negatively predicts sight word reading, while MDD negatively predicts elision. Both PDD and MDD negatively predict phonemic decoding, real word spelling, and oral reading fluency. These findings support the hypothesis that dialect discrepancy accounts for significant variation in reading ability of AAE-speaking children, but does not support the hypothesis that MDD is a more important predictor than PDD.

Study 2 was a type analysis that catalogued frequency of nonstandard morphophonemic dialect features. It revealed that the participants in this sample

have a different distribution of features than those found in previous samples, suggesting regional variation.

Study 3 examined two different methods of calculating dialect density, and found that the most commonly-used methods may not adequately account for variation in opportunity for occurrence.

Since nonstandard dialect density is likely to influence literacy performance, educators must assure assessment validity for AAE speakers. Assessments must be able to distinguish between typically and atypically performing AAE-speakers, and also accurately compare AAE and SAE speakers. Educators require appropriate knowledge and curricula to achieve two distinct but interrelated goals: mastery of each dialect with adroit code-switching, and literacy skills as good as any of their peers.

Future research should clarify the relationships of PDD and MDD with literacy skills, and determine whether the relationship between dialect density and literacy skills is different among struggling readers than among typical readers.

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Statement of the Problem

The studies described below were designed in response to two problems: both of critical consequence, though of two very different scopes. One problem spans the globe and 3000 years of human literacy, the other is restricted to the present-day political, social, and educational climate of the United States. We hope that the research contained here will help to elucidate each of these problems, and perhaps begin to lead us towards possible solutions.

The global problem

> *Now the whole world had one language and a common speech. …But the LORD came down to see the city and the tower the people were building. The LORD said, "If as one people speaking the same language they have begun to do this, then nothing they plan to do will be impossible for them. Come, let us go down and confuse their language so they will not understand each other." So the LORD scattered them from there over all the earth, and they stopped building the city. That is why it was called Babel—because there the LORD confused the language of the whole world. From there the LORD scattered them over the face of the whole earth. (Genesis 11:19)*

One of the most striking features of language—and one of the features that is most taken for granted—is its astonishing mutability. Languages change constantly, and not just when change is necessary, such as when a new invention requires the creation of a novel word, or when two language communities come in contact. Languages evolve even within generations, within a given community, in times of stability as well as in times of transition. Given the enormous cognitive cost of acquiring a language, this mutability requires speakers to engage in a never-ending process of gradual language learning. It also ensures that people

across the world will speak mutually-unintelligible languages, thus hindering international cooperation, and demanding effortful and time-consuming second-language learning for people interested in crossing cultural barriers. We live in a kind of self-imposed Babel, in which each of us can hold a conversation with only a small minority of the population. But despite such cognitive and social costs, humans seem to have an innate drive to innovate with language, and an inherent delight in creative uses of language, a fact to which the poems, puns, nicknames, and song lyrics across the globe and across history can attest. This mutability of language, and its consequent variety, can seem baffling from a scientific, evolutionary standpoint: what possible evolutionary benefit could explain a feature of language that prevents communication and increases mental time and effort? It might indeed be easiest to ascribe such a phenomenon to an act of a vengeful God.

Though it is impossible to know for certain why languages change so readily, one plausible suggestion stems from the theory that language initially evolved to serve a social function, such as an outgrowth of social bonding behavior like grooming (Dunbar, 2003). According to this framework, the communicatory, cognitive, and representational functions of language emerged as it developed, but were not the original driving force of its evolution. When one emphasizes the social function of language, its mutability suddenly seems less outrageous: this mutability allows for increased social bonding and group differentiation. Because language changes so rapidly, the way in which a group of people speaks quickly comes to differentiate that group from others. This

process reinforces group membership and loyalty, and allows group members readily to identify outsiders. The sensitive period for phonological development may have evolved to reinforce this process, providing a degree of safety by ensuring that group membership cannot be easily feigned. Presumably, a mutable language that helps to reinforce group membership serves an evolutionary advantage by encouraging social groups to work together and protect one another from outsiders (Dunbar, 2003). The near-universal drive to play with language, combined with the universal drive to establish the self as part of a coherent group, guarantees that even in our global culture, languages will continue to self-differentiate, to split into new varieties, and eventually into completely new languages. It further guarantees that even in the face of potential cultural advantages to adopting another dialect, most people will resist abandoning their native dialect, since their dialect is so closely tied to their identity, their community, and their sense of social safety.

Given the mutability of language, and the human drive to reinforce group membership, it is inevitable that languages should break into distinct varieties. Mutually-intelligible varieties of the same language are known as "dialects," and dialects differ systematically from one another along all linguistic lines: phonological (sound structure), semantic (meaning), syntactic (system of combining words into sentences), morphological (construction of words from meaningful parts), and pragmatic (practical use).

In a linguistic sense, all dialects are created equal: they are all able to express any human thought. But in a cultural sense, dialects are anything but

equal. Just as humans seem to have a universal drive to establish social groups, they also may have a universal drive to pit those groups against each other, granting prestige to some, and devaluing or even oppressing others. Within each language community, one dialect tends to be privileged, and becomes known as the "standard" dialect. This privileged dialect is generally used within schools and government, and is often taught as "correct" and "proper," whereas nonstandard dialects may be considered "wrong" or "improper." Widely-used languages sometimes have more than one standard dialect; English, for example has Standard American English (SAE) and Standard British English (SBE). And some nonstandard dialects can carry high social prestige, such as the Boston English associated with Beacon Hill and the Kennedy family.

Even in cases of multiple standard dialects, one dialect is often even more highly privileged. In English, for example, many consider SBE to be somehow more "proper" or "correct" than SAE. Furthermore, when a language has a written form, this written form generally more closely matches the standard dialect(s) than it does the nonstandard dialects: it more often captures the standard morphosyntactic and lexical features, and more closely matches the standard phonology. A language's orthography often most closely matches the standard dialect at its inception, and then gradually becomes more opaque as the spoken language continues to evolve, and the orthography becomes increasingly canonized and fossilized. Thus, young orthographic systems may be almost completely transparent for standard speakers, since they were designed to correspond with the contemporary language. Written Malagasy, for example, is

almost perfect in its transparency, as each grapheme reliably encodes a single Malagasy phoneme. Older orthographies, on the other hand, are often opaque, as they were designed to represent an archaic form of the oral language. In Arabic, for example, the orthography remains fixed in its classical form even as the spoken language is dynamic and evolving, leading to an ever-increasing gap between the language's spoken and written forms. The relative transparency of a language also varies according to the information the orthography attempts to encode. Purely phonemic orthographies are highly transparent, morphophonemic orthographies are less so, and some logographic writing systems are nearly entirely opaque. As a result of such variation in transparency, the relative difficulty of the task of decoding written text varies by language, and by dialect within language.

Speakers of nonstandard dialects often face many challenges not faced by those who speak standard dialects. Nonstandard dialect speakers are more likely to be poor, and less likely to be either well-educated or socially powerful. Along with these well-recognized challenges, speakers of nonstandard dialects may often face an additional hurdle: a mismatch between the morphosyntactic, lexical, and phonological features of their spoken dialect, and the orthographic features of the written standard dialect. When readers initially acquire literacy, they make associations between the spoken language they know, and the written language with which it correlates. When the correlation is relatively opaque, and the orthography does not encode many of the phonological, lexical, and morphosyntactic structure of a reader's spoken language, then acquiring an

orthography becomes more complex and difficult, and has some of the characteristics of second language acquisition. Such mismatches may constitute an under-appreciated obstacle to efficient literacy acquisition for millions or billions of nonstandard dialect speakers worldwide. It is thus imperative that the research community should strive to understand the relationship between spoken and written dialect, and how speaking a dialect divergent from the written code might affect literacy acquisition.

The Domestic Problem A half-century after the momentous *Brown vs. Board of Education* decision sought to equalize public education in the United States, our nation is still struggling with an unexplained and indefensible racial achievement gap that appears before children enter kindergarten, that persists throughout the school years, and that cuts even across lines of socioeconomic status (Ferguson, 2002; Ladson-Billings, 2006). This achievement gap is particularly pronounced in reading, and even as an African-American president leads our country, the most recent National Assessment of Educational Progress data reveals that African-American children consistently have lower reading performance than their European- and Asian-American peers. Disappointingly, though perhaps not surprisingly, the enormously expensive No Child Left Behind (NCLB) act has led neither to an absolute rise in achievement among African-American children, nor to a real reduction in the achievement gap (Lee & Orfield, 2006). Before any more resources are poured into other unproven widespread reforms, researchers should strive to better understand the multifaceted causes of

the achievement gap, and to identify effective methods of mitigating or eliminating it.

A complex network of historical, social, and institutional factors contributes to this pernicious racial achievement gap. Relative to their European-American and Asian-American peers, African-American children are more likely both to be poor (U.S. Census Bureau, 2010), and to live in a neighborhood of concentrated poverty (U.S. Census Bureau, 2010). A vicious cluster of risk factors accompany higher poverty rates: higher rates of single parent homes (Kids Count Data Center, 2009); poorer nutrition (Beaulac, Kristjansson, & Cummins, 2009) and healthcare (Fiscella, Franks, Doescher, & Saver, 2002); greater risk of exposure to violence (Crouch et al., 2000) and parental mental illness (Meadows, McLanahan, & Brooks-Gun, 2007); less well-educated parents (Roscigno & Ainsworth-Darnell, 1999); higher rates of residential mobility (Wilson, 1987); lower quality schools; and higher rates of medical complications such as preterm birth (Davidoff, et al., 2006), obesity (Cossrow & Falkner, 2004), and asthma (Gold et al., 1993). In addition, unlike many of their peers, African-American children are trying to succeed within a culture of often-institutionalized racism, and within a context of historical oppression. Educators and policy makers who are able to alleviate even some of these factors can help to reduce the achievement gap.

One such potential factor that is often overlooked in discussions of the achievement gap is the dialectal differences between African American English (AAE), varieties of which are spoken by most of the nation's African American

children, and Standard American English (SAE), which is spoken by most of the nation's white children. Prior research suggests that differences between varieties of language spoken at home and at school might lead to difficulties in reading and writing (Washington & Craig, 2001). AAE's phonology and morphosyntax differ subtly but systematically from those of SAE, which can pose additional challenges when children learn to read and spell. For example, a child who says "*aks* a question" may struggle to learn to read and spell the word "ask." Theorists have hypothesized several plausible, and not mutually exclusive, routes by which dialect discrepancies might contribute to difficulty in school: as a low-status dialect, AAE might spark low teacher expectations and negative teacher attitudes; phonological and morphosyntactic differences between the home dialect and the written school dialect may cause "interference" in reading and writing (Washington & Craig, 2001); and children who do not gain metalinguistic awareness of the two dialects, and fail to code switch, may struggle to disentangle the written code (Craig & Washington, 2002).

It is likely that dialect differences may not affect all speakers and learners equally, and that the children who struggle most with dialect discrepancies may be the same children who struggle the most with language in general. Indeed, preliminary data suggests that while typically-developing children often have the linguistic skill to compensate for any dialect discrepancies, children with reading disabilities may not (Connor & Craig, 2006; Deeney & Gidney, 1999). If this is indeed the case, then many reading-disabled speakers of AAE may be triply challenged, struggling to overcome the reading and language problems associated

with dyslexia, plus additional phonological complications associated with the speaking of AAE, plus societal factors such as both subtle and blatant forms of institutionalized racism.

Review of the Literature

African American English African American English (AAE) is a term for a family of English varieties spoken by many African Americans in the United States, as well as by many people of other racial backgrounds. As dialects of the same language, AAE and SAE share the vast majority of features and are mutually comprehensible, although certain features differ systematically in the realms of phonology, semantics, syntax, and pragmatics (Stockman, 1996). Though researchers have identified general trends in AAE use, no one knows precisely how many people use AAE, what percentage of African-Americans use AAE, or what percentage of non-African-Americans use AAE. Furthermore, while it is certain that many or most AAE-speakers use more than one dialect, it is unknown how many speakers are bidialectal, and to what degree most speakers have mastered each of their dialects. Though such exact figures are elusive, dialect researchers have identified general trends of dialect use.

The use and features of AAE vary according to geographical region, and to the gender, age, and SES of the speaker (Craig & Washington, 1994, 1998). AAE use is higher among individuals who identify strongly with, and are highly engaged in, communities that speak AAE (Edwards, 1992). Besides these extrinsic factors, intrinsic linguistic factors such as the phonological environment,

and the internal composition of sounds, also influence the variability of AAE forms (Craig & Washington, 1994, 1998).

Though it is possible to identify phonological and morphosyntactic features that typically define AAE, not all features are present in all speakers, or in all areas of the country (Stockman, 1996). Although speakers of AAE general report an ability to distinguish among AAE dialects (Labov, 1998), the limited research on the subject has not yet fully outlined the ways in which regional variations of AAE might differ (Charity, 2007). We can think of AAE as a family of dialects with a consistent core of features that exist across regions, plus a set of variable features that are locally contrastive, and that vary widely in their prevalence from region to region. Though vowel variation is widely known to distinguish regional varieties of SAE, no one yet has a clear and comprehensive model of the ways in which vowel pronunciations vary across AAE language communities (Fought, 2001). Most research on AAE has focused on its similarities to, and differences with, SAE. As a result, regional variations internal to AAE, especially phonological and prosodic features, have often been overlooked, even if these variable features may be highly salient to speakers (Fought, 2001; Charity, 2007). SAE is usually used as a "normative" yardstick against which AAE features are contrasted. This model of study is problematic both because it limits study of AAE features that are not obviously contrastive with SAE, and because it promotes the privileging of SAE over other dialects.

Labov (1972b) developed a three-tiered sociolinguistic classification system for linguistic features. According to his system (Labov, 1972b),

"indicators" are linguistic features that vary according to social attributes of speakers, but which are neither socially-marked, nor socially-interpreted. Speakers generally do not manipulate these features, and listeners do not consciously notice variation in their use. They correlate with social features of speakers, but do so in a manner that is nearly invisible to a language community (Labov, 1972b). Like indicators, "markers" correlate with meaningful social features of speakers, but unlike indicators, markers are consciously perceived by speakers and listeners. Speakers may manipulate markers in accordance with the formality of an event, and listeners may use markers to classify speakers according to social groups such as race or class. "Stereotypes" are the most highly marked linguistic features in Labov's system (1972b). They are readily perceived by both speakers and listeners, and are often actively manipulated by speakers for social reasons. The AAE features that have been the most studied are generally either stereotypes of markers by Labov's model, presumably because these features are most salient to researchers as well as to other members of a language community.

AAE Phonemic System AAE and SAE are characterized more by their phonological similarity than phonological differences, a fact that can render cognitive differentiation of their phonemic systems challenging for some bidialectal speakers. The two dialects possess nearly all of the same phonemes, and they differ primarily in the positional distribution of certain consonants, and on the frequency of use of particular consonants in particular positions. Most differences occur in medial and final positions of words (Stockman, 1996). The

phonological variation of AAE in comparison with SAE can be divided into three categories: 1) those processes that occur in most English dialects, including SAE, but that occur more frequently in AAE, 2) those processes that occur in some other non-standard dialects, but not in SAE, and 3) those processes that are restricted to AAE (Bailey & Thomas, 1998). Phonological differences most commonly include sound substitutions, reductions, and deletions (Stockman, 1996).

Most phonological features of AAE are variable, and only occur in certain phonological environments. However, some speakers of AAE may have different underlying phonological representations for certain words than do speakers of SAE, especially in the case of words with final consonant clusters, or with postvocalic "s," which are pronounced using AAE features regardless of the phonological environment (Bailey & Thomas, 1998). For example, some AAE speakers' underlying phonological representation of "desk" is "des," a point that becomes evident through the plurality marking "desses" (Stockman, 1996). For these speakers, pronunciation of these patterns is generally invariable.

Of the 24 most commonly cited features that characterize AAE phonology, eight features also occur in many other dialects, such as many of the Southern dialects, and sometimes including SAE (Bailey & Thomas, 1998). Most of these features involve the elimination of certain sounds, such as final consonant cluster reductions, which render "desk" as "des," and "cold" as "col," and unstressed syllable deletions, which render "about" as "'bout," and "government" as "gov'ment" (Bailey & Thomas, 1998). Final consonant cluster reduction is

probably the most-studied and best-understood phonological feature of AAE, and is explained differently by linguists representing varying theoretical perspectives. Some linguists assume that speakers' underlying representations of the words contain consonant clusters, while others, often invoking the phonological structure of some African languages, assert that the underlying representations contain only a single final consonant (Green, 2002). In support of the theory that final consonant clusters are underlyingly represented in AAE, Green (2002) cites evidence that the final consonant is often retained before certain vowel-initial suffixes, such as -able. However, plural forms such as "desses" suggest that final consonant clusters do not exist for at least some words ending in the clusters –sk, -st, and -sp, and for at least some speakers of AAE, since otherwise the speakers would be unlikely to add the suffix "es" to form the plural (Green, 2002; Stockman, 1996). Final consonant cluster reductions occur both within a single morpheme, as in desk→des, and also across morphemes, as in messed→mess. As first noted by Wolfram and Fasold (1974) and later dubbed the "voicing generalization" model, the last sound of a final consonant cluster is generally reduced or eliminated if all the consonants in the cluster have the same voicing value (Green, 2002). A competing model posits that sonority (amplitude), not voicing, is the relevant feature, and suggests that a final consonant will be omitted when the consonants forming the cluster group too closely together on the sonority scale (Green, 2002).

AAE also has frequent deletion of repeated syllables, turning "Mississippi" into "Missippi," frequent glottalization of the final "l" sound,

turning “pool” into “poo’,” and de-rhotacization after consonants and in unstressed syllables, turning “throw” into “thow,” and “teacher” into “teacha” (Bailey & Thomas, 1998). Other phonemes undergo a substitution rather than a deletion. Thus interdental fricatives are often pronounced either as labiodental fricatives, or as alveolar stops, depending on position, which turns “bath” into “baf,” “baths” into “bavs,” “that” into “dat,” and “with” into “wit” (Bailey & Thomas, 1998). The phonemes /t/ and /f/ replace SAE’s unvoiced interdental fricative in medial and final positions, though the unvoiced interdental fricative is pronounced in initial position. The phonemes /d/ and /v/ substitute for the voiced interdental fricative in SAE, in initial, medial, or final positions (Green, 2002). In AAE, the velar nasal in the suffix “ing” is usually replaced by the alveolar nasal, as it is in many other nonstandard dialects of English, and in some informal registers of the standard dialect.

Eleven of the 24 major phonological features of AAE exist in AAE and in certain varieties of Southern white speech (Bailey & Thomas, 1998). AAE and Southern white English share the frequent loss of intersyllabic “r,” which turns “hurry” into “huh-y,” and “furrow” into “fuh-ow.” Both dialects are often rhotic in stressed syllable, as in “bird,” but non-rhotic in unstressed syllables (Bailey & Thomas, 1998). The liquid consonants “r” and “l” are both often either vocalized or omitted in post-vocalic environments (Green, 2002), a feature AAE at least partly shares with some other nonstandard dialects, including Boston English and Southern White English. However, while these dialects may be similar in their liquid vocalization, the vowel sounds produced vary significantly from dialect to

dialect, rendering the final pronunciation of words very different (Green, 2002). Also, only in AAE and in Southern White English can the liquid "r" be vocalized when it is positioned between two vowels (Green, 2002). In addition, pre-nasal fricatives are often converted to stops, as when "isn't" becomes "idn," and pre-nasal short "i"'s and short "e"'s are often merged, such that "pin" is pronounced the same as "pen" (Bailey & Thomas, 1998*)*. Other phonological features common to both AAE and Southern white English include metathesis when final consonant clusters have "s" followed by a stop, which turns "ask" into "aks" and "grasp" into "graps" (Bailey & Thomas, 1998).

Finally, five of the 24 most common phonological features of AAE may be unique to the dialect, among at least American varieties of English (Bailey & Thomas, 1998). These six features have been studied relatively little, and linguists do not yet know very much about when and how they appear, and whether they are in fact specific to AAE (Bailey & Thomas, 1998). These features include the widespread deletion of final consonants, including final nasals, which leads both "five" and "fine" to be pronounced nearly identically as "fi'," and the devoicing of final stops without a shortening of the preceding segment, which leads "bad" to be pronounced as "baat" (Bailey & Thomas, 1998). AAE speakers also may be unique for deletion of the on-glide, leading to the pronunciation of "Houston," as "Hooston," and "computer" as "compooter" (Bailey & Thomas, 1998*),* a pattern that is also observable in some second language learners. The last two phonological features specific to AAE are the substitution of the "k" sound for the "t" sound in "str" clusters, which leads to

"street" being pronounced "skreet," and the replacement of final voiced stops with coarticulated voiceless stops and glottal stops in words like "bad" (Bailey & Thomas, 1998*).*

Much less is known about the vowels of AAE than its consonants, and the vowels have proven difficult to study since they have changed significantly even since the nineteenth century (Stockman, 1996). Many of the vowel features present in AAE in the nineteenth century are now no longer present in AAE, but are present in Southern White English (Stockman, 1996). Generally, all of the vowels in SAE also appear in AAE, with the exception of three phonemic diphthongs, which are monophthongized in AAE (Stockman, 1996). Older AAE speakers, particularly in the Southern United States, often substitute the diphthong [oI] for the long "o" sound that would occur in SAE in words such as "coach" and "road" (Green, 2002). In some regions, the contrasts between some vowel sounds is lost, as in the pairs pin/pen, for/four, and horse/hoarse, though the process of such vowel convergence generally occurs equally in both in SAE and in AAE (Burling, 1973; Green, 2002). In at least some regions of Texas and Tennessee, AAE speaker lower the "air" sound in words like "prepare," thought it is not clear how widespread this phenomenon may be (Green, 2002).

AAE Morphosyntax In addition to phonological differences, AAE also systematically differs from SAE in its morphosyntax. It can sometimes be difficult for linguists to tease out the distinctive morphosyntactic features of AAE. In some instances, differences that appear to be syntactic on the surface, may be revealed to be lexical upon further examination (Martin & Wolfram, 1998), as in

the word “go” in the AAE utterance, “There go the pencil.” While it may appear that a suffix was eliminated from the SAE word “go,” in fact the word “go” contains distinct semantic content in AAE. In other cases, linguists encounter the contrary problem, when apparent syntactic similarities between SAE and AAE mask underlying differences (Martin & Wolfram, 1998). For example, the indignant “come” in AAE could easily be interpreted in SAE without recognition of its unique syntactic function (Martin & Wolfram, 1998). A speaker unfamiliar with AAE would likely assume that the indignant “come” in AAE conveyed the SAE meaning of “to arrive or approach,” when in fact the indignant “come” syntactically modifies the main verb by encoding a sense of indignation.

The most studied morphosyntactic feature of AAE is unquestionably the omission of the verb “to be,” which can be observed as a zero copula, or the lack of a verb ‘to be” in an auxiliary or progressive form (Labov, 1995). Zero copula can be described by a grammatical rule that is parallel to a rule in SAE: where SAE does not permit contraction of an auxiliary, AAE permits deletion of an auxiliary, and where SAE permits contraction of the copula, AAE permits deletion of the copula (Labov, 1995).

The morphosyntax of AAE has distinct verbal markers that help to differentiate it from SAE, and for other nonstandard dialects, including differences in auxiliary and modal verb use, aspect marking, and tense marking. These AAE forms of verbal markers vary greatly in their frequency, and some are found primarily in certain geographic regions, or among certain age groups (Green, 1998; Rickford, 1997).

Auxiliary and modal verbs behave subtly differently in AAE and SAE. In AAE, auxiliary verbs need not be marked for number, such that first, second, and third person singular and plural verb forms may be identical (Green, 2002). The auxiliary form of the verb "to be" patterns differently in SAE and AAE. Whereas in SAE auxiliary "to be" is obligatory before a the progressive form of a verb (V+ing), in AAE the auxiliary "to be" is optional following the first personal plural, and the second and third personal singular and plural, in situations when the speaker does not intend to emphasize the verb (Green, 2002). The auxiliary "to be" is also nearly obligatory following the word "it." The auxiliary "to be" can be negated in AAE as "ain't," a form that does not take distinct tense markers, and that can stand in for a variety of auxiliary verbs plus "not" (Green, 2002). AAE often does not include a separate past participle form of a verb, which means that the simple past and the present perfect verb forms may be identical on the surface, and their forms can only be distinguished from one another in cases of emphatic affirmation (Green, 2002). In AAE "had" can be included in simple past contexts, a sequence known as "preterite had" (e.g., Green, 1998; Green, 2002; Rickford, 1997). AAE allows for additional future markings not included in SAE, including "gonna," gon," and the first person singular "I'ma," as well as a reduced form of the auxiliary "will" pronounced as "a" (Green, 2002). Some AAE speakers use double modal auxiliary verbs within a given clause, which leads to sentences such as, "She might could eat that" (Martin & Wolfram, 1998). Auxiliaries are not required in question formation in AAE, and instead can be replaced by special question intonation, including intonational patterns not

generally observed in other varieties of English. (Green, 2002). When auxiliaries are omitted in the surface form of AAE utterances, they often reappear in the tags of tag questions. As a result, tag questions allow linguists to understand when the underlying representation of a form contains an auxiliary verb that has been optionally deleted (Green, 2002). Auxiliaries generally also appear in cases of negation or emphasis (Green, 2002).

SAE speakers often misinterpret the tense-aspect markers of AAE, probably because these markers bear a surface resemblance to auxiliary verbs in SAE, though the role they play and the meaning they carry are different. Aspectual "be" denotes an action that is habitual or iterative, and is obligatory in sentences in which such an aspect is intended to be conveyed (Green, 2002). It appears exclusively in its uninflected form, and can appear before many different parts of speech. Aspectual "be" also occurs in Hiberno (Irish) English and Carolina English, though the rules governing its use and its precise meaning vary slightly from dialect to dialect (Green, 2002). Speakers of other varieties of English often fail to comprehend the rules governing aspectual "be" and the verb "to be" in its copula and auxiliary forms.

Stressed "BIN" (or "BEEN") appears in AAE as a sign that an action or state occurred in the relatively remote past. Like aspectual "be," remote past "BIN" can occur before progressive verbs, adjectives, nouns, adverbs, prepositions, and "done." Remote past "BIN" is marked by its distinctive stress pattern, and it carries a meaning different from that of unstressed "been," the present perfect progressive (Green, 2002). Remote past "BIN" constructions can

describe a state or act that began in the remote past and that generally continues to the time of speaking, either continually or periodically.

The unstressed verbal marker "done," generally occurring before a past-tense verb, indicates that an event has ended, and may also carry the additional implication that the event ended in the recent past (Green, 2002). It carries much of the meaning of the present perfect verb tense in SAE, though the two constructions do not perfectly overlap in the meaning they convey, and the SAE construction is more widely applicable than is the AAE construction. "Done" is used in a similar manner in Southern White English, though one early study of working-class white speakers in Alabama suggests that their use of "done" is wider and less pragmatically-restricted than is the AAE "done" (Feagin, 1979; Green, 2002). "Done" can combine with the aspect markers "be" and "BIN," as in "be done" and "BIN done," though in all such constructions "done" continues to indicate a completed action, and "done" is unstressed (Green, 2002). "Be done" can accordingly encode the habitual, modal, or future resultant state, while "BIN done" encodes the remote past resultant state (Green, 2002).

The preverbal markers "finna," "steady," and "come" have been identified and broadly described in AAE, but are not yet understood in great detail. Finna/ fixina/ fixna/ fitna are alternate realizations of "fixing to," and precede unmarked non-finite verbs to indicate the imminence of an action (Green, 2002). "Steady" communicates that an action is intense or consistent and precedes a progressive verb. Finally, "come" precedes progressive verbs, and is a marker of speaker indignation (Green, 2002).

The negation patterns of AAE tend to be particularly salient to listeners, and are often somewhat familiar even to those with little exposure to AAE. While the SAE community largely ignores some defining features of AAE, nonstandard negation seems to be particularly fraught, and is considered by many listeners to be "wrong," or indicative of a speaker's low education, lack of grammatical knowledge, and or weak intelligence (Labov, Cohen, Robbins, & Lewis, 1968; Green, 2002). However, negation in AAE requires mastery of a complex set of morphosyntactic rules, just as does negation in any other dialect. Multiple negation is perhaps the best-known feature of AAE, producing double negatives like "Don't watch no more TV," and triple negatives like, "Nobody don't never eat that." Each separate negator does not add cumulative meaning to the clause, and instead is simply in concord with the previously-occurring negators (Green, 2002). Multiple negation follows the complicated rule of negative attraction followed by all English dialects, with the word "no" generally replacing the word, "any" (Labov, 1972; Martin & Wolfram, 1998). Similar to, but distinct from, multiple negation, negative inversion occurs in utterances like "Can't nobody do me like the Lord," in which a negative-marked auxiliary and a negative-marked indefinite noun phrase both occur in a sentence initially (Green, 2002). Negative inversion is an optional construction, and allows a speaker to emphasize negation, often with a strong accompanying affect (Green, 2002; Labov, 1968).

Another common feature of AAE is "existential it," in which AAE speakers use the words "it" or "they" in existential sentences in which an SAE speaker would use the word "there." So, for example, child speakers in the

present study introduced the movie "Alvin and the Chipmunks" with the line, "It was these chipmunks," instead of the likely standard sentence "There were these chipmunks." These constructions are formed with an existential element (usually either "it" or "they"), then a form of "be," "have," or "got," and then the logical subject noun phrase, which is the true topic of the sentence (Green, 2002).

Other AAE morphosyntactic features surround question formation. As in SAE, AAE yes-know questions require a transformation of a declarative sentence, in which the auxiliary is placed before the subject in a sentence-initial position. However, as discussed above, the auxiliary used in a declarative AAE sentence may be different from one used in an equivalent SAE sentence, resulting in questions that could not occur in SAE. Furthermore, AAE does not require inclusion of an auxiliary in all declarative sentences, and thus question formation in AAE sometimes includes insertion of the relevant auxiliary in the sentence-initial position, or may omit the auxiliary altogether, and instead mark the question through intonation (Green, 2002). AAE allows three patterns of Wh-question formation: a Wh-word followed by an auxiliary and then the subject, a Wh-word followed by a subject and then an auxiliary, and a Wh-word followed by a subject, with no overt auxiliary (Green, 2002). Of these, the second pattern is clearly ungrammatical in SAE, while the first and third types likely occur in other dialects (Green, 2002).

Since the auxiliary verbs used in AAE sometimes differ from those in SAE, questions following the identical construction pattern in the two dialects may be different on the surface. Finally, AAE differs from SAE in its production

of embedded questions, in which an interrogative clause is embedded within a declarative sentence. In AAE, embedded questions can be introduced with the words "if" or "whether," or with an inverted auxiliary, though not with both in the same utterance (Green, 2002). AAE speakers often use subject-auxiliary inversion in embedded questions, which produces questions such as, "Do you know what is it?," or they may not invert the auxiliary, producing questions like, "What it is?" (Martin & Wolfram, 1998). Furthermore, unlike other varieties of English, AAE is fairly flexible in its construction of embedded questions: it permits embedded questions to include auxiliaries besides the modals "would" and "will," and allows them to be introduced with verbs other than "ask" and "wonder" (Green, 2002).

As with other nonstandard dialects, the structure of relative clauses in AAE can differ from that in SAE. In both dialects, relative clauses can be introduced with the relative pronouns "that" or "who. However, in AAE, relative clauses do not require introduction with a relative pronoun if they are modifying a predicate nominative or object position noun (Green, 2002).

Since at least the mid-1990's, preterite "had" has been recognized as a feature of child and adolescent AAE (Rickford & Theberge-Rafal, 1996). But as these children and adolescents have grown up, it has recently emerged as a feature of mature AAE usage. Despite surfaces similarities, preterite "had" is clearly distinct from the pluperfect tense in AAE, as well as from the pluperfect tense in other varieties of English. Whereas the pluperfect refers to an event occurring in the prior past, preterite "had" signifies an event occurring in the simple past.

Preterite “had” constitutes a unique manner of conveying simple past tense, along with AAE’s other five types: simple past, remote past, pluperfect, remote past perfect, and resultant state (Green, 2002). Since preterite “had” does not occur in other dialects or among older speakers, this feature is likely particularly salient for young African-American speakers who use dialect to project information about their identity and group membership.

Past tense activity can be expressed differently in AAE and SAE. When using the simple past, AAE speakers need not obligatorily mark verbs for past tense, meaning that the speakers may often omit the suffix –ed, or use the present tense form of an irregular word, and allow the context of the sentence to make the intended tense apparent. Furthermore, there is usually no distinction between the simple past and the past participle forms, with either the past or the participle form being used in both grammatical contexts, depending on the verb used, whether the intended meaning is more adjectival or more verbal, and qualities intrinsic to the speaker (Green, 2002). For a small number of irregular verbs AAE-speakers do generally distinguish between the simple past and the past participle, such as the verbs went/gone, and saw/seen (Green, 2002). And while SAE requires use of the past participle in passive constructions, AAE allows a simple past form in passive sentences (Green, 2002).

AAE treats the suffix “s” differently from SAE. Since AAE does not require marking verbs for number, the third person singular present tense form of a verb often omits the “s” suffix that would be obligatory in SAE. The suffix “s” can also be applied to verbs in AAE to mark the narrative present, and to mark

habitual action. Suffix "s" can even be attached to aspectual "be" to mark habitual action redundantly (Green, 2002).

Marking of the possessive or genitive case functions differently in AAE than in SAE. While SAE requires the marker "'s," AAE allows variable encoding of possession relationships, using either the "'s" marker or word order.

Once again, to the extent that they have been studied, all of these morphosyntactic constructions are rule-based and systematic. For example, as a result of speakers' implicit knowledge of these rules, the sentence, "Anybody doesn't sit here anymore," is incomprehensible and confusing to SAE and AAE speakers alike (Labov, 1972).

AAE Prosody Prosodic features of AAE have been widely remarked on but little studied. Indeed, the linguistic community does not yet have an adequate model of prosodic variation in standard dialects of English (Grabe, Post, Nolan, & Farrar, 2000), and has an utterly insufficient understanding of prosodic variation in nonstandard dialects. However, wide anecdotal evidence and limited experimental evidence indicate that listeners may rely on suprasegmental prosodic markers as cues to identify the race or ethnicity of a speaker, even when a speaker uses the phonemic and morphosyntactic patterns of SAE (Green, 2002). Some researchers have proposed that prosodic features in speech define what it means to "sound white" or "sound black," (Rickford, 1972; Wolfram & Fasold, 1974), suggesting that these poorly-understood linguistic features may play a critical role in the sociolinguistic environment. Indeed, an understudied speech pattern known as "standard AAE" is defined by standard phonemic and morphosyntactic features

combined with AAE prosody (Green, 2002). Since prosodic patterns often convey information about speaker mood or intention, deviation in speech patterns between SAE and AAE may contribute to misunderstanding among speakers of the two dialects, and may help explain why some SAE-speakers falsely characterize many AAE speakers as being confrontational, negative, aggressive, or dramatic (Green, 2002).

Beyond its social importance, AAE prosody relates integrally to meaning. As we have seen, "been" and "done" carry distinct semantic content, and play distinct syntactic roles, depending on the stress patterns employed by the speaker (Green, 2002). It is likely that other words or phrases have meaning determined at least in part by intonational patterns.

A few reports attempt to characterize aspects of AAE prosody, though these studies were generally conducted on small sample sizes, decades ago, and often had limited research goals. Tarone (1973) examined the intonation of a group of African-American teens in Seattle, and described their speech in relation to SAE. Tarone (1973) found that their speech exhibited a wider pitch range extended into higher pitches than those found in SAE, more level and rising final pitch contours in informal contexts, more falling pitch contours with yes-no questions in formal contexts, and non-final intonation contours to mark the dependent clause of conditional sentences. Cruttenden (1986) observed some similar phenomena, suggesting that AAE, as compared with SAE, may be characterized by more pitch rises, a wider key range, a higher register, and greater use of falsetto. However, the reports summarized did not analyze AAE prosody

in a completely rigorous way, and intonation patterns have most likely changed in the intervening decades.

Several researchers have noted variation in the intonation pattern of question in AAE and SAE (e.g., Tarone, 1973; Cruttenden, 1986; Green, 1990; Green, 2002). Most notably, AAE speakers often use a final level tone in yes-no questions, whereas SAE speakers usually use a final rising tone in such questions (Green, 2002; Foreman, 1999). On the other hand, SAE and AAE speakers use the same intonation pattern in Wh-questions (Foreman, 1999; Green, 1990; Cruttenden, 1986).

The stress patterns within words sometimes vary between SAE and AAE, though so far the research in this area has been inadequate fully to understand the phenomenon. Many AAE speakers forestress certain bisyllablic words composed of an open syllable followed by a closed syllable, most notably *police, define, produce, revise, polite*, *Detroit, July,* and *hotel* (Baugh, 1983; Wolfram & Fasold, 1974). This pattern likely applies to just a small range of two-syllable words, perhaps only to the ones listed. While some informal reports suggest that at least some Southern white varieties share this bisyllabic intonation pattern, no one has yet studied this proposal systematically (Green, 2002; Baugh, 1983). Nonstandard stress patterns likely also occur in three-syllable words. Green (2002) recorded an instance of "protector" pronounced with emphasis on the first syllable, and in our home city of Boston we have informally noted AAE speakers commonly pronouncing the neighborhood name "Mattapan" with an accent on the third syllable, whereas SAE speakers usually accent the first syllable.

Given the close relationship of AAE prosody to social roles, syntax, and semantics, researchers interested in AAE should focus on this poorly-understood feature of the dialect in the coming years.

AAE Lexicon and Semantics As with all varieties, the lexicon of AAE does not completely overlap with that of SAE. AAE includes some unique words that do not exist in SAE, as well as words with identical phonological form but distinct meaning. As a result, speakers proficient in the lexicons of both AAE and SAE are faced with a greater number of homonyms than are speakers of SAE alone. The lexicon of AAE varies according to region, context, and the age of the speaker. Thus, some words are used only by adolescents, or only in the South, or only in the context of religion or the illicit drug trade (Green, 2002). Some linguists distinguish between words that are an accepted mainstream part of AAE, and those that are considered "slang" by the AAE community, and are associated primarily with illegal or violent activity (Dillary, 1977).

Some of the verbal markers discussed in the section on morphosyntax also can be considered lexical, such as stressed "been" and unstressed "done," but they will not be discussed again in this section. Other common AAE verbs include to *get over* meaning to take advantage of, to *call oneself* meaning to try unsuccessfully to do or be something, to *mash* meaning to press, and to *stay* meaning to engage in an activity often. Mainstream AAE also includes words like *saddity*, meaning conceited African-American person, *ashy*, describing dry flaky skin, *mind*, meaning attention, and *kitchen*, meaning the short kinky hair at the

nape of the neck (Green, 2002). Words such as these are part of the general AAE lexicon, and would not likely be classified as "slang" by AAE speakers.

"Slang" can refer to those rapidly-changing words or phrases in vogue particularly with the adolescent population, and AAE slang general differs significantly from SAE slang, allowing adolescents to identify themselves culturally based on their word choices (Green, 2002; Rickford & Rickford, 2000). More than any other linguistic phenomenon, slang is a moving target, and so attempts to classify slang terms systematically will invariably be outdated as soon as they are printed. Bearing in mind this caveat, the following is an attempt to classify some of the slang terms that recently have characterized AAE in adolescent speakers.

Many slang terms describe populations of people. Females might be called *bopper*, *dime*, *shorty*, or *wifey*, for example, while males might be called *cat*, *cuz*, *dawg*, or *money*. Generally, male speakers use such gender-specific labels more often than do female speakers, and there are using more male-specific labels in the lexicon than female-specific labels (Green, 2002). All such words are used in the systematic, rule-based fashion that characterized use of any other lexical item. For example, the term *money* can be used both as a common noun and as an address, but is apparently only acceptable in contexts in which the speaker and the referent are familiar with one another (Green, 2002). And while *dawg* and *money* can be used with the possessive *my*, other labels such as *slick* cannot be used with *my*.

Money is another rich source of slang terms, including words like *benjis*, *cheese*, *paper*, *dividends*, and *scrilla* (Green, 2002; Breaithwaite, 1992), some of which are unique to AAE, and some of which exist in SAE with different semantic content.

AAE also contains a rich repertoire of generative phrases that encourage lexical innovation. For example, the phrase "get____on" is almost infinitely productive, with ever-proliferating variations such as "get my praise on," "get my chill on," and "get my drink on" (Green, 2002).

The unique lexicon of AAE interacts with its defining phonology and morphosyntax, creating a rule-based systematic dialect that is similar to, but distinct from, SAE.

AAE in Child Speakers Most linguists attempting to describe AAE have, appropriately, centered their research on the language of mature speakers of the dialect. While this focus on adult speech has created a broad understanding of the rules and regularities of the full realization of the dialect, it has left the field with a relative paucity of information on the language of developing speakers. At the same time, most of the language acquisition literature in this country is based on the study of white, middle-class children. As a result, teachers, educational diagnosticians, and speech-language pathologists often have trouble determining what would characterize typical versus deviant language in a young AAE speaker (Craig & Washington, 1994, 1998, 2002), a point of confusion that can lead variously to over-diagnosis or under-diagnosis of language impairment in AAE-speaking children. When evaluators count all deviations from SAE as "errors,"

then typical AAE-speaking children are likely to be falsely identified as speech delayed. Conversely, when evaluators overcompensate and assume that most or all deviations from SAE are dialect features, then AAE-speaking children with delayed speech may fail to be identified, and to receive appropriate intervention services.

Some phonological features of AAE are similar to developmental phonological processes of young SAE speakers, which can further complicate any attempts to define the dialect of young AAE learners (Craig, Thompson, Washington, & Potter, 2003). Beginning in the 1990's, research efforts have established a clearer picture of the AAE that children use, and a taxonomy of these features divided into three categories: phonological features, morphosyntactic features, and combination features that include both phonological and morphosyntactic elements (Washington & Craig, 1994; Washington et al., 1998; Craig, Thompson, & Washington, 2003).

At a general level, we know that most African American children enter school using at least some features characteristic of AAE (Craig & Washington, 2002), though their production of AAE is highly variable, and is subject to both extrinsic and intrinsic influences. Washington and Craig (1994) have classified child AAE speakers in three distinct groups: low, moderate and high users, each of which is characterized not only by differences in absolute density of AAE in their speech, but also by distinct distributions of frequency of particular AAE features. The high and moderate AAE groups all produce zero copula/auxiliary and subject-verb agreement dialect features, whereas the use of these features is

variable in lower users of AAE (1994). Most studies suggest that boys use more AAE features than girls (Craig & Washington, 2002; Washington & Craig, 1994, 1998), and that children of lower socio-economic status (SES) use more AAE than do children of higher SES (Washington & Craig, 1998). Though researchers do not yet understand the range of influences that lead boys to use more AAE than girls, one theory is that boys are socialized into a view of masculinity that values frequent use of nonstandard dialect features (Wolfram, 1986), perhaps associating AAE-use with perceived "coolness." Children with more formal schooling usually use less AAE, as do children who live in communities in which AAE is a less dominant dialect (Craig & Washington, 1994, 2004). Though child AAE maintains many similarities across language communities, it also has regional variations, and, for example, child speakers use more AAE features in New Orleans than do their peers in either Cleveland or in Washington, DC (Charity, 2007).

Though not all differences between child and adult use of AAE are understood, it is clear that children are not yet able to produce all of the morphosyntactic features observed in adult speech, and they have particular difficulty with features requiring advanced knowledge of verb constituents (Craig & Washington, 2002). The morphosyntactic forms used by children reflect those forms used by their primary caregivers, highlighting their mutual membership in a single language community, and reinforcing the role caregivers play in influencing the speech of the children in their care (Washington & Craig, 2002).

Research is beginning to isolate typical use of AAE in particular age groups, beginning with children as young as three and four, children who in many cases have had very little exposure to the standard dialect. Very young speakers of AAE produce up to 16 different morphosyntactic dialectal types (Craig & Washington, 1994), some of which are very consistent among and within speakers, and some of which are highly variable. Even among fairly homogenous populations of children, production of AAE fluctuates massively: urban, low-income African American preschoolers in Detroit use AAE in between 0% and 25% of their utterances, for example (Craig, 1995). Surprisingly, most preschool speakers of AAE demonstrate a precocious emerging ability to code-switch, systematically varying their use of SAE and AAE according to the task and context: African-American preschoolers in Head Start use less AAE in tasks more closely tied to reading or to academic skills. This early understanding of code-switching will likely give children an advantage when they enter the SAE-dominant school system (Connor & Craig, 2006).

Use of many features generally becomes more refined as AAE speakers get older, and the speech of adults is characterized by much more restrictive use of certain features than is the speech of their preschool children. For instance, adults use zero "to" only in a very specific context: in questions containing a main verb followed by an infinitive, producing sentences like, "Do you want eat this cake?" Their young children, however, often use zero "to' widely, and apparently almost indiscriminately, producing sentences, such as, "It's your turn go." (Washington & Craig, 2002). Similarly, mature speakers use an undifferentiated

pronoun case only by substituting the objective pronoun "them" for the pronoun "those" in utterances like, "Them candles are pretty," while their preschool children often freely substitute object pronouns for subject pronouns, producing utterances such as, "Her play the game" (Washington & Craig, 2002). Other complex features do not appear in the speech of preschool-aged children, and instead are replaced by a simpler form. For example, preschool children use simpler double auxiliaries where adult AAE-speakers might use double modals (Washington & Craig, 1994, 1998). Other adult AAE structures do not appear at all in the speech of young children (Washington & Craig, 1994, 1998; Washington et al., 1998).

As AAE-speaking preschoolers get older and enter school, their receptive and expressive language develop in ways that have been increasingly illuminated by recent research. They generally encounter SAE in their school environment, if they had not already encountered it before school entry, and they must wrestle with their bidialectal status. Most AAE speakers experience a drop in their use of morphosyntactic AAE features during first grade, after which they use a fairly constant level of AAE morphosyntax, at least through elementary school (Craig & Washington, 2004). While the majority of AAE speakers in Kindergarten are identified as "moderate users" of the dialect, by first grade the majority of AAE speakers are classified only as "low users" (Craig & Washington, 2004). However, even though older elementary children use AAE morphosyntax with less frequency than they did previously, they generally are able to employ an increasing repertoire of complex morphosyntactic features (Craig & Washington,

2004). Children's use of AAE phonological features usually drops between second and third grade, and then levels off (Craig & Washington, 2004). AAE speaking children use progressively less AAE during oral reading of SAE texts as they move through elementary school, a phenomenon that presumably reflects growing familiarity with standard orthography and sound-letter correspondence, and perhaps growing understanding of the dialectal expectations of the school environment (Thompson, Craig, & Washington 2004). As AAE-speaking children progress through the school years, their patterns of use of AAE features increasingly resemble those of their peers, whereas previously they resembled those of their primary caregivers (Payne, 1976).

The language of AAE speakers in middle childhood has both similarities with, and differences from, the language of adult and preschool AAE speakers, and the language of SAE-speaking peers. Generally, AAE speakers in elementary school use AAE features in between five and 15% of their utterances, and almost never use AAE features in more than 20% of their utterances (Terry, 2006). The most common AAE morphosyntactic features in studied samples of schoolchildren are zero copula, and subject/verb agreement variations, which are also the most common features in most samples of mature AAE speech (Craig & Washington, 2000).

Children in Kindergarten through second grade are generally already more adept than their preschool counterparts at code-switching, and in the later elementary grades children are often able to use primarily either SAE or AAE, depending on the context (Charity, Scarborough, & Griffin, 2004). Third graders

show transitional code-switching ability: while third grade AAE-speaking students have been found invariably to use AAE in a casual picture description task, only 92% used AAE during oral reading, and only 62% used AAE during writing tasks (Charity, 2005). The degree to which AAE-speaking children learn to code-switch may depend on the dominant dialect of their schools (Thompson, Craig, & Washington, 2004), as well as on other factors intrinsic to the child, and stemming from the child's interactions with his or her unique environment. Children vary both in their ability and in their motivation to code-switch, meaning that each child's relative frequency of code-switching is determined by a complex network of factors. It thus can be hard to generalize about groups of children based on the degree to which they code-switch. It is likely that facile code-switching provides linguistically able children with enhanced metalinguistic awareness, and a deeper explicit understanding of the structure of each dialect, such as is observed among multilingual children (e.g., Diaz, 1985). This code-switching ability and the metalinguistic awareness it requires are likely great untapped linguistic strengths of AAE-speaking children, strengths that could perhaps be harnessed to advance any lagging language or literacy skills.

Elementary school teachers sometimes worry that if their AAE-speaking students do not produce a particular sound or morpheme prevalent in SAE, then these children may not have a mental representation of the sound or morpheme. However, research suggests that school-aged children often know more about certain phonological and morphosyntactic features than might be obvious in their speech. In the phonological realm, children may not actually be fully omitting

final consonant sounds that appear to SAE speakers to be deleted. Instead, children often systematically vary the length of the vowel preceding the final consonant to mark the difference between voiced and unvoiced final consonants. This distinction becomes clearer to SAE speakers who have been trained in narrow transcription (Mora, 1993). Mora (1993) suggests that school-aged children are in the midst of a transition from the immature final consonant deletion of preschoolers, to the final consonant devoicing and final cluster reduction of adults. Similarly, grade school AAE speakers generally understand inflections that they may not produce, and in one study they performed as well as SAE speaking peers on an inflection recognition task (Terry, 2006). This finding suggests that phonological or grammatical features that do not appear to be overtly pronounced may in fact be represented psychologically as children talk. Thus, in order to gain an accurate picture of children's grammatical knowledge, evaluators include receptive language tasks to complement productive language tasks.

Although children's use of AAE tends to diminish early in grade school, it usually resurges once again as young speakers reach adolescence (Washington & Craig, 2002). As they strive to identify with their peer group, and to distinguish themselves both from children and adults, adolescents generally use a very high rate of AAE, and produce some forms rarely used in either younger or older speakers (Washington & Craig, 1994, 1998). Some school-aged and adolescent children do not believe that acquisition of a standard dialect has value in their communities, and so they will resist adoption of SAE (McLeod, 1995). It is not

yet known at what age most children purposefully adopt or adjust their use of dialect features for social purposes, but several studies have documented the use of phonological variation for stylistic purposes in children as young as six (e.g., Romaine, 1984; Bondi, 1975). It is thus likely that the pattern of AAE use across middle childhood and adolescence reflects relatively deliberate choices on the part of young people operating within a social and linguistic community. As young people move past their teenage years and enter early adulthood, their use of AAE once again generally subsides to lasting lower levels.

AAE use in children varies regionally just as it does in adults. However, the regional differences in AAE are even less well understood than are the differences in mature speakers. Charity (2005) found that children in New Orleans used more overall phonological and morphosyntactic features than did children in Washington, DC or Cleveland, and that they used these features at older ages than did their peers in other cities. But despite such intriguing early findings, to date there has been no comprehensive analysis of regional variation of AAE among child speakers. As a result, teachers and educational diagnosticians must rely on national trends to anticipate the language abilities of their students.

Considering the paucity of reliable information on prosodic features of AAE in mature speakers, it is unsurprising, though disappointing, that the research community knows so little about the prosody of AAE in children. In a 2002 study of the playtime discourse of African-American and Latina girls, Goodwin, Goodwin, and Yaeger-Dror (2002) found that AAE-speaking children generally use a wide range of intonation, perhaps wider than the typical range of

intonation of SAE-speaking children. However, they also report that AAE-speaking children may use more monotonic speech than their SAE peers when in the midst of a conflict. This study illuminates not only potential differences between SAE and AAE prosody, but also the communicatory and social implications of prosody. Prosody carries a communicatory burden and can, as in this example, distinguish between friendly and aggressive intention. Children who do not understand the prosodic patterns of a speech community might be at a formidable social and linguistic disadvantage.

Children who speak AAE in their home communities and SAE in school must acquire SAE prosodic patterns just as they acquire other aspects of the standard dialect. This task is likely complicated by the fact that few speakers are consciously aware of the prosodic patterns of dialects, so children need to navigate the prosodic learning process with little direct help. A recent study (Collins & Nowicki, 2001) using the Diagnostic Analysis of Nonverbal Accuracy (DAVNA) indicates that teachers' perceptions of their African-American students is influenced by the degree to which such children can recognize and properly interpret SAE paralinguistic features. In a separate pilot study, Charity (2005) found that white undergraduates often associate flat question contours in early elementary African-American speakers with qualities such as being less skillful, less polite, and less friendly, and also are prone to misinterpret such questions as statements. This pilot study suggests that SAE-speaking teachers and peers might negatively judge AAE-speaking children who employ a nonstandard prosodic pattern in their speech. Charity (2005) proposes that AAE-speaking children must

undergo a two-stage learning process: first they learn the prosodic contours of SAE, and then they learn how to use such contours appropriately. Presumably, children must also make individual determinations of the degree to which they choose to embrace SAE prosodic contours in specific contexts, a decision that might be especially fraught if, as has been proposed, AAE prosody is a particularly strong marker of racial and cultural identity (Green, 2002). Since teachers provide such prosodic instruction rarely, if ever, students are left to sort out the prosodic rules of their two dialects largely independently. As a result, the most linguistically and socially skilled children will likely gain an even further advantage, by mastering the prosodic code of their two dialects. Less socially and linguistically able children might be left to flounder, and might risk negative judgment from SAE-speaking listeners.

Despite these early findings, there is no rigorous or comprehensive analysis of the overall prosodic patterns of AAE in either children or adults, a fact that is especially unfortunate considering that the prosodic features of AAE may be most salient to listeners, and may be most powerful in influencing listener determinations of the race of a speaker (Green, 2002). Furthermore, differences in prosody may render the task of parsing and comprehending written SAE sentences disproportionately difficult for speakers of AAE, and of other nonstandard dialects.

AAE in a Social Context As we have seen, AAE is a systematic, rule-based dialect that is linguistically equivalent in its intrinsic value to any other dialect of any other human language. However, as with every other dialect of every other

language, AAE exists within a human culture, which invests the dialect with meaning not inherent in its linguistic properties. For many speakers, AAE is a source of pride, and a marker of membership in African American culture. Some African Americans assert a sense of connection to their African heritage through their use of a nonstandard dialect (LeMoine, 2001).

Though many embrace AAE, a significant number of people—including teachers, judges, and employers--continue to view AAE as an inferior dialect, and accordingly show conscious or unconscious bias against AAE speakers. Job discrimination based on AAE is common, and dialect discrimination in hiring and firing is often permitted in US courts (Rickford, 1997). Some of the apparent bias against AAE speakers by SAE-speaking listeners may in fact be due to limited comprehension of AAE, which could lead listeners to believe that speakers are being indistinct or incompetent, when in fact the listeners' inexperience with the dialect accounts for their lack of understanding (Cook, 1994).

Some researchers have wondered which features of AAE are most salient to listeners, and which most strongly mark the dialect of a speaker. Cook (1994) found that the differentiated response listeners often show towards AAE versus SAE relies most on the prevalence of ellipsis in the speaker's utterances. In one experiment, adults listening to tapes of children's speech consistently rate the children who use the least ellipsis as most competent, and the children who use the most ellipsis as least competent (Cook, 1994): the features listeners use to

identify a dialect is extended to a general, and unsupported, conclusion about the children's overall competence.

Multiple experiments in the 1970's and 1980's exposed the prejudice that many teachers hold against AAE. When listening to tapes of AAE-speaking and SAE-speaking students of equivalent reading ability, teachers usually describe the AAE-speaking students as less intelligent, as less deft at both decoding and reading comprehension, and as less likely to achieve academic success than their SAE-speaking peers. Furthermore, teachers are much more likely to correct miscues related to dialect, than those unrelated to dialect (e.g., Taylor, 1983). Even many African Americans hold often-subconscious negative associations with AAE. In a study reminiscent of the famous Clarks' experiments, a group of African American adult subjects listened to tapes of African American variously speaking exclusively SAE, exclusive AAE, and code-switching between the two dialects. The listeners invariably rated the SAE speakers as more likable, and better to work with, than either the AAE speakers or the code-switching speakers (Doss & Gross, 1994). Among African Americans, such negative associations with AAE could have discouraging consequences both for AAE speakers' self-concept and ambitions, and for their treatment of others who speak AAE.

As the research refuting the deficit model of AAE has become more widely recognized, certain US institutions have attempted to formalize this position. For example, in 1974 the Conference on College Composition and Communication, and in 1983 the American Speech-Hearing Association (ASHA),

published papers stating that AAE is a valid dialect and not an indication of insufficient speech or language.

Two court decisions aimed to compel teachers to treat AAE speakers almost like second language learners, and explicitly to teach them SAE in schools. First, in 1979, in the Ann Arbor Black English trial, Justice Joiner ruled that the School Board had not taken appropriate measures to overcome the linguistic obstacles to equal education facing African America students, finding the School Board guilty of "violating the children's right to an equal education by neglecting to teach the Standard dialect'' (Weems, 1993, p. 75). However, early formal efforts to teach AAE speakers to use SAE in the classroom were generally poorly designed, and were largely unsuccessful (Harber & Bryan, 1976). Then, in 1996, the Oakland School Board officially recognized "Ebonics" as the first language of African American students, and resolved to teach these children SAE in the classroom (Rickford, 1997). The Oakland School Board decision provoked a furor of controversy, both among those claiming that teaching SAE devalued AAE, and among those insisting that teaching SAE as a second dialect gives too much validity to AAE. In the years since the Oakland decision and the political tumult that ensued, few educators or lawmakers have dared to suggest that AAE-speaking children be systematically taught the standard dialect in schools. Scholars such as Lisa Delpit (2006) lament the "politically correct" move away from explicit dialect instruction, claiming that by failing to teach AAE-speaking children the standard dialect, we are systematically denying them access to power in society. Indeed, it seems likely that all AAE-speaking children could benefit

from explicit and respectful training in identifying and distinguishing between their two dialects, and that such instruction might be vital for children with lower overall language ability.

AAE and Phonological Awareness Prior research has explored the relationship between literacy skills, and prevalence of AAE in natural speech, with mixed results (e.g., Sligh & Conners, 2003; Charity, Scarborough, & Griffin, 2004; Connor & Craig, 2006). AAE seems to interact with children's phonological awareness, reading, and spelling abilities in ways that are multifaceted and complex.

As we have seen, the phonology of AAE differs systematically from that of SAE. It seems logical that the phonological awareness abilities of AAE speakers might then develop in a manner distinct from those of SAE speakers. However, the research to date has made clear that the relationship between dialect use and phonological awareness is complicated, subtle, and not yet adequately understood.

An intriguing 2003 study indicated that speaking AAE may confer a relative advantage in some phonological awareness tasks to its speakers. Sligh and Connors (2003) found that elementary school AAE speakers were generally superior at phoneme deletion tasks than were reading level matched SAE speakers of similar SES. This study administered a phoneme-deletion task to 30 age- and reading-matched pairs of seven- and eight-year-old SAE-speaking and AAE-speaking children in Alabama. Children were classified as speaking AAE, SAE, or "other" based on whether they used at least four out of the five primary

phonological differences between AAE and SAE that Labov (1972) lists. The task consisted of a tape-recording voice presenting 24 nonwords, and asking the child to delete a phoneme, after which the nonwords would become words. Four different types of consonant cluster deletions were included: initial outside, initial inside, final inside, and final outside. Eight of the 12 items with word final deletions required deletions from consonant clusters that are often reduced in AAE, and two of the 12 items with word final deletions were from consonant clusters that are often pronounced differently in AAE and SAE.

Slight and Connors (2003) found that their AAE- and SAE-speaking samples had distinct patterns of performance on the elision tasks. SAE-speaking children were superior at word-final deletions, as opposed to word-initial deletions, whereas the opposite pattern held for AAE-speaking children. AAE-speaking children were superior at word–initial deletions rather than word-final deletions. Presumably, word-final consonant clusters are less salient and less well-represented among AAE-speakers since they are so often deleted or reduced in AAE. AAE-speakers are then likely to rely disproportionately on word-initial consonants and consonant clusters, representing, remembering, and manipulating these onsets with relative ease. Further research is needed to confirm this conclusion.

Sligh and Connors (2003) also found that overall, their AAE-speaking participants performed better on the phoneme deletion task than did their SAE-speaking controls, even though they were matched according to reading ability. An appealing interpretation of this finding is that the AAE speaking children

might have superior metalinguistic awareness, due to their bidialectal status, which might in turn boost their reading ability. A less encouraging interpretation is that the AAE-speaking children might not get as much reading "leverage" from their phonological skills as do the SAE-speaking children with whose reading ability they were matched (Sligh and Connors, 2003). Perhaps, since AAE phonology is farther removed from English orthography than is SAE phonology, AAE speakers need relatively more phonological awareness than do SAE speakers in order to achieve the same level of reading success. According to this interpretation, AAE speakers reading at a given level generally would have stronger phonological awareness than would SAE speakers reading at the same level, a theory that can and should be systematically tested. Another possible interpretation is that the AAE speaking participants might have been mismatched because they actually read at a higher level than is measured by standardized assessment (Sligh & Connors, 2003). Most standardized reading tests have been normed on populations of SAE speakers, and they often penalize instances of nonstandard feature use. Thus, if the AAE speakers were miscategorized as weaker readers than they in fact were, they would have been matched inappropriately with weaker-reading SAE speaking peers. In such a scenario, it is natural that the AAE speakers might have had stronger phonological awareness skills than the weaker-reading SAE speakers. Thus, while Sligh and Connors's (2003) study appears to indicate that AAE can grant an advantage in phonological awareness, such an interpretation will need to be validated by future research that

more carefully manipulates the ways in which reading ability is measured, and the ways in which children are matched.

A 2006 study of 63 African-American preschoolers enrolled in Head Start uncovered a U-shaped relationship between the children's rate of AAE use and their ability in a number of literacy skills, including phonological awareness (Connor & Craig, 2006). Researchers gathered language samples by asking the children to "read" a wordless book, and then coded the language samples using the method devised by Craig and Washington, which was also used in the current study (e.g., Craig & Washington, 1994; Craig, Washington, & Thompson-Porter, 1998). Researchers calculated a Dialect Density Measure by dividing the total number of AAE tokens by the total number of words. In the spring, these children were administered a two-part Rhyming Task as part of the Michigan Literacy Progress Profile (MLPP). In the first section children identified whether two spoken target words rhyme or not, and in the second section they listened to a target word, and then provided a word that rhymes with it. Hierarchical linear modeling revealed that children with either very high or very low rates of AAE use tended to have better performance on the Rhyming Task than did children with moderate levels of AAE use (Connor & Craig, 2006). This finding suggests that overall language ability may be more important than dominant dialect in predicting the emergent literacy skills—including phonological awareness skills—of African-American preschoolers. "Specialization" in one dialect or the other might lead to greater overall linguistic competence, at least in very young

children. Perhaps those preschoolers who try too strenuously to balance use of two dialects are not yet able to achieve adequate mastery of either dialect.

Many researchers and reading experts assume that phonological awareness contributes to early literacy learning in the same way for all students. However, some studies suggest that not only does the phonological awareness of AAE speaking children differ from that of their SAE speaking peers, but the nature of the relationship between phonological awareness and reading may differ as well. In fact, several researchers have found that phonological awareness may not correlate as strongly with reading ability among AAE speaking children as it does among SAE speaking children (Sligh & Connors, 2003; Connor & Craig, 2006), which suggests that many AAE and SAE speaking children use subtly different strategies when decoding words. Some AAE speakers may not rely as heavily on a phonological word attack strategy as do their SAE-speaking peers. Perhaps since AAE phonology is not as closely related to English orthography as is SAE phonology, AAE speakers rely more strongly on alternative reading strategies such as memorization of whole words or of larger orthographic or morphological patterns, or comparing words to ones they know with analogous spellings. Using knowledge of sound-letter correspondence to decode phonemically might not be as successful a strategy for AAE speakers as it is for SAE speakers. Further research is needed to determine any differences in the manner in which SAE-speakers and AAE-speakers read, and the best way to teach AAE-speaking children, but it is possible that they may benefit particularly from extensive instruction in morphology, and in the use of a morphological strategy to tackle

unfamiliar words. Recent evidence also suggests that AAE-speaking students may particularly benefit from multi-componential reading instruction that targets multiple concurrent areas of linguistic knowledge (Morris et al., 2010).

AAE and Reading In 2000 the National Reading Panel suggested that dialect variation might contribute to the reading problems of some African American children. AAE does seem to be connected to reading, though in a way that is not straightforward. Most studies have found that children who speak AAE generally read less accurately (Craig, Thomson, Washington, & Potter, 2003; Charity, Scarborough, & Griffin, 2004), and with lower comprehension (Craig, Connor, & Washington, 2003), than do children who speak SAE, even when Socio-economic Status (SES) is controlled for. The methodologies of these studies vary, and not all findings are directly comparable.

A study of 217 low-SES Kindergarten through second grade AAE speakers in Cleveland, New Orleans, and Washington, DC found that greater knowledge of SAE is positively associated with better reading achievement, as measured by the Woodcock Johnson Reading Mastery Test Revised (WJRM-R), independent of memory or general cognitive ability (Charity, Scarborough, & Griffin, 2004). Researchers scored the passage subtest of the WJRM-R in a dialect-sensitive manner, as is explicitly recommended in the test directions. Knowledge of SAE was measured through a sentence imitation task. Prevalence of morphosyntactic AAE features in speech, and lack of awareness of SAE morphosyntactic features, were negatively associated with reading comprehension once the children moved past first grade (Charity, Scarborough, & Griffin, 2004).

This relationship between SAE knowledge and reading achievement were found even among a relatively homogenous population, which suggests that it is fairly robust.

A 2004 study of 65 second through fifth grade African-American children outside Detroit sought to determine what relationship, if any, use of AAE might have with performance on a standardized test of reading comprehension and fluency (Craig, Thompson, Washington, & Potter, 2004). Participants all had at least average intelligence and were typically developing. Reading rate, accuracy, and comprehension were measured using the Gray Oral Reading Test III (GORT-III), a widely-used individually administered reading assessment. The tests were scored twice, once using the normal scoring system, and another separately accounting for dialectal deviations from SAE, and not counting those nonstandard dialect features as errors. Dialect Density Measures (DDMs) were calculated as a ratio of the number of dialectal deviations from SAE in students' oral readings to the total number of words in the readings. This study found that as use of AAE increases, Accuracy and Rate scores on the Gray Oral Reading Test III (GORT-III) decrease, though level of dialect does not seem connected to comprehension as measured by the GORT-III (Craig, Thompson, Washington, & Potter, 2004).

Though dialect use predicts some of the variance in reading ability among AAE-speaking children, other factors common to SAE and AAE speaking children predict the majority of the variance. General linguistic competence, including knowledge of complex syntax, helps to predict the majority of the variance in the reading ability of children who speak both SAE and AAE (Craig,

Connor, & Washington, 2003). A longitudinal study of 50 AAE-speaking African-American children outside of Detroit measured children's language, cognitive, and reading comprehension skills first when they were either in preschool or Kindergarten, and then again later in elementary school (Craig, Connor, & Washington, 2003). Capitalizing on research documenting typical developing of sentence structure and vocabulary skills among African-American children (Craig, Washington, & Thompson-Porter, 1998; Craig & Washington, 1994, 2000) researchers sought to determine early predictors of later reading ability as measured by the Metropolitan Achievement Test (MAT) in typically-developing African American children from both low-income and middle-income households (Craig, Connor, & Washington, 2003). They found that the strongest predictors of later reading ability were visual processing ability as measured by the Triangles subtest of the K-ABC (Kaufman & Kaufman, 1983), and syntactic ability as measured by amount of complex syntax in spontaneous discourse (Craig, Connor, & Washington, 2003).

However, the most important predictor of later reading ability may have been preschool attendance. Indeed, low-income children in the sample who attended public preschool performed in the average range on the MAT at age nine, whereas middle-income children who did not attend public preschool scored in the low-average range. Thus, preschool attendance was more important in predicting reading ability than was family SES for this sample. This study (Craig, Connor, & Washington, 2003) suggests that it is possible to identify early

predictors of reading ability in African-American children, and that factors other than dialect density are critically important in determining reading outcomes.

In support of the dialect interference theory, multiple researchers and educators have discovered that when children read text written in SAE out loud, the children will often "translate" some of the text into AAE. Such a translation process probably requires extra cognitive energy, and may result in a less accurate rendition of the printed word. For example, in one study of typically-developing second through fifth grade AAE speakers in Detroit, 60 out of 64 children used at least some AAE in their oral reading of a passage written in SAE. As a group, these children used eight phonological features of AAE, and over 60% of all potential morphosyntactic, phonological, and combination features. Overall, 21% of these children's deviations from print were intrusions of AAE features, a pattern that may be replicated in their silent reading (Craig, Thompson, Washington, & Potter, 2003). In a comparable study, 94% of second through fifth grade African American students used some AAE when reading aloud from the GORT-III (Craig, Thompson, Washington, & Potter, 2004). These children's total AAE feature production in oral reading decreased as they progressed in grades, but not by a large degree, and with great variability among individuals (Craig, Thompson, Washington, & Potter, 2004).

The profile of decoding errors of AAE-speaking children often reflects phonological differences of their dialect. For instance, first grade AAE speakers seem more oriented towards initial consonants, while first grade SAE speakers seem equally oriented towards all consonants (Hart et al., 1980). This pattern

seems to continue as children get older. A 1998 study of the reading errors of AAE-speaking second through fifth grade children found trends in reading errors that seem to reflect the phonological structure of AAE (Labov, Baker, Bullock, Ross, & Brown, 1998). The participants, who were from Philadelphia and were reading below grade level, were best able to use sound-letter correspondence to decode the first consonant and vowel of words, and often ignored the following letters. These children had the most difficult decoding postvocalic r, and final consonant clusters, neither of which is consistently orally represented in their dominant dialect (Labov, Baker, Bullock, Ross, & Brown, 1998). The decoding errors of these AAE speaking children more often involved single consonants or consonant clusters at the ends of words, than those at the beginning, presumably due to the prevalence of final consonant deletion and simplification in AAE (Labov, Baker, Bullock, Ross, & Brown, 1998). This study supports a much earlier finding that AAE-speaking youth use sound-letter correspondence to spell the initial consonant and vowel of words, but not for later sounds (Labov, Cohen, Robins, & Lewis, 1968).

Recent converging evidence seems that indicate that morphosyntactic features of AAE may be more strongly negatively associated with reading outcomes than are phonological features (e.g., Charity, 2005). Some experts describe morphosyntactic features as the "core" of the dialect, whereas phonological features are more regionally variable, and perhaps less strongly ingrained in the speaker.

The relationship between dialect density and reading ability seems to be mediated by children's overall linguistic competence, and especially by their skill in dialectal code-switching. Several studies indicate that dialect density apparently influences reading ability more strongly in children with lower overall language ability than among children with higher overall language ability (Craig, Zhang, Hensel, & Quinn, 2009; Craig & Washington, 2004, Craig, Connor, & Washington, 2003). It is likely that children who enjoy generally strong linguistic skills are able to distinguish clearly between SAE and AAE, to code switch effectively, and to compensate for the discrepancies between written English and the phonology of AAE. Such children may be able to use their bi-dialectal status as an asset that can further expand their rich understanding of language. By contrast, children whose linguistic skills are weaker might confuse their two dialects, fail to code-switch adaptively, and become confused by phonological and orthographic mismatches when they attempt to read and write. Though nearly all AAE speakers can code switch at some level, children who are more proficient at code switching generally have an advantage in literacy activities, presumably because effective code switching demonstrates superior metalinguistic awareness. Expert code switching requires conscious, explicit knowledge of both phonological and morphosyntactic differences between dialects, a feat that demands a high level of linguistic ability in general. Among elementary school children who use high levels of AAE features in their spontaneous speech, those children who are able to code switch adroitly usually perform better on standardized measures of reading and vocabulary than do their

AAE-speaking peers who code switch less facilely (Craig & Washington, 2004). In particular, children who complete first grade without learning to code switch effectively generally struggle in their subsequent literacy skills (Craig & Washington, 2004).

AAE and Spelling Both the phonology and the morphosyntax of AAE seem to render spelling more difficult for children who speak AAE than it is for children who speak SAE. Children who speak AAE generally have poorer spelling ability than do their SAE-speaking peers, both on real words (Terry, 2006; Johnson, 1999), and nonwords (Kohler *et al.*, 2007), even when they are spelling words that are not sensitive to dialectal variations in pronunciation (Johnson, 1999). Specifically, AAE speakers in grades one through three often fail to spell inflections that are followed by a consonant, which reflects the frequent omission of inflections before a consonant in speech (Terry, 2006). There is a significant negative association between school children's dialect density measure (DDM), and their correct spelling of inflections, productive morphology, and orthographic recognition, such that DDM accounts for 14.5% of the variation in spelling inflections (Terry, 2006). In a study of first grade African American students, the spelling of children who used a high level of AAE reflected labialization or stopping of the /th/ sound, vocalization or deletion of postvocalic /r/, and consonant cluster reduction (Johnson, 1999). Children in the intermediate and high dialect groups reduced the consonant clusters of a full 80% of relevant words (Johnson, 1999). Whereas young AAE speakers often omit the last sound of a cluster on dialect-influenced words, they often omit the first sound of a cluster of

non-dialect-influenced words (Treiman et al., 1997, Johnson, 1999). This difference probably reflects the pattern of final consonant cluster reduction in AAE. Labov (1995) provocatively suggests that the discrepancy between spoken AAE and written SAE may trigger a "lack of confidence in the alphabet" among some AAE-speaking children, forcing them to rely on non-phonological—and presumably less effective--spelling strategies.

Cross-linguistic and Cross-dialectal Research An examination of differences among other languages and orthographies can help us to understand the relationship between AAE and standard English literacy skills. Some of these languages have transparent orthographies, some have opaque ones, and many encompass multiple nonstandard dialects whose features match the orthographic code less closely than does the standard dialect. Therefore, research in other dialects of English, and in other languages, can help elucidate the ways in which AAE might interact with literacy.

The language a child speaks seems to shape that child's facility in phonological awareness, perhaps by determining which phonemes within a word are most salient, and therefore more memorable. Studies of Czech and English speaking children found that the linguistic properties of words in the two languages affect the phonological awareness skills of their speakers. Czech children, who use a language containing many initial complex consonant clusters, are much more skillful at orally manipulating complex onsets than are English speaking children (Caravolas & Bruck, 1993; Jimenez-Gonzalez & Haro Garcia, 1995). Extrapolating to English dialects, one might assume that SAE-speaking

children might be more skillful at manipulating words with final complex consonant cluster than are AAE-speaking children, since SAE-speaking children would be more likely to pronounce all the sounds in the final consonant clusters.

A child's dialect has also been found to influence that child's phonological awareness. In a study of standard and nonstandard dialect speakers in Newfoundland, first graders had trouble discriminating pairs of words presented orally in the standard dialect, when the words were homophonous in the children's native dialect. The same children had no trouble distinguishing between pairs of words that were contrastive in their native dialect (Walker, 1976), implying that the phonology of a child's native dialect can help to determine that child's sensitivity to certain sounds in certain locations. Speakers of AAE, for example, may not be sensitive to the contrast between words like "flow' and "floor," which they may often pronounce homophonously. Children who speak AAE may be less sensitive to certain sounds more prominent in SAE, sounds that may be critical for the successful reading or spelling of some words. Since phonologically-similar sounds are harder to distinguish than are phonologically-distinct sounds, AAE's phonological similarity with SAE may make it particularly challenging for some AAE-speaking children to develop stable representations of SAE's phonological code.

An examination of the spelling of British and US children and adults clearly demonstrates that the dialect one speaks is inextricably connected to one's intuitions in spellings. Reflecting their respective rhotic and non-rhotic dialects, US and British children under age 7:6 make different types of spelling errors on

words containing postvocalic R's (Treiman, Goswami, Tincoff, & Leevers, 1997). American children commonly omit the vowel in such words, whereas British children commonly omit the r. Thus American children might misspell "hurt" as "hrt," while British children might misspell it "hut." Confusion surrounding the letter r also appears in the frequent r-intrusions in the British children's spelling errors, such as writing "barth" for "bath," and "chiner" for "china." These children seem to believe that "a" and "vowel + r" are equivalent spellings for the schwa sound (Treiman, Goswami, Tincoff, & Leevers, 1997).

Strikingly, British and US university students exhibit a similar configuration of spelling errors when asked to spell uncommon, but not unfamiliar words. Adult British spellers continue to show confusion about use of the letter "r" to a much greater degree than their US peers: 24% of British spelling errors involved omission of final r, contrasted with just 1% of US errors; 17% of British spelling errors involved the addition of r, contrasted with just 2% of US errors; and 20% of British spelling errors involved replacing medial "or" with "au," contrasted with 7% of US spelling errors (Treiman, Barry, & Christopher, 2000). When confronted with uncommon words, these British university students behave much like their younger compatriots, and alternate in their use of "a" and "vowel + r" to represent the schwa sound. US college students, by contrast, showed little difficulty using the letter r, but had much more trouble than their British peers spelling in medial flaps. For example, US students often replaced medial "d" or "dd" with medial "t" or "tt," or vice versa, whereas British students' only errors involved whether or not to double the medial letter

(Treiman, Barry, & Christopher, 2000). This pattern of US errors probably reflects the fact that the medial /t/ sound is rarely clearly articulated in US dialects, though it is in British dialects. These studies of British and American spelling suggest that the influence dialect has over spelling may be both significant and long-lasting, extending at least into early adulthood. One's spelling tendencies do not seem to be standardized upon exposure to print, or even after years of formal schooling. We might then assume that AAE speakers would spell at least some patterns differently from SAE speakers through their high school years and beyond.

Presumably, all readers of alphabets and syllabaries need some degree of phonological awareness in order to decode successfully, especially as they begin to encounter longer words and a whole memorization strategy is rendered less efficient. However, less transparent orthographies may place more demands on readers' phonological processing capabilities than more transparent orthographies. As a result, individuals with phonologically-based dyslexia may have more success in reading languages with relatively transparent orthographies (Laderl, Wimmer, &Frith, 1997). Indeed, converging research indicates that the level of orthographic transparency of a language helps to determine how easily children are able to acquire literacy (Goulandris, 2003), and that readers with dyslexia may struggle disproportionately to decode opaque orthographies. For example, dyslexic Dutch children, enjoying their language's relatively transparent orthography, have very low error rates when reading pseudowords (Landerl et al.,1997), and their disabilities usually do not become apparent until after the first

few years of reading instruction (De Jong, 2003). In fact, in languages with very transparent orthographies, dyslexic and typical readers may be behaviorally distinguished only by their disparate fluency rates (Goulandris, 2003), and not by any differences in decoding or reading accuracy.

Landerl et al. (1997) identified cross-cultural differences in the reading ability of German and English dyslexic children. The similarity of the German and English languages allows researchers to provide nearly identical target stimuli, and thus partly control for linguistic variation that is unrelated to orthographic transparency (Landerl *et al.*, 1997). The English readers in Landerl et al.'s (1997) study suffered from vastly more severe impairments than the German readers. While the English dyslexic children made errors reading 50 percent of low-frequency words, and 70 percent of three-syllable pseudowords, the German dyslexic children made errors reading only ten percent of low-frequency words, and only 20 percent of three-syllable pseudowords (Landerl *et al.*, 1997). Furthermore, even when they identified words correctly, the English-speaking dyslexic children read much more slowly than the German children on all but the very short, very high frequency words. In the category of short, one-syllable pseudowords, English dyslexic children read two times more slowly than German dyslexic children (Landerl *et al.*, 1997). Landerl et al. (1997) attribute this striking disparity in the decoding ability and reading rate of identically-diagnosed children to the relative opacity of English orthography in comparison with German orthography.

Though opaque orthographies may have dramatic effects upon the reading abilities of dyslexic individuals, they do not seem to have long-term effects upon typically-developing individuals. Landerl *et al.* (1997) discovered that typically-developing beginning English readers showed a marked delay in decoding and reading rate in contrast to typically-developing beginning German readers, but that this delay disappeared within a year of the commencement of reading instruction. In contrast, Landerl et al.'s (1997) dyslexic English readers were still delayed in comparison to dyslexic German readers at least at age 12. Thus, opaque orthography seems to interact uniquely, and potentially devastatingly, with the phonological deficits associated with many subtypes of dyslexia, a finding that may have enormous implications for the literacy acquisition of nonstandard dialect speakers with dyslexia in this country, and around the world.

Brain imaging studies have revealed that the characteristic neural signature of dyslexia—underactivation of posterior brain regions with simultaneous overactivation of anterior regions—is relatively consistent across languages and cultures (Berninger, 2000), though behavioral manifestations of dyslexia vary according to orthographic transparency. Dyslexic men from the United Kingdom, Italy, and France all show reduced activation of the left temporoparietal regions during phonological and reading tasks, despite cross-cultural differences in their ability to compensate for their dyslexia (Temple, 2002). Even though brain imaging suggests that subjects from these three countries probably have the same underlying functional neuroanatomical abnormality, the relative transparency of the different languages' orthographies

likely helps determine the degree to which dyslexic individuals have trouble decoding (Temple, 2002).

Cross-cultural research indicates that as orthography moves away from a simple one-to-one grapheme-phoneme correspondence, dyslexic children with phonological deficits struggle increasingly to decode accurately and quickly (Goulandris, 2003). And as we have seen, AAE differs phonologically from SAE in ways that might render written English more phonologically opaque for speakers of AAE, than for speakers of SAE. Thus, we might predict that AAE speakers with dyslexia might encounter a relatively greater impairment than would SAE speakers with dyslexia.

AAE and Dyslexia Many of the features that characterize AAE deviate from their orthographic representations in written English. As a result, for speakers of AAE, written English may be one step less transparent than it is for speakers of SAE. And since, as we have seen, dyslexic readers around the world struggle much more to decode relatively opaque orthographies than they do transparent orthographies (Goulandris, 2003), dyslexic speakers of AAE may have more pronounced reading difficulties than do dyslexic speakers of SAE.

Deeney and Gidney (1999) studied 104 second- and third-grade dyslexic students in Boston and Atlanta, half of whom were African American and half European-American. Participants were classified according to the Double Deficit Hypothesis (Wolf & Bowers, 1999) as having a primary phonological deficit, a primary naming speed or fluency deficit, or a double deficit, which involves both categories of weaknesses (Deeney & Gidney, 1999).

The African-American and the European-American children showed remarkably different patterns of distribution among the three dyslexia subtypes (Deeney & Gidney, 1999). Generally, the European-American dyslexic students were fairly evenly distributed between the two single deficit categories, with 51 percent classified as having a primary phonological deficit, and 39 percent as having a primary naming speed deficit. Only fourteen percent of dyslexic white students had double deficits. In sharp contrast, a full 61 percent of the dyslexic African American students were classified as having double deficits, the subtype associated with the most profound and intractable reading disabilities (Wolf & Bowers, 1999). An overwhelming 76 percent of dyslexic African American students had a phonological deficit, and 79 percent had a naming speed deficit (Deeney & Gidney, 1999). Deeney and Gidney (1999) found group differences between the African American students and the white students on phonological tasks, but not on naming speed tasks, even after controlling for variables such as intelligence, socioeconomic status, and child age. Their African-American dyslexic subjects consistently struggled with tests of elision and phoneme blending to a greater degree than white dyslexic subjects (Deeney & Gidney, 1999).

Though tantalizing, Deeney and Gidney's (1999) findings are far from conclusive, especially since their subjects were never tested to determine their dominant dialect and dialect density. However, it is reasonable to assume that more of the African American students than the white students spoke AAE. Despite the limitations of Deeney and Gidney's (1999) research, the study does

suggest that dyslexic speakers of AAE may suffer from more phonological deficits than dyslexic speakers of SAE, even though both sets of children may have the identical neurological abnotmalities typical of dyslexia. Further research will determine if existing cross-linguistic research can be generalized to cross-dialectal situations, and if it is indeed likely that the disproportionate phonological difficulties that Deeney and Gidney (1999) discovered in African American dyslexic readers may stem from relative orthographic opacity.

Methodological Questions Though there is to date a fairly wide base of research on AAE and its relationship with literacy, a close analysis of the literature reveals that AAE is defined and measured in many different ways, and it is not clear to what degree results using one methodology can be compared with results using other methodologies. Indeed, Oetting and McDonald (2002) claim that the great problem facing dialect research is not a lack of research methods, but rather the lack of uniformity measures of dialect rate, and their tedious, time-consuming nature.

It is thus critical for researchers in the field carefully to analyze the ways in which they measure dialect use, and to work on systematically determining the most accurate, valid, efficient, and consistent way(s) of doing so. Until such a standard system of measurement is established, researchers should carefully elaborate the manner in which they measure AAE, so that readers can assess the degree to which various results are comparable and able to be aggregated.

Studies of nonstandard dialect use employ a range of strategies for eliciting spoken language, often without systematic exploration of the differential

results obtained through the various techniques. One of the most common methods, a variation of which is used in the present study, is the sociolinguistic interview as developed by Labov (1984). In such an interview the researcher aims to record unguarded vernacular speech. To do so, the interviewer asks about emotional universal topics, encourages narratives of personal experience, and promotes conversation among multiple interviewees (Labov, 1984). Other protocols include a repetition task, in which a researcher asks the participants to repeat spoken sentences, and a storytelling task, in which the researcher provides the child with pictures or a wordless book and asks the child to tell the story. Another protocol (e.g., Charity, 2005) combines tasks, using a storybook prompt to guide a sentence imitation task, and then following it with a story retell task. Each of these methods is potentially valuable in prompting the characteristics of a participant's speech in a particular context, but researchers should be mindful of the likely disparate results they would obtain through use of different methods. Charity (2005), for example, assumes that a sentence imitation task captures a child's AAE as it would appear on a test, story retells captures AAE as it would appear in a classroom, and spontaneous speech captures AAE as it would appear on the playground. When describing research methodology, researchers should describe and defend their chosen method of language sample gathering, explaining how it suits the purposes of a particular study.

We know that use of AAE varies within a given speaker, and so researchers must be aware of the way in which the context of data collection might influence the AAE produced. For example, in one study preschool- and

Kindergarten-aged African-American children used more total AAE, and more types of AAE, in a picture-description context, than they did in a free-play context (Washington, Craig, & Kushmaul, 1998). Researchers should be careful not to make judgments about the relative prevalence of AAE in different populations if the contexts of data gathering varied from location to location.

The researchers themselves may also influence the dialect produced by study participants, in ways that we do not yet fully understand. Researchers who are themselves African-American are more likely to elicit AAE forms in participants, as are researchers who speak AAE or another nonstandard dialect during their interactions with study participants (Ball, 1995; Baugh, 1979). Speakers adept at code-switching alter their dialect use according to their conversational partners, and so researchers must be aware of the cues they may be inadvertently giving their subjects as to the appropriate dialect of conversation.

Dialects differ from one another along all linguistic lines, and as a result it would be theoretically possible to measure dialect by assessing all differences in syntax, semantics, phonology, morphology, and pragmatics. However, researchers rarely, if ever, have the time or capability to measure all of these potential sources of variation, and indeed the research community does not well understand some dialectal differences, such as prosodic differences between AAE and SAE (Cruttenden, 1997). So most people studying AAE restrict themselves to measuring phonological and/or morphosyntactic features. However, the exact combination of features studied is not standardized, and there remains wide variation in which features are counted in different studies.

Researchers vary in the way they define particular dialect features, and the degree to which they sub-divide similar features. For example, the suffix –s has multiple distinct grammatical roles: as a plural marker, as a marker of the third person present tense, as a marker of possession, and as a contraction of the copula. Historically, various researchers have grouped these various functions of the suffix –s differently, some treating each function as distinct, and others grouping some or all of them together (Baugh, 1990). Variation in methods of categorizing features could contribute to greatly divergent accounts of AAE use in speakers.

At least three primary methods exist for measuring dialect use: listener judgments, type-based studies, and token studies. Listener judgments and type-based studies are often used to classify dialect types, while token studies are more often used to classify the feature pattern rate among known speakers of a dialect (Oetting & McDonald, 2002).

In studies using the listener judgment method, trained researchers listen to speech samples, and rate the samples according to one or more language characteristics. At its most basic, this methodology might simply require listeners to judge holistically whether a child is speaking AAE or SAE, and might, for example, require agreement among raters (e.g., Seymour & Ralabate, 1985). Slightly more nuanced studies require listeners to rate dialect use holistically on a 3-point scale as high, moderate, or low (e.g., Cole, 1980). More complex listener judgment studies ask listeners to rate the degree to which speech samples adhere

to characteristics of a dialect in their stress and intonation, syntax, semantics, and phonology (Wyatt, 1991, 1996), using a 7-point Likert scale.

Type analyses of dialect account for the number of instances of particular nonstandard dialect features in a participant's speech. When type analyses are used to classify someone according to their dominant dialect, researchers sometimes determine a set of identified features of a dialect, and predetermine that a speaker must produce a certain number of features in order to be considered a speaker of that dialect. For example, Champion (1995) classified study participants as AAE speakers if they produced at least two phonological and/or three syntactic patterns from a list of 28 features of AAE. In other studies, researchers do not establish a set of nonstandard features that they are looking for before listening to speech samples, and instead rely on expert listeners to identify patterns characteristic of a dialect independently. Such studies generally require speakers to produce a certain number of nonstandard features in order to be classified as a speaker of a particular dialect (e.g., Smith, Lee, & McDade, 2001).

Measures of feature type attempt to account for each different dialect feature occurring within a sample, whereas token measures assess the gross number of dialect features within a sample. While type analyses measure breadth of a speaker's dialect use, token analyses measure its depth (Washington & Craig, 2002). Token analyses provide a measure of the overall frequency of nonstandard dialect features in participant speech, though without analyzing the prevalence of particular features. Such analyses can be useful for learning about the rate and type of dialect a speaker uses (Oetting & McDonald, 2002). Researchers have

used several variations of token analyses. Some calculate the number of utterances containing a nonstandard feature, and then divide this by the total number of utterances produced by the participant (e.g., Washington & Craig, 1994, 1998). Others divide the total number of nonstandard features produced by the total number of words produced (e.g., Gidney & Deeney, 2000; Washington & Craig, 1998). A third variation calculates the total number of nonstandard features, and then divides this number by the total number of utterances (e.g., Oetting & McDonald, 2001; Jackson & Roberts, 2001). The present study calculates the total number of dialect features observed and then divides this number by the total number of morphemes.

Oetting and McDonald (2002) conducted a study comparing the three most common approaches to dialect measurement: listener judgment, token analyses, and type analyses. They used all three methods to analyze the same 93 recorded language samples, 44 of which were from African-American children. A third of the participants were six-year-olds with Specific Language Impairment (SLI), and the rest were typically-developing age- and language-matched controls. The language samples included 35 patterns characteristic of nonstandard dialects other than AAE. Oetting and McDonald (2002) attempted to classify the participants' dialect using each of the three methods. They found that 90% of children were classified identically across the three methods (Oetting & McDonald, 2002). Younger children, boys, and children with SLI were more likely to be disputed, but race was not associated with disputed categorization. All three methods indicated that the African-American speakers used more

nonstandard dialect features than did the European-American speakers. The token-based method generated a greater range of scores than either of the other two methods, and thus is probably a better tool for determining rate of relative dialect use than either a listener judgment or type-based method (Oetting & McDonald, 2002). Furthermore, token counts that included only the most common nonstandard features were moderately to highly correlated with token counts that included all nonstandard features. A token count based only on zero copula had a correlation of r =.75 with the full token count, and a token count based only on the four most common patterns had a correlation of .90 (Oetting & McDonald, 2002). This preliminary finding suggests that researchers may be able to design a simplified token type analysis that could be highly accurate but less time-consuming than a full token analysis. Other researchers need to continue where Oetting and McDonald (2002) left off, systematically comparing the various methods of studying dialect in order to determine the ideal method for each research purposes.

Hypotheses

Though many researchers have previously explored the relationship between AAE dialect density and reading skills, there remaining many outstanding questions. This dissertation contains three studies that aim to respond to several of the unresolved issues surrounding nonstandard dialect use and literacy.

Study 1: First, we do not yet adequately understand the separate relationships of morphosyntactic nonstandard dialect features, and of

phonological nonstandard dialect features, with literacy ability. Charity, Scarborough, and Griffin (2004) discovered that morphosyntactic features have a greater negative influence on reading comprehension than do phonological features in second grade, but they did not extend this study to a wide range of reading subskills. There may be a qualitative difference between a nonstandard dialect characterized solely by phonological features, and a nonstandard dialect characterized by both phonological and morphosyntactic features. Bialystok (2001) describes the morphosyntactic features of one's language as "more inherent, more universal, or more innate" than phonological features (Bialystok, 2001, p.80), and Gidney (C.Gidney; June 7, 2011; personal communication) proposes that a nonstandard dialect characterized by such morphosyntactic features may be "deeper" than one characterized solely by phonological features. It seems plausible that children who speak a "deep" AAE dialect characterized by both morphosyntactic and phonological features might have relatively greater difficulty with literacy tasks than would children who speak a "shallow" AAE characterized by phonological features alone. The first study of this dissertation examines the degree to which morphosyntactic and phonological AAE features in children's natural speech predict children's ability in a range of literacy tasks, and begins with the following hypotheses:

1. The relative frequency of AAE phonological and morphosyntactic features in the speech of a child in grades one through four will predict that child's literacy skills, such that relatively higher frequency of AAE features will be associated with lower performance on literacy tasks.

2. Morphosyntactic AAE features will predict literacy skills more strongly than will phonological AAE features.

3. Among reading-disabled children, the relationship between nonstandard dialect features and literacy skills will be stronger than will be the relationship among typically-reading children.

Study 2: Recent ambitious research efforts have developed a much clearer picture of the AAE commonly used by children. However, we do not yet have adequate information to understand the way in which child AAE varies from region to region. Without such reliable regional data, educators and evaluators have no normative model with which to compare the speech of any given sample of children. Thompson, Craig, and Washington (2003) have created a inventory of AAE features in children's speech that has been well-validated to date. The second study examines the degree to which the type analysis of the current sample adheres to the type analysis of Thompson, Craig, and Washington's (2003) sample. Study 2 began with the following hypothesis:

1. The relative frequency and distribution of morphosyntactic nonstandard dialect features in the speech of a sample of African-American children in grades one through four will replicate the relative frequency and distribution of such features discovered by Thompson, Craig, and Washington (2003).

Study 3: There remains little consistency in the manner in which researchers measure AAE dialect use, and this variation makes it difficult to compare findings and aggregate data across studies. The research community should strive to

identify the best possible method of studying dialect density, so that future researchers can adopt a uniform method with confidence. We do not yet know the best and most valid way to calculate DDM. While most researchers use some variation of the total number of words as the denominator, it is possible that this method does not adequately control for the relative frequency of possible occurrence of specific nonstandard features. Study three examines this question, and begins with the following hypothesis:

1. Calculating dialect density as the ratio of total dialect features divided by the total number of morphemes will produce the same relative ranking of participants as will calculating dialect density as the ratio of observed dialect features divided by possible total dialect features.
2. Calculating morphosyntactic dialect density as the ratio of total morphosyntactic dialect features divided by the total number of morphemes will produce the same relative ranking of participants as will calculating morphosyntactic dialect density as the ratio of observed morphosyntactic dialect features divided by possible morphosyntactic dialect features

Research Questions

This dissertation attempts to answer the following research questions:

Study 1:

1. To what degree (if at all), and in what way(s), are phonemic nonstandard dialect features predictive of literacy skills?

2. To what degree (if at all), and in what way(s), are morphosyntactic dialect features predictive of literacy skills?

3. Is the relationship between nonstandard dialect features and literacy skills different for typically reading children than it is for struggling readers?

4. Does the relationship vary for children of different ages? For boys and girls?

Study 2:

1. How does the relative frequency and distribution of AAE features in the current sample compare with those of a 2003 sample of African-American children?

Study 3:

When DDM of a sample of school-aged African-American children is calculated with frequency of possible occurrence as the denominator, how does the relative ranking of the students compare with the relative ranking when DDM is calculated with total number of morphemes as a denominator?

Study 1: Method

Sample The participants were 67 African-American children in grades one through four enrolled in elementary schools in Indianapolis, Indiana, in the winter of 2010, and/or the winter of 2011. Participants were drawn from one large public school, three small parochial schools, and one small charter school. The researcher decided to recruit from these schools since they have a large population of African-American students, and nearly all of these students' families had been in the United States for generations, and spoke only English. Students ranged in age from 6 to 13, with a mean age of 8.10 (SD = 1.44). 14 children were in first

grade (20.0%), 23 were in second grade (34.3%), 19 were in third grade (28.4%), and 11 were in fourth grade (16.4%). 39 participants were girls (58.2%) and 28 participants were boys (41.8%), though the researchers recruited boys and girls in an identical manner. This overrepresentation of girls may have skewed the sample towards less AAE use, and lower incidence of reading disability, than were actually present in the larger population, since girls tend to speak less AAE (Craig & Washington, 2002; Washington & Craig, 1994, 1998), and are less likely to have diagnosed reading disabilities (e.g., Badian, 1999), than boys.

All but two participants identified themselves as monolingual English speakers, and we determined that those two participants could be included in the analysis since it was highly unlikely that their experience in a second, non-primary, language would significantly influence their dialect use in English. One girl has grandparents in Sierra Leone, and she reported having visited that country on several occasions, during which she spoke some Krio. However, she reported speaking only English at home, and when asked to speak in Krio during the intake interview, she seemed only able to produce simple phrases. One boy has a younger brother who is Deaf, and so the boy is bilingual in American Sign Language (ASL). Since the deaf brother is younger, however, and since the boy has hearing parents, it is safe to assume that this boy's primary language is English. ASL presumably would be unable to influence the boy's English phonology since ASL has no phonology of its own, and it seems unlikely that the boy's second language, ASL, would significantly influence his underlying conception of the morphosyntax of his first and primary language, English.

All the children participated willingly in the study, and nearly all were very enthusiastic about at least the interview portion of the study. Most children seemed pleased to receive exclusive adult attention, and were eager to share information about themselves. All the testers remarked how delightful the children were to work with: friendly, forthcoming, humorous, cooperative, and polite.

The Participants' Environment 2010 Census data reveals that Indiana as a whole has a smaller percentage of African–Americans, and a larger percentage of whites, than does the nation at large: 9.1% of the state is African-American, and 84.3% of the state is white. Indiana has relatively little linguistic diversity, in that only 7.8% of people speak a language other than English at home, as compared with 20.1% of people in the country speaking a language other than English at home. Census data does not elucidate the relative rate of nonstandard dialect use. 13.5% of people in Indiana live in poverty, a number comparable to the 13.8% nationwide. Poverty rates among children tend to be higher than those among the larger population.

The city of Indianapolis has a different demographic composition than does the larger state. 27.5% of the city is African-American, and 61.8% of the city is white. 11.5% of people in the city speak a language other than English in the home, and 17.9% of Indianapolis residents live below the poverty line. Like most American cities, Indianapolis is fairly segregated along socioeconomic lines, and has several neighborhoods of concentrated poverty. All in all, 45 of the city's 212 census tracts have poverty rates above 30%, nineteen above 40%, and seven

above 50%. The Center Township, areas of Wayne Township such as Haughville, and an area of Warren Township near the Beechwood Gardens housing complex all have very high poverty rates, and Center Township has a much higher population of African-Americans than do the wealthier neighborhoods of the city. Most of the participants in the current study live in the Center Township.

In the Center Township 40.8% of the population is African-American, and married couples lead just 28.2% of households. 58.5% of resident grandparents are responsible for the care of their grandchildren in this neighborhood. 35.4% of residents of Center Township aged 25 or older have less than a high school diploma. Most residents of Center Township are native-born: 96% were born in the United States, and 95.5% were born in Indiana. 20.2% of families in the Center Township live in poverty, 29.2% of children under 18 live in poverty, and 33.1% of children under 5 live in poverty. 18.1% of households in the Center Township earn less than $10,000 a year.

Children in the sample attended one of five schools, all in Indianapolis. 19 (17.9%) participating children attended a majority-white charter school that boasts rigid discipline, extracurricular activities, and above-average standardized test scores in English, science, and math. The charter school is housed in a brand-new building and appears clean, modern, and highly ordered: children walked down the halls in silent, orderly lines behind their majority-white teachers. Three small parochial schools participated, two serving almost exclusively African-American students, and one serving primarily Latino students. Two participants

(1.9%) in the current study attended the majority Latino school, which enrolled 108 students in 2008-2009, of whom 3% were African-American, and 88% were Latino, and of whom 92% received free or reduced price lunch. 28 students (26.4%) attended the two other small parochial schools. The first of these schools had 153 students in 2008-2009, of whom 95% were African-American, and of whom 78% received free or reduced-price lunch. This school's test scores are lower than the state average, with fewer than 50% of students meeting state standards. The second of these schools had 170 students in 2008-2009, of whom 96% were African-American, and of whom 71% received free or reduced price lunch. This second school's test scores are below state averages, with approximately half of students meeting state standards. All three parochial schools are housed in small, older, traditional school buildings, and visits to the classrooms revealed a traditional arrangement of desks in straight rows, with children listening obediently to a teacher speaking at the front of the room. Children at the charter school and the parochial schools were exceptionally polite and obedient when working with the testers, a fact that may reflect characteristics of their school environment.

45 (42.5%) of the participating students attended a large public elementary school with slightly below-average test scores. In grade three, 63% of this school's student body passed the state ISTEP exam, and just 48% of its African-American students passed the exam. 377 of its 454 children receive free lunch, and 11 receive reduced-price lunch, meaning that approximately 85.2% of the children at this school live in poverty. 38.5% of the school's students are African-

American. The atmosphere at the public school was louder and less controlled than at the smaller schools. All five schools are headed by knowledgeable and dedicated principals who willingly participated in the current study. The principals were all eager to learn more about their students so that they could serve them better.

We did not study the children's home lives, and so we cannot make any general statements about their home influences with authority. However, we know that most of the children lived in the Center Township, a majority-black and high-poverty neighborhood. Though we did not systematically ask children about their lives outside of school, they spontaneously volunteered information that may provide some insight into the home lives of at least some of the children, home lives that inevitably influence their academic and literacy performance at least as much as their dialect does.

Many of the children listed their family members, and nearly all of the children who did so had families with more children than is typical in the broader US population. One child reported 17 siblings, and another did not know how many siblings she had since she had so many. Many of the children lived with half-siblings or with the children of a stepparent or a parent's boyfriend or girlfriend. Many of the younger children reported being cared for by their older siblings, and many of the older children reported caring for their younger siblings. Though the children's stories suggested that most of them have positive relationships with at least one adult, many of the children also indicated that they had experienced significant separations from important people in their lives.

Many referred to absent fathers, and to siblings who no longer live with them due to parental separations. One girl described bringing her Christmas presents to the hospital so that she could open them with her mother. Another girl interrupted a narrative about her dog with the spontaneous lament, "I miss my dad. He in jail."

The interviews suggested that most of the children spend a great deal of their free time in front of a screen, and in particular in front of a video game or a television. Very few children mentioned computer use. All of the children reported watching television, and all were very familiar with multiple television shows and movies. A large percentage of the children described shows that were aimed at adults, including ones with intensely violent themes. Several of the children said they were scared by such shows, and that they had nightmares and other sleep disruptions. Many of the children discussed playing video games, and several said that they played video games almost all the time on the weekends. While some children described physical activities such as riding bikes, playing with a dog in the park, building snowmen, and playing basketball, others did not mention any physical activities or any outside games. One girl explained that her family keeps her inside so that they can protect her.

Nearly all of the children were easily able to think of a very special day they had had, and for most of the children this day was their birthday, Christmas, or a trip to either an amusement park or an entertainment spot such as Dave and Buster's. The children described sharing these special days with parents and extended family, and were very enthusiastic about them. It was clear from the stories that these special trips were generally intended amusement for the whole

families, and not just for the children. The participants generally described their parents playing arcade games, drinking, and eating pizza alongside their children.

Nearly all of the children were very excited about food, and most eagerly described hearty home-cooked meals typical of the region, including fried chicken, green beans with bacon, mashed potatoes, pancakes with sausage, and fried biscuits. Most of the children also described regular consumption of unhealthful foods alongside their parents, including fast food, Ramen noodles, and a hamburger with donuts in place of a regular bun. Most of the children were clearly familiar with multiple fast food restaurants, and indicated what they typically order at each such restaurant. Two children described vomiting with family members mid-meal so that they could continue eating. The eating patterns described by many of the children seem consistent with the type of diet known to contribute to problems such as child obesity and concurrent malnutrition, problems that could certainly potentially contribute to literacy difficulties in ways that we do not yet well understand.

Testers Sociolinguistic Interviews were conducted by a male university professor whose expertise is in both linguistics and child development, and by a woman from Indianapolis whom he trained. Both interviewers are African-American, and both can speak in AAE as native speakers. The female interviewer uses many AAE features in both casual and professional settings, whereas the male interviewer generally uses SAE in professional settings, and when speaking with others who are using SAE. During the interviews the interviewers spoke in a way

that felt comfortable. Both used some AAE features, though the female interviewer did so more frequently than did the male interviewer.

Reading batteries were administered by eight people, all of whom had prior experience giving reading assessments and had extensive background knowledge about reading development. One tester is a Child Development professor and linguist, two are doctoral students in the Tufts University Child Development department studying reading, one was an assessor and recruiter at the Tufts Center for Reading and Language Research, and four are reading experts working at the Indiana branch of the International Dyslexia Association. One tester is African-American, one is Latino, and the remaining six testers are of white European ancestry. One tester is native to England and consequently spoke Standard British English, but this tester did not administer the CTOPP or either of the spelling assessments. All testers spoke SAE during the administration of the literacy battery.

Instruments We gathered natural speech samples using a Sociolinguistic Interview protocol (Labov, 1972), a protocol designed to elicit unguarded speech through the evocation of emotion. Though many sociolinguistic interview protocols encourage the telling of personal narratives associated with negative emotions, for the current study we only attempted to elicit positive emotion since we did not feel there was sufficient evidence to justify causing children potential mental distress. We piloted the interview protocol with a small sample of children in Medford, MA before using it in the present study. Meeting with pairs

of participants, the researchers asked the children three questions designed to induce strong positive emotions:

1. Tell me all about a day when you were really, really happy.

2. Think of your favorite book or movie, and tell me the story of that book or movie.

3. Imagine that it's your birthday, and your parents told you that you could eat whatever foods you want all day long. What foods would you like for breakfast, lunch, and dinner?

The first two questions aimed to elicit narrative form responses, one a personal narrative and one an impersonal narrative, which generally provide rich evidence of children's morphosyntax. The third question was designed to elicit a list of words in isolation, which provides relatively precise evidence of children's pronunciation patterns. Though the interviewer always asked the three target questions to maintain some consistency across the interviews, the interviewer also followed the children's interests and often ended up in relatively lengthy discussions not guided by the interview questions. Such digressions along the subjects' interests are consistent with the Sociolinguistic Interview protocol (Labov, 1972).

We measured phonological processing using the Elision, Blending, and Segmenting subtests of the Comprehensive Test of Phonological Processing (CTOPP) (Wagner, Torgesen, & Rashotte, 1999), a phonological assessment normed for ages seven through 24. The Elision task asks children to repeat words while removing a syllable or phoneme from the word. The Blending task asks

participants to listen to a recording of phonemes in isolation, and to blend these sounds together to pronounce a whole word. The Segmenting task asks participants to listen to a whole word, and then to break the word apart orally into its component phonemes.

We measured word reading in isolation with the Sight Word subtest of the Test of Word Reading Efficiency (TOWRE) (Torgesen, Wagner, & Rashotte, 1999), an assessment normed for ages six through 24. This subtest asks children to read a list of progressively more difficult real words as fast as they can for 45 seconds. Their score is based on the number of words read correctly.

We measured decoding/ word attack ability with the Phonemic Decoding subtest of the TOWRE (Torgesen, Wagner, & Rashotte, 1999). Participants completing this subtest read a list of progressively more difficult regularly-spelled nonsense words as fast as they can for 45 seconds. Their score is based on the number of nonsense words read correctly within 45 seconds.

We designed our own spelling inventories in order to measure students' spelling skills (see Appendices 1 and 2). The 16-item real-word spelling inventory focuses on real words containing spelling patterns that are often pronounced differently in AAE than they are in SAE. Students were read each target word, then a sentence using the word, then the target word again, and they were asked to write each target word on a piece of paper. During the second round of data collection, in February 2011, a measure of nonsense word spelling was added to the battery. This additional measure was researcher-designed to include the same target spelling patterns as the real word spelling inventory, but

within the context of nonsense words. Spelling inventories were scored based on the total number of words spelled correctly, plus on the total number of each spelling feature spelled correctly. The feature analysis was based on that contained within the book *Words Their Way* (Bear, Invernizzi, Templeton, & Johnston, 2004).

We assessed morphological knowledge using a Morphological Lines task (Norton & Wolf, 2008). This experimental task presents a list of words, each of which contains 2 morphemes. Participants are asked to draw a line between the morphemes of the word.

Finally, we measured reading accuracy and rate in connected text using the DIBELS Oral Reading Fluency (DORF) subtest of the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) (Good & Kaminski, 2005), which is normed for grades Kindergarten through six. This subtest presents participants with three leveled passages, and asks the participants to read each passage for one minute. The final score is the median number of words read correctly per minute.

Due to time constraints and resistance from participating schools, the study was unable to include a measure of reading comprehension in the testing battery.

Procedure We recruited participants and obtained informed consent by sending a study description and consent form home to the parents of all African-American children in grades one through four several weeks before our arrival at each school. After receiving back signed consent forms, we scheduled children for 1-

hour testing sessions spread over the course of one week in February 2010, and then another week in February 2011.

All data were collected during the school day, in the school buildings, using a single procedure. A researcher took each child out of class, and brought him/her to a room set up with several testing tables. The researcher then told the participant that we were interested in understanding better how kids learn to read, and explained that if the child chose to participate, s/he would do some reading and spelling activities, and would have a conversation that we would record. We asked participants aged eight and above to sign an Informed Assent form, and we obtained oral assent from all participants. Then, the researcher administered the Literacy Battery to the student, including the CTOPP, TOWRE, DIBELS, spelling test(s), and morphological lines task. The CTOPP, TOWRE, and DIBELS were administered according to their respective standardized procedures. The researcher administering the real word spelling test named each word, gave a sentence using the word, and then repeated the word, while the child wrote it on a designated line on a piece of paper. The researcher administering the nonsense word spelling task simply named each nonsense word, repeating it if requested, and the student wrote it on a piece of paper in a designated spot. For the morphological lines task, the researcher demonstrated the task with a model item, and then gave the child the prompt, asked him/her to begin, and allowed the child silently to work on dividing the words into morphemes.

After completing the testing battery, the researcher gave each participant a sticker and decorative pencil as a prize. Next, the researcher led the child to a

separate room for the Sociolinguistic Interview. During the interview process, an African-American researcher spoke with the children singly or in pairs, asking the three main interview questions, plus any relevant follow-up questions. The researcher spoke in a casual manner, and generally used SAE. Interviews were digitally recorded. We transcribed all the interviews, and counted the number of morphemes, and the number of both morphosyntactic and phonological AAE dialect features in each transcript. After the sociolinguistic interview, the researcher thanked each participant and accompanied the participants back to their class.

We calculated three measures of Dialect Density for each participant, using a variation of the "token-based" dialect classification that has been shown to be valid in prior research (Oetting, McDonald, 2002). We chose to measure dialect features as a percentage of the total number of morphemes, rather than of the total number of words, since the definition of a morpheme is more clear and consistent than is the definition of a word. Morphosyntactic Dialect Density (MDD) represents the number of morphosyntactic dialect features present in the speech sample, divided by the number of morphemes present in the speech sample. Phonological Dialect Density (PDD) represents that number of phonological dialect features present in the speech sample, divided by the number of morphemes present in the speech sample. Total Dialect Density (TDD) represents the sum of all nonstandard dialect features present in the speech sample, divided by the number of morphemes in the speech sample. We counted

all deviations from SAE as nonstandard dialect features, and did not isolate those features exclusive to AAE.

Study 1: Results

Dialect Density and Literacy Skills We examined three independent variables: MDD, PDD, and TDD, and explored to what degree they are associated with variation in ten outcome variables: elision, segmenting, blending, single sight word reading, single nonsense word reading, real word spelling, nonsense word spelling, morphological awareness, oral reading fluency (as defined by the DIBELS benchmarks: at risk, some risk, low risk), and a dichotomous variable identifying participants as "struggling readers" or not, in which a "struggling reader" is defined as being at "some risk" or below on the DIBELS, and/or receiving a standard score below 85 on either of the TOWRE subtests. Our hypotheses were that, 1. all three DDM scores will be negatively associated with all nine literacy variables, and positively associated with the struggling reader variable, and that, 2. MDD will be more strongly negatively associated with all nine literacy variables and more positively associated with the struggling reader variable than will PDD. We conducted bivariate Pearson product-moment correlations, factoring out participant age, for each predicting variable with each outcome variable, to measure the degree to which the predicting variables and the outcome variables are associated, and then conducted multivariate regressions to estimate the degree to which each measure of dialect density is able to predict variance in each measure of literacy.

All the participants used at least some nonstandard phonological dialect features in their spontaneous speech, though two participants used no nonstandard morphosyntactic features. The token analysis of PDD, MDD, and TDD are summarized below. A score of 1.0 would indicate that the speech sample contains as many nonstandard features as morphemes, whereas a score of .00 indicates that the sample contains no nonstandard features.

Table 1. Descriptive Statistics of Dialect Density Measures.

Measure	N	Minimum	Maximum	Mean	SD
PDD	61	.04	.40	.20	.09
MDD	67	.00	.07	.02	.02
TDD	61	.04	.46	.22	.11

Phonological Awareness Participants' standard scores on the three measures of phonological awareness are summarized in the table below. A standard score of 10 indicates average performance. Only half of the participants were administered the segmenting subtest, due to a data collection error. As is evident in the descriptive summary, there was a range of student performance for each of the three subtests, though overall performance, particularly on the blending and segmenting subtests, was lower than would be expected for a representative sample of children.

Table 2. Descriptive Statistics of Standard Scores on the Subtests of the CTOPP.

Measure	N	Minimum	Maximum	Mean	SD

Blending	60	3	12	7.30	2.07
Elision	60	3	17	8.57	3.19
Segmenting	30	3	13	7.93	2.36

None of the three measures of dialect density was significantly associated with either blending or segmenting as measured by the CTOPP, a surprising finding that contradicted an earlier pilot study using 27 of the current 67 participants. However, MDD was moderately negatively correlated with CTOPP elision ($r = -.422$, $p < .05$), though neither PDD nor TDD was correlated with this elision task. This finding indicates that children who used a greater density of morphosyntactic dialect features in their speech had relatively greater difficulty than their peers in deleting phonemes or syllables from words, though they performed comparably to their peers in segmenting and blending phonemes. The analysis of segmenting was limited since, due to a data collection error, only the first 27 students were administered the subtest. Thus we were unable to look for a relationship with segmenting for the larger sample of children.

A simple linear regression analysis revealed a trend towards MDD significantly predicting variance in elision, $F(1, 58) = 3.75$, $p = .058$, $R^2 = .061$, such that MDD may account for approximately 6.1% of the variation in elision ability.

Morphology None of the measures of dialect density was significantly correlated with, or predictive of, performance on the Morphological Lines task,

once the effect of age was partialed out. The participants' performance on the lines task is summarized below:

Table 3. Descriptive Statistics of Total Lines Correct Out of a Possible 19 on Morphological Lines Task.

Measure	N	Minimum	Maximum	Mean	SD
Lines	59	1	19	14.61	5.84

Sight Word Reading The standard scores of the participants' performance on the TOWRE Sight Words subtest are reported below. A standard score of 100 indicates average performance. The mean score and standard deviation reflect that expected of a representative sample, though the minimum score is much farther from the mean than is the maximum score.

Table 4. Descriptive Statistics of Standard Scores on the Sight Word Efficiency Subtest of the TOWRE.

Measure	N	Minimum	Maximum	Mean	SD
Sight Words	61	65	126	100.28	14.69

TDD and PDD, though not MDD, were significantly negatively correlated with single sight word reading as measured by the TOWRE. TDD was most strongly negatively correlated ($r = -.463$, $p < .05$) with the Sight Word Efficiency subtest, followed by PDD ($r = -.438$, $p < .05$). This finding indicates that children who used a relatively greater density of nonstandard phonological features in their

speech were generally less fast and/or accurate than their peers in reading lists of single known words in a timed setting.

In linear regression analyses, TDD predicted approximately 10% of the variance in TOWRE Sight Words standard scores: $F(1, 59) = 6.57$, $p < .05$, $R^2 = .100$, and predicted an additional 4.7% of variance in sight word reading even when the influence of phonological awareness ability as measured by CTOPP Elision were controlled for: $F(2, 57) = 21.81$, $p < .05$, $R^2 = .414$, R^2 change = .047. PDD alone predicted approximately 9.6% of the variance in TOWRE Sight Words standard scores: $F(1, 59) = 6.23$, $p < .05$, $R^2 = .096$, and predicted an additional 4.8% of variation in TOWRE Sight Words standard scores after accounting for the effect of phonological awareness as measured by the CTOPP Elision subtest: $F(2, 57) = 21.93$, $p < .05$, $R^2 = .100$, R^2 **c**hange = .048. Age was not a significant predictor of TOWRE sight words, probably because we used the age-neutral standard score.

Decoding Standard scores of the participants' performance on the Phonemic Decoding Efficiency subtest of the TOWRE are summarized below. A standard score of 100 indicates average performance. The mean is slightly below that expected of a representative sample, and the minimum score is considerably farther from the mean than is the maximum score:

Table 5. Descriptive Statistics of Standard Scores on the Phonemic Decoding Efficency Subtest of the TOWRE.

Measure	N	Minimum	Maximum	Mean	SD
Phonemic	61	67	118	95.74	14.22

Decoding					

All three measures of dialect density were significantly negatively correlated with the single word decoding, as measured by the TOWRE Phonemic Decoding Efficiency subtest. All three measures of dialect density were strongly negatively associated with TOWRE phonemic decoding efficiency standard scores: TDD (r = -.670, p <.001), PDD (r = -.642, p < .001), and MDD (r = -.480, p < .05). This finding demonstrates that those children who used a relatively greater density of nonstandard dialect features in their speech were generally less facile than their peers at decoding unfamiliar regularly-spelled single words in a timed setting.

Regression analyses revealed that PDD predicted approximately 19.4% of the variation in phonological decoding as measured by the TOWRE: $F(1, 59) = 14.22$, $p < .001$, $R^2 = .194$, and predicted an additional 11.5% of variation in Phonemic Decoding Efficiency standard scores even after the influence of phonological awareness, as measured by CTOPP Elision, was accounted for: $F(2, 57) = 30.38$, $p < .01$, $R^2 = ..516$, R^2 change = .115. This finding suggests that PDD influences phonological decoding ability partly through a mechanism distinct from phonological awareness.

MDD predicted approximately 16.4% of variation in phonemic decoding as measured by the TOWRE: $F(1, 64) = 12.77$, $p < .01$, $R^2 = .164$, and accounted for an additional 5.9% of variation in phonemic decoding efficiency even after the effects of phonological awareness as measured by CTOPP Elision was accounted for: $F(2, 63) = 28.21$, $p < .001$, $R^2 = .473$, R^2 change = ..059. However, when both

PDD and MDD are included in a regression model, neither predictor accounts for variation in phonemic decoding beyond that predicted by the other variable. MDD and PDD are, as predicted, highly positively correlated with one another (r = .692, $p < .001$), and account MDD and PDD account for nearly the identical variance in phonemic decoding.

TDD predicted approximately 20.5% of the variance in TOWRE phonemic decoding efficiency standard scores: $F(1, 58) = 15.20$, $p < .001$, $R^2 = .205$, and TDD accounted for an additional 11.6% of variation in TOWRE phonemic decoding efficiency after the influence of phonological awareness as measured by CTOPP Elision was accounted for: $F(2, 57) = 14.22$, $p < .001$, $R^2 = .194$, R^2 change = .116. This finding reinforced the supposition that the three highly-collinear measures of dialect density predict nearly the same variance in phonemic decoding efficiency.

Encoding Real Words The table below summarizes descriptive statistics of the total number of real words spelled correctly, out of a possible 16, by the participants:

Table 6. Descriptive statistics of real words spelled correctly out of a possible 15.

Measure	N	Minimum	Maximum	Mean	SD
# Correct	61	0	15	8.38	4.30

Beyond their relationship with decoding, the three measures of dialect density were significantly and moderately negatively associated with encoding as well, with age factored out, as measured by overall words correct on the real

words spelling task. The negative correlations of TDD (r = -.422, $p < .01$), MDD (r = -.329, $p = .05$), and PDD (r = -.418, $p < .01$) with the real word spelling task indicate that those children who used relatively more nonstandard features in their speech were in general less accurate than were their peers in spelling real, known words.

Linear regression analyses indicated that MDD predicted approximately 8.7% of variation in overall correct spelling, once the effect of age was accounted for: $F(1, 64) = 13.96$, $p < .01$, $R^2 = .304$, R^2 change = .087. PDD predicted approximately 9.8% of variation in overall correct spelling after controlling for the effect of age: $F(2, 58) = 14.231$, $p < .01$, $R^2 = .329$, R^2 change = .098. Finally, TDD predicted approximately 10% of variation in overall correct spelling after controlling for the effect of age: $F(2, 58) = 14.382$, $p < .001$, $R^2 = .332$, R^2 change = .100. Collinearity statistics suggest that the three measures of dialect density account for nearly the same proportion of variance in overall correct spelling, meaning that their contribution is not cumulative.

We conducted correlation analyses with the individual orthographic features contained within the target real words, continuing to factor out the effect of age. Each of the three measures of dialect density was significantly negatively correlated with spelling of short vowel sounds: TDD moderately (r = -.300, $p < .05$), MDD strongly (r = -.317, $p < ..01$), and PDD moderately (r = -.293, $p < .05$). TDD (r = -.293, $p < .05$) and PDD (r = -.294, $p < .05$) were both moderately negatively correlated with spelling single final consonants, while MDD had no significant association with spelling single final consonants. TDD (r = -.254, $p <$

.05) and MDD (r = -.281, p< .05), though not PDD, are moderately negatively correlated with spelling vowel digraphs and trigraphs. All measures of dialect density are significantly negatively correlated with the spelling of final 2-letter consonant clusters: TDD (r = -.304, p < .05), MDD (r = -.299, p <.05), and PDD (r = -.288, p < .05), and TDD and PDD are negatively associated with the spelling of initial 3-letter consonant clusters: TDD (r = -.267, p < .05), and PDD (r = -.264, p < .05) though none of the measures of dialect density is significantly correlated with spelling either initial 2-letter consonant clusters, or final 3-letter consonant clusters. The spelling of final voiced "th" is significantly negatively correlated with TDD (r = -.294, p < .05) and with PDD (r = -.282, p < .05), though not with MDD, and the spelling of initial unvoiced "th" is significantly negatively correlated with TDD (r = -.253, p < .05), though not with either of the individual measures of dialect density.

None of the other measured features were associated with any of the three measures of dialect density: initial single consonant, long vowel, final unvoiced "th," doubled final consonant, post-vocalic L, post-vocalic R, contractions, initial voiced "th," final –se, medial voiced "th," consonant cluster plus plural, or R-controlled final consonant cluster.

Encoding Nonsense Words The table below summarizes the number of nonsense words the children spelled "correctly," in which "correct" spelling was considered any orthographic pattern that would be typically associated with the spoken phonological pattern in conventional English. The nonsense word

spelling task was only administered at the second data collection point, and thus only includes half of the sample.

Table 7. Descriptive statistics of nonsense words spelled correctly out of a possible 16.

Measure	N	Minimum	Maximum	Mean	SD
# Correct	30	0	13	5.00	4.09

Despite the relationship of each of the measures of dialect density with spelling real words, none of the measures of dialect density was significantly associated with overall correct spelling of nonsense words. A correlation analysis of the individual features contained within the nonsense words revealed that the three measures of dialect density are significantly associated with only one nonsense word feature: post-vocalic "L." TDD ($r = -.440$, $p < .05$), MDD ($r = -.401$, $p < .05$), and PDD ($r = -.419$, $p < .05$) each has a significant, moderate, negative association with the correct spelling of post-vocalic "L," such that children who use more nonstandard dialect features in their speech were less likely than lighter nonstandard dialect users to spell post-vocalic "L" correctly in nonsense words.

Oral Reading Fluency Participants' performance on the DIBELS ORF measure is summarized below, including the median number of words read correctly in a minute, the median number of errors in a minute, and the "DIBELS Benchmark," in which a 1 indicates performance at grade level, a 2 indicates performance slightly below grade level, and a 3 indicates performance significantly below grade level.

Table 8. Descriptive statistics of participant performance on DIBELS ORF measure.

Measure	N	Minimum	Maximum	Mean	SD
# Correct	61	2	173	77.11	38.39
# Errors	60	0	27	5.00	3.99
Benchmark	60	1	3	1.72	.88

All three measures of dialect density were moderately negatively correlated with text-level oral reading fluency as measured by the DIBELS ORF raw scores, with the effects of age partialed out: TDD ($r = -.293$, $p < .05$), MDD ($r = -.357$, $p < .01$), and PDD ($r = -.268$, $p < .05$). MDD has the strongest negative association with ORF of the three dialect density measures.

In linear regression analyses, MDD accounted for approximately 6.6% of the variation in DIBELS ORF beyond that accounted for by age: $F(2, 64) = 6.34$, $p < .01$, $R^2 = .165$. PDD predicted approximately 4.5% of the variation in DIBELS ORF beyond the variation accounted for by age: $F(2, 58) = 4.02$, $p < .05$, $R^2 = .122$. TDD predicted approximately 5.8% of the variation in DIBELS ORF not predicted by age: $F(2, 58) = 4.51$, $p < .05$, $R^2 = .135$. MDD was able to predict an additional 6.2% of variation in DIBELS ORF beyond that predicted together by age and phonological awareness as measured by CTOPP Elision: $F(3, 62) = 9.23$, $p < .001$, $R^2 = .309$, R^2 change = .062.

Struggling Reader Status Students were classified as being either a "struggling reader" or not, in which "struggling readers" were defined as those who received a standard score more than one standard deviation below the mean on either subtest of the TOWRE, and/or who received a DIBELS benchmark

score of 2 or 3. The frequency of struggling reader designation is summarized in the table below:

Table 9. Frequencies of struggling and typical reader status in the sample.

Value	Frequency	Percent
Typical	36	59
Struggling	25	41

TDD (r = .269, $p < .05$) and PDD (r = .267, $p < .05$) are moderately positively correlated with being a struggling reader, such that children who used a greater density of phonological nonstandard dialect features in their speech were more likely to be labeled a struggling reader using our criteria. Additionally, though MDD was not itself significantly correlated with being a struggling reader (r = .176, $p > .05$), it tended towards significance. TDD was more strongly correlated with being a struggling reader than was PDD, suggesting that a high MDD may enhance the correlation between a high PDD and the likelihood of being a struggling reader.

Linear regression analysis revealed that PDD predicts variation in struggling reader status, $F(2, 58) = 3.46$, $p < .05$, $R^2 = .106$, such that PDD accounts for approximately 6.5 percent of the variation in struggling reader status beyond that already predicted by age. TDD also predicts significant variation in struggling reader status with the effect of age controlled, $F(1,58) = 3.48$, $p < .05$, , $R^2 = .107$, such that TDD accounts for 6.6% of the variation in struggling reader

status beyond that predicted by age. MDD did not significantly predict variation in struggling reader status.

Separate Analyses, Struggling Readers and Typical Readers We hypothesized that the negative relationship between dialect density and reading skills would be stronger among children who were struggling readers than it would be among children who were typical readers, since we assumed that the more linguistically-proficient children would be able to use their knowledge of language effectively to code-switch between their two dialects. However, this hypothesis was hard to test reliably in the current study since we had a relatively small sample overall, and a particularly small sample of struggling readers. Furthermore, we were unable to obtain an independent measurement of struggling reader status, and so had to rely on the TOWRE and DIBELS scores within our battery. This lack of an independent measure limited the number of analyses we could run, since two of the reading variables were used in defining struggling readers.

In the overall sample of 94 children, there were 53 non-struggling readers, and 41 struggling readers. Of these 94 children, 67 participated in the sociolinguistic interview and thus were included in the analysis of dialect density. Of these 67 children, 38 were non-struggling readers, and 29 were struggling readers. The non-struggling readers ranged in age from six to eleven, with a mean age of 8.11, and the struggling readers ranged in age from six to thirteen, with a mean age of 8.63. Among the non-struggling readers, PDD ranged from .04 to .40, with a mean of .18, while for struggling readers, PDD ranged from .09 to .39,

with a mean of .23. A *t*-test reveals that this difference in PDD means between struggling and non-struggling readers is statistically significant: $t(59) = 2.12$, $p < .05$. MDD for non-struggling readers ranged from .00 to .05, with a mean of .01, and for struggling readers MDD ranged from .01 to .08, with a mean of .03, a difference that is not statistically significant: $t(59) = 1.62$, $p > .05$. TDD for non-struggling readers ranged from .04 to .45 with a mean of .20, and for struggling readers TDD ranged from .09 to .46, with a mean of .26, a difference that is significant: $t(59) = 2.15$, $p < .05$. ANOVA confirmed that the struggling and non-struggling readers differed significantly in their PDD (F (1,59) = 4.51, $p < .05$) and their TDD (F (1,58) = 5.33, $p < .05$), but not in their MDD.

Though the struggling readers did not produce significantly more tokens of morphosyntactic AAE, they did produce a slightly different distribution of morphosyntactic AAE features than did the non-struggling readers. ANOVA revealed that the struggling readers produced significantly more instances of nonstandard subject-verb agreement (F (1,65) = 3.88, $p = .053$) zero copula (F (1,65) = 5.27, $p < .05$) and of other morphosyntactic features not classified in Craig et al.'s taxonomy (F (1,65) = 9.63, $p < .01$).

The struggling and non-struggling readers performed similarly on the CTOPP blending task, with the mean Standard Score being 7.08 for the non-struggling readers, and 7.15 for the struggling readers. This low Standard Score indicates that both groups of readers, whether or not they were designated as struggling, had difficulty with blending phonemes and syllables into words. The non-struggling readers had slightly higher scores on the elision task, though the

differences between their mean scores were not statistically significant for this sample size: non-struggling standard elision scores ranged from 3 to 17, and a mean score of 9.6, whereas struggling readers' scores ranged from 1 to 13, with a mean score of 7.08. The non-struggling readers generally performed better than their struggling peers on spelling, with a mean score of 10.51 words correct as opposed to the struggling readers' mean score of 6.05 words correct, though this difference was not statistically significant with this sample size.

The non-struggling readers performed significantly better on the lines task than the struggling readers, with a mean score of 16.47 correct as opposed to the struggling readers' mean score of 14.34 words correct: $t(88) = 1.97$, $p < .05$.

We conducted partial Pearson product-moment correlations with the effects of age partialed out, splitting the cases according to their designation as struggling readers or not, where struggling readers were defined by a classification of "at some risk" or "at risk" on the DIBELS DORF, and/or a standard score below 85 on either subtest of the TOWRE. Among non-struggling readers, MDD ($r = -.354$, $p < .05$) and TDD ($r = -.353$, $p < .05$) were negatively correlated with overall correct spelling, though, contrary to our predictions, there was no significant relationship between dialect density and overall correct spelling for the struggling readers.

We conducted partial Pearson product-moment correlations without partialing out the effects of age to explore the relationship of dialect density with those reading skills for which we had standard scores, for both struggling readers and typical readers. Among typical readers, all three measures of dialect density

were significantly negative related with ability to read sight words: TDD (r = -.405, $p < .05$), PDD (r = -.384, $p < ..05$) and MDD (r = -.460, $p < .01$), and MDD was most strongly negatively associated with sight word reading for this group. The three measures of dialect density were also significantly negatively related with phonemic decoding among the non-struggling readers: TDD (r = -.549, $p < .01$), MDD (r = -.574, $p < .001$), and PDD (r = -.520, $p < .01$), with MDD again having the strongest negative relationship with single-word decoding among the non-struggling readers. Contrary to our prediction, there was no significant relationship between any of the three measures of dialect density and either measure of single word reading among the struggling readers, nor was any measure of dialect density significantly associated with any other reading or phonological awareness skills among the struggling readers.

Study 1: Discussion

Some, but not all of our hypotheses were supported. In particular, the pattern of relative influence of PDD and MDD on literacy skills was surprising.

Phonological Awareness We had hypothesized that all three measures of dialect density would be negatively associated with all three measures of phonological awareness as measured by the CTOPP: elision, segmenting, and blending. We had anticipated that children who use high levels of nonstandard dialect features in their speech might have particular difficulty segmenting, deleting, and blending speech sounds in the standard dialect, since they might struggling to maintain stable mental representations of SAE phonology. However, our hypothesis was not well supported.

None of the three measures of dialect density was significantly associated with either blending or segmenting as measured by the CTOPP. It is possible that this null finding is due to a relative lack of variation in children's dialect use. Though the children's speech represented a range of dialect densities, we did not include any children who spoke no AAE. Perhaps if we had included more SAE-dominant children we would have detected a significant relationship between AAE density and blending and segmenting, as we had predicted. Similarly, it is possible there was not enough variation in children's segmenting and blending scores to detect a relationship, and such a relationship might be detectable with a larger and more varied sample.

There is some evidence that there was not sufficient variation in the tested children's CTOPP scores to detect a relationship between DDM and either blending or segmenting. While there was variation in the children's CTOPP scores, the scores overall tended to be fairly low. In particular, in the Blending subtest only two children performed above the mean, and 87% of the children performed at least slightly below the mean. 50.5% of the children performed greater than one standard deviation below the mean on the Blending subtest. The scores were slightly better but still generally weak on Elision and Segmenting. 63.4% of the children performed below the mean on Elision, with 39.8% performing greater than one standard deviation below the mean. 81.3% of the children performed below the mean on Segmenting, with 39.6% performing greater than one standard deviation below the mean. This pattern of results indicates that the majority of the children were weak in their phonological skills,

and that our sample does not represent the distribution of phonological skills upon with the CTOPP was normed, perhaps suggesting that the CTOPP's norms may not be valid for African-American children. Since most of the children were generally weak in phonological awareness, their scores may not have varied enough to produce significant results.

It is also possible that variation in performance on the CTOPP stems from a factor separate from dialect use, such that dialect density provides neither a benefit nor a hindrance to children's ability to blend and segment sounds in SAE. For example, blending and segmenting ability might vary due to differences in classroom instructional techniques, or due to the dominant dialect spoken by each child's classroom teacher. Segmentation and blending are tasks used very frequently in certain reading curricula, and never used in others, so the influence of differences in reading curricula may well have outweighed any influence of dialect density. A future study should control for instructional techniques in order to eliminate such potential confounds.

Though no measure of dialect density was significantly correlated with blending or segmenting, MDD was moderately negatively correlated with CTOPP elision, as predicted. In regression analysis, there was a trend towards MDD negatively predicting CTOPP elision, though the trend was not quite significant given our sample size. Neither TDD nor PDD was significantly correlated with elision. Children who used a greater density of morphosyntactic dialect features in their speech struggled more than their peers to delete phonemes or syllables from words, though they performed comparably with their peers in segmenting

and blending phonemes. The explanation for such disparate findings remains elusive. The task of elision may have a special relationship with AAE dialect density since AAE phonology and morphosyntax are both influenced by the dialect's relatively high rate of elision. Final consonants are often deleted or reduced in AAE, as well as some initial or medial unstressed syllables, and certain suffixes. So it is not altogether surprising that elision might relate to AAE use more strongly than to either blending or segmenting. Furthermore, unlike segmenting and blending, elision is not a very common task in elementary school classrooms, and is less directly connected to reading and spelling instruction. Thus, any relationship between dialect density and elision is less likely to be confounded with differences in classroom instruction than are relationships with blending or segmenting.

However, the precise negative relationship between MDD and elision is not immediately obvious. One possibility is that children with higher MDD scores have an overall lower command of SAE. Since morphosyntactic features are often considered the "core" of the dialect (Washington & Craig, 2002), such children might speak a stronger or deeper form of AAE, one that is more fundamentally distinct from SAE, and thus one that causes more confusion for children attempting to code-switch between the two dialects. Children may have learned that cues located in certain parts of words are unreliable since they are not present in both dialects, and thus may not adequately attend to such word parts. Participants with less SAE proficiency may not have stable mental representations of SAE phonology, and especially of those sounds that are optionally or

consistently deleted in AAE. Given such a scenario, children would likely struggle to understand and accurately accomplish a task requiring perception, retention, and systematic deletion of SAE speech sounds.

As with other literacy skills, another possibility is that elision is not directly related to MDD, but rather that both are a function of overall linguistic competence. Children with lower overall language ability might use more morphosyntactic features in their speech due to a lack of code-switching, and might also struggle with a task such as elision. Any potential relationship between overall linguistic ability and segmenting and blending might be so greatly moderated by classroom practices that it is no longer detectable.

Morphology Contrary to our predictions, none of the measures of dialect density was significantly correlated with morphological ability as measured by the Lines task. This finding is somewhat puzzling, since the Lines task directly measures SAE morphological knowledge, which would seem to be connected with the rate of nonstandard morphosyntactic features in speech.

It is likely that the still-experimental Lines task was not an adequate measure of morphological ability in this population, despite its earlier success in pilot studies of children not selected for AAE. Such a task might be particularly invalid for young speakers of nonstandard dialects. It is possible that children with high rates of nonstandard phonological and morphosyntactic features in their speech may have trouble discerning and mentally representing certain morphemes. For such children, then, a printed multimorphemic word may contain multiple elements that the children consider to be unpronounced, and

which are not well-represented in the children's minds. In such a situation, children might have trouble distinguishing those unpronounced elements that represent separate morphemes.

There are several possibilities for why MDD may not influence morphological ability as measured by the Lines task. The affixes represented on the Lines task are all very common, and so perhaps the children all know the morphemes very well. If this were the case, then variation in morphological knowledge would have been too minimal to capture with this sample size. If the task were not truly measuring differences in morphological knowledge, then it would perhaps instead be capturing differences in children's spelling ability, their word recognition, or their decoding. Future research could eliminate this confusion by including an orally-administered morphological task.

It is also possible that the Lines task is valid for this sample in measuring differences in morphological knowledge, but that PDD and MDD are truly unrelated to the ability to recognize written morphemes for this sample. Perhaps children have stable mental representations of orthographic morphemes that are stored distinctly from representations of morphemes as they are pronounced in AAE. Another possibility is that the children have adequate command of SAE phonology and morphosyntax even though they use a high percentage of AAE in their speech, and they are able effectively to identify the morphological structure of standardly-spelled words using their knowledge of SAE. Alternatively, the children may have stable representations of even those morphemes that they optionally or rarely pronounce in AAE. If this were the case, then the children

could learn written morphemes with relative ease by linking them with their mental representations of those morphemes.

Single Word Reading We had predicted that all three measures of dialect density would be significantly negatively associated with single word reading as measured by the TOWRE, assuming that the requirement to "translate" between dialects would render SAE orthography more opaque for heavy AAE dialect users, resulting in a greater cognitive load, and consequent lower accuracy and rate. This hypothesis was only partly confirmed: TDD and PDD were predictive of sight word reading, but MDD was not predictive of it. In general, those children who used a relatively greater density of nonstandard phonological features in their speech were less fast and/or less accurate than their peers in reading lists of single, known, words, in a timed setting. Presumably, children with a high density of nonstandard phonological features in their speech might work harder to recognize words spelled in standard orthography, and as a result might read more slowly or less accurately than children with fewer nonstandard features.

This finding is not in itself completely unexpected, but is surprising in light of the above-reported finding that MDD, though not PDD, is related to phonological awareness. This disparity indicates that phonological awareness may not strongly mediate the connection between dialect density and word reading for this sample of children, as is predicted by many reading models. Instead, PDD seems to relate to real word reading more directly, perhaps by facilitating a whole-word reading strategy and helping children efficiently and

effectively to store learned words. PDD and TDD each explains significant variation in single word reading even after the effect of phonological awareness as measured by CTOPP elision is controlled, further indicating that they at least partly contribute to word reading ability through a mechanism other than phonological awareness. Such an interpretation reinforces earlier findings that phonological awareness is less strongly related to reading ability among speakers of AAE than it is among speakers of SAE (Sligh & Connors, 2003; Connor & Craig, 2006).

MDD's lack of a relationship with single word reading suggests that using a high density of nonstandard morphosyntactic features does not affect children's ability to read single known words. On the surface, this finding makes sense, since single words have limited syntactic content, and since most of the early words on the TOWRE have simple morphemic structure. So it is possible that the syntactic and morphological requirements of the TOWRE are so limited that variation in MDD is not associated with the Sight Words subtest. Though this interpretation is logical, it is not consistent with the theory that higher MDD indicates a stronger or deeper core dialect. Such a theory would seem to predict that MDD would be associated with lower literacy scores across the board, and that MDD would always be more strongly negatively associated with literacy skills than PDD. However, this finding suggests a more complicated story, in which both PDD and MDD are uniquely related to a variety of literacy skills, sometimes overlapping in their influence, and sometimes not.

Decoding As we had predicted, all three measures of dialect density were significantly negatively correlated with single word decoding, as measured by the TOWRE. Those children who used a relatively greater density of nonstandard dialect features of any type in their speech were generally less facile than their peers at decoding unfamiliar regularly-spelled single words in a timed setting. Analyses suggest that the three highly-collinear dialect density measures are in fact explaining nearly the same variance in phonemic decoding.

The phonemic decoding subtest is a fairly pure measure of children's ability to apply the alphabetic principle, and its negative relationship with all measures of dialect density likely reflects the relatively greater orthographic opacity of English spelling for speakers using many AAE features in their speech. This relative orthographic opacity could lead to slower, less accurate, more effortful decoding, or in extreme cases could lead children to abandon the alphabetic principle altogether, instead attempting to rely on the sort of whole-word strategy that is ineffective in the reading of untaught nonsense words.

In contrast to sight word reading, phonemic decoding is significantly associated with all measures of dialect density. This means that while MDD may not relate to children's ability to identify sight words, it may influence children's ability to decode novel words. This disparity implies that the children are generally using fundamentally different reading strategies when they are decoding new words and when they are reading words they know: presumably, they are using a phoneme/grapheme mapping strategy with unfamiliar words, and a whole-word identification strategy with familiar words. If, indeed, MDD and PDD both

influence decoding, but then only PDD influences sight word reading, then it is likely that children with higher levels of MDD will struggle disproportionately whenever they encounter a large number of unfamiliar words. In such a scenario, children with high MDD scores might struggle in the early years of reading, when nearly all words are novel, and, in the upper grades, may struggle again when faced with a large number of novel multimorphemic words in content-area courses. When children area reading texts containing primarily known words, such as in the leveled texts often found in mid-elementary classrooms, PDD may be more influential than MDD in determining the degree to which children will struggle in their reading.

All three measures of dialect density predicted significant variation in phonemic decoding even after variation in phonological awareness ability as measured by the CTOPP elision subtest was controlled for. This finding suggests that while high dialect density may partly interfere with decoding by disrupting phonological awareness, it also negatively affects single word decoding through a separate mechanism. For example, children with high dialect density may have trouble perceiving and stably representing the morphological structure of words, and thus may have trouble recognizing known word parts in novel words. Alternatively, the decoding difficulty that children with high nonstandard dialect density face may discourage some of these children from engaging with text, thus depriving them from the success and experience they need in order to become proficient decoders.

Encoding Real Words Consistent with our hypotheses, the three measures of dialect density were negatively associated with encoding, as measured by overall words correct on the real words spelling task with the effects of age partialed out. Each measure of dialect density predicted approximately the same 10% of variation in children's spelling of real words. Those children who used relatively more nonstandard features in their speech were in general less accurate than were their peers in spelling real, known words. This pattern is probably due to the greater disparity between written and spoken English faced by those who use a higher density of nonstandard dialect features. Such relative orthographic opacity and inconsistency can render the task of identifying and learning spelling patterns more cumbersome and less rewarding. Children whose spoken dialects are farthest removed from the orthography would also be expected to produce errors reflective of the distinct phonological and morphosyntactic features of their native dialect.

Hypothesizing that dialect density would be most strongly negatively associated with the spelling of orthographic features that vary in their pronunciation between AAE and SAE, we examined the correlation between the three measures of dialect density and accuracy in spelling each of the real word spelling features, controlling for the effect of age. The three different measures of dialect density related to the various orthographic features in distinct ways.

We first measured the spelling of vowels, knowing that vowel sounds tend to be more difficult to spell than consonant sounds, and that vowel sounds generally vary more from dialect to dialect than do consonant sounds. All three

measures of dialect density were negatively correlated with accuracy in spelling short vowels, meaning that children who used more nonstandard features in their speech were less likely than their peers to encode short vowel sounds correctly. This finding is not surprising since vowel sounds in general, and short vowel sounds in particular, are highly variable from dialect to dialect, and from region to region. The short vowel sounds are also extremely similar to one another, and easy to confuse. Though linguists do not understand vowel use in AAE as well as they do consonant use, it is safe to assume that the vowels in AAE differ from those of SAE in important ways. MDD was particularly strongly associated with weaker spelling of short vowel sounds. Though we have no measure of the degree to which participants' vowel pronunciation deviates from the least-marked pronunciation of SAE, it is likely that the children who used the highest number of morphosyntactic features were the children who spoke the most marked nonstandard dialect, and consequently used the greatest number of nonstandard vocal features. These children would, then, logically have difficulty spelling short vowels, especially since the short vowels are so acoustically similar to one another. For some AAE speakers, the difference between the AAE pronunciation of a given vowel and the SAE pronunciation of the same vowel might be greater than the difference between the SAE pronunciation of two different vowel sounds. Future phonetic research can determine if this is indeed the case.

The relationship between dialect density and the spelling of vowel digraphs and trigraphs was evident, but less clear than with short vowels. TDD and MDD were negatively associated with spelling such "vowel teams," though

PDD was not associated with the spelling of these features. Vowel digraphs and trigraphs are more difficult orthographic patterns that are generally taught later in first or second grade, if they are directly taught at all. In order to learn these more difficult patterns effectively, children need either to be generally linguistically able and thus able to intuit the patterns from frequent exposure, or they need to receive explicit, structured instruction in class. Since vowel digraphs and trigraphs are more challenging and less regularly well-taught than the short vowels, they may be particularly sensitive to the overall linguistic competence of the child. Since, as mentioned above, the children with the higher MDD scores might be the least able to code-switch and thus the least linguistically able, these children might also be less likely to learn the complicated and often poorly-taught vowel digraph and trigraph patterns.

Despite dialect density's clear association with short vowel spelling, and complicated association with vowel digraphs and trigraphs, dialect density was not associated with the spelling of long vowel sounds in silent e syllables. This null finding can potentially be explained because unlike short vowels, long vowels are not as greatly variable from region to region, and are not as strongly influenced by their phonetic environment within a word. Furthermore, since long vowels "say their name," they are often much easier for children to identify, and the silent-e pattern tends to be taught early and exhaustively in nearly all reading curricula. As a result, it is likely that the long vowel sounds were fairly easy for children to identify correctly, regardless of the AAE dialect density in their speech.

Measures of dialect density were associated with some measures of spelling consonants, and not others. We had hypothesized that the phonological features of AAE would lead AAE-speakers towards more errors in spelling final consonants, consonant clusters (especially final consonant clusters), inflections, and spelling of the interdental fricative. Our hypotheses were partially supported.

TDD and PDD, though not MDD, were negatively correlated with spelling single final consonants. Since deletion or reduction of single final consonants in the children's speech would have resulted in their receiving higher PDD scores, this relationship seems logical. Participants who often omitted or reduced final consonants in their speech may have had trouble discerning or identifying such consonants, and so would be likely to omit them in their spelling as well. MDD might not be associated with spelling final single consonants because none of the single, final consonants in the spelling inventory represented a separate morpheme that could be optionally deleted in AAE. By contrast, all measures of dialect density were significantly negatively correlated with the spelling of final 2-letter consonant clusters. Final 2-letter consonant clusters would logically be influenced by both PDD and MDD since such consonant clusters often contained the morpheme "s," and since both high PDD and high MDD rates derived from frequent reduction of final consonant clusters, including deletion of the morpheme "s." Despite this relationship between dialect density and final 2-letter consonant clusters, however, there was no significant relationship between any of the dialect density measures and spelling of final 3-letter consonant clusters, or of final

consonant clusters plus the plural morpheme "s." These null finding could be due to the very low incidence of such orthographic patterns in the spelling inventory.

Accuracy in spelling initial 3-letter consonant clusters was associated with TDD and PDD, though not MDD. This observation is reasonable since initial three-letter consonant clusters might be reduced in AAE phonology, but such reductions would not generally indicate the omission of a morpheme, or any other deviation from SAE morphosyntactic structure. So it makes sense that PDD, but not MDD, would predict spelling of initial 3-letter consonant clusters. Surprisingly, initial two-letter consonant clusters were not similarly related to any of the measures of dialect density. Perhaps these simpler initial consonant clusters are more salient to AAE speakers, less likely to be reduced in speech, and more strongly represented in their minds. If such were the case for nearly all the children, then the spelling of these features would not likely to vulnerable to differences in dialect density.

The spelling of final voiced "th" was significantly negatively correlated with TDD and with PDD, though not with MDD. This observation is consistent with our hypotheses. Stopping or fronting of the interdental fricative was a frequently observed phonological feature in the participants' speech, and would contribute to a higher PDD score. So children who frequently substitute another sound for the interdental fricative might have trouble stably associating the "th" spelling pattern with the sound of the interdental fricative. The spelling of initial unvoiced "th" is significantly negatively correlated with TDD, though not with either of the individual measures of dialect density. Its significant relationship

with TDD suggests that both PDD and MDD may contribute to difficulty spelling this feature, and that perhaps a spelling inventory with a higher incidence of initial invoiced "th" might detect a significant relationship with one or both of the individual dialect density measures. Initial voiced "th," final unvoiced "th," and medial voiced "th" were not significantly related with any of the measures of dialect density, contrary to our expectations. Since other interdental fricative patterns were significantly associated with measures of dialect density, it seems likely that these null findings are due to a low incidence of the spelling features in the spelling inventory such that any actual relationship could not be perceived. The study should be replicated with a much larger and more comprehensive spelling inventory to assess whether there is in fact a significant relationship between dialect density and all possible positions and voicings of the interdental fricative.

We had anticipated that dialect density might be negatively associated with post-vocalic placement of the liquid consonants "r" and "l," since these can be optionally deleted or reduced in AAE. However, these hypotheses were not supported, and the spelling of these sounds was not significantly associated with any measure of dialect density. The participants may in general have sufficient familiarity with the phonological structure of SAE to be able to represent and encode these sounds reliably, or they may use them frequently enough in AAE that they are stably represented even when they are not pronounced. In such a scenario higher dialect density would not be associated with difficulty spelling these liquid sounds.

None of the measures of dialect density was significantly associated with the spelling of initial single consonants, which is probably due to the extreme salience of initial single consonants to most children, including AAE speakers, and the very early mastery of initial single consonants in the typical spelling development of children. Speaking a nonstandard dialect would not likely influence the degree to which children could perceive or reliably encode single initial consonants. Doubling of the final consonants l, z, s, and f was not associated with any measure of dialect density, probably because this pattern is a frequently-taught spelling rule reliant much more on quality of instruction than on characteristics of a child's speech. Dialect density might affect whether the child perceives the final consonant sound, but not whether the child knows to double the letter in English spelling. Along a similar line, no measure of dialect density was significantly associated with either use of contractions, or with final voiced "-se," other frequently-taught spelling features that more likely rely on adequate instruction than on familiarity with the standard dialect.

Encoding Nonsense Words We had predicted that, consistent with prior research (Kohler et al., 2007), dialect density would be negatively associated with nonsense word spelling, perhaps to a greater degree than with real word spelling. Since the spelling of nonsense words is a fairly pure measure of children's ability to apply knowledge of grapheme-phoneme correspondence to the task of encoding, and since it is not encumbered with as many potential confounding factors as real word spelling, we had thought that nonsense word spelling task would be especially vulnerable to any confusion generated by discrepancies

between a child's spoken dialect and the written orthography. However, our hypothesis was not confirmed, since none of the measures of dialect density was significantly associated with overall correct spelling of nonsense words.

The three measures of dialect density were all negatively associated with just a single spelling feature, post vocalic L, such that children who used more AAE features in their speech were less likely than other children to spell the post-vocalic L feature correctly in nonsense words. This finding is surprisingly limited and specific, and may indicate a statistical anomaly. As mentioned above, the nonsense word task was only administered to half the children, and so correlations were calculated with a much smaller sample size than were the correlations for real word spelling. It is likely that a finding more consistent with that of real word spelling would be revealed if the study were repeated with a larger sample of children. It is hard to explain why post-vocalic L, but no other studied orthographic features, might be influenced by dialect density. While post-vocalic L is often deleted or reduced in AAE, so too are other studied features, and it does not seem reasonable to assume that children may mentally represent post-vocalic L in a fundamentally different way than they represent, for example, post-vocalic R, such that post-vocalic L would be uniquely vulnerable to dialect confusion.

Oral Reading Fluency All three measures of dialect density were predictive of text-level oral reading fluency as measured by the DIBELS, such that children with higher levels of dialect density generally read more slowly and/or less accurately than their peers with lower dialect density scores. MDD was able to

predict significant variation in DIBELS ORF even after the influence of phonological awareness, as measured by CTOPP Elision, was controlled for.

Since oral reading fluency is a higher-level ability requiring the seamless integration of many lower-level skills, it is difficult to pinpoint the precise nature of the relationship between any given variable and reading fluency. However, bearing in mind such inherent ambiguity, there are several plausible interpretations of this finding. One possibility is that children with high levels of phonological and morphosyntactic features in their speech must "translate" phonological, structural and meaning-carrying elements of the written sentences as they read, a cognitive effort that could reduce their ability to read quickly and accurately. Since morphosyntactic and phonological dialect density were highly correlated, these children might struggle with two levels of this "translation" process: morphosyntactic translation and phonological translation. These children might also deviate from the text by substituting AAE phonological and morphosyntactic forms, a phenomenon that would result in a lower ORF score. It is also likely that the children with high dialect density scores may be the children least able to code-switch effectively, who may be the least linguistically-able children in general. It would thus be understandable that such children might perform poorly on a task of reading fluency.

Struggling Reader Status As predicted, TDD and PDD were positively predictive of being a struggling reader, meaning that those children who used more total or phonological dialect features in their speech were more likely to be

designated as struggling readers. However, surprisingly, MDD was not independently significantly associated with being a struggling reader.

There are several plausible explanations for PDD's positive prediction of being a struggling reader. Children with a high rate of nonstandard phonological features in their speech may have difficulty decoding words whose orthographic patterns do not well match the children's own phonological patterns. Such children may need to "translate" words into their native pronunciation as they read, which would require extra cognitive effort, and which would reduce the effort children could expend on other aspects of reading. Such an increased cognitive load associated with reading would also likely reduce children's enthusiasm for the task, potentially initiating a vicious cycle in which children do not read because it is hard, and then reading gets harder because they do not practice it.

Another possibility is that the children who use more phonological features in their interviews are those children with the least metalinguistic awareness, and the weakest ability to code-switch. Even though the interview was designed to make children feel as comfortable and casual as possible, it was conducted at school, by a professionally-dressed stranger, and was audio-recorded, all factors that would likely predispose children to use a somewhat formal mode of speech. Accordingly, it is possible that those children who used high levels of dialect in the interview did not discern the cues to formal speech, could not identify their separate dialects, and/or could not consciously determine which dialect they would speak in. If such a scenario is accurate for many of the

children, then the measurement of dialect density would have been confounded with code-switching ability, and the children using higher levels of phonological dialect features would have been those with less ability to code-switch.

It is more difficult to understand why MDD did not significantly predict being a struggling reader in this study. PDD and TDD had relatively weak relationships with being a struggling reader, and there was much less variation in participants' MDD scores than there was in their PDD or TDD scores. So a likely possibility is that the sample was neither large nor varied enough to detect a significant relationship between MDD and being a struggling reader, assuming that such a relationship existed. The study should be replicated with a larger sample of children to see whether MDD is able to predict being a struggling reader with more statistical power. Similarly, it is also possible that there was not enough variation in the children's scores, and particularly in their scores on the TOWRE, for MDD to be associated with being a struggling reader. Children were only identified as struggling if their TOWRE scores were below 1 standard deviation below, but a large percentage of the children had scores just slightly above this mark. Very few of the children had scores above the mean.

Though it seems likely that MDD's lack of a relationship with being a struggling reader is due to statistical limitations, it is also possible, of course, that there is actually no relationship between the two variables. Since being a struggling reader was determined by a low score on either subtest of the TOWRE and/or designation as below-benchmark on DIBELS ORF, such a finding would

indicate that high levels of MDD are not associated with poor single-word reading, poor single-word decoding, or poor oral reading fluency.

PDD vs. MDD There is no consensus in the field of AAE research as to what features of AAE should be measured in order to classify a speaker's AAE use. However, a recent trend in some of the research has moved more towards measuring morphosyntactic features, and not quantifying phonological features. This trend is based on the assumption that morphosyntactic features represent the "core" of the dialect and are most strongly linked with reading ability. In opposition to this observed trend, the present study suggests that PDD and MDD contribute to literacy skills in significant and distinct ways. Some literacy skills are associated with both PDD and MDD, while others are associated with just one or the other measure of dialect density. Given this complex pattern of interrelationships, researchers should probably continue to measure both PDD and MDD, since both appear to contribute to literacy skills in a manner that is unique and not yet fully understood. Future research should clarify the precise nature of the relationship between the prevalence of different phonological and morphosyntactic AAE features in speech and performance on various measures of literacy subskills.

Struggling and Typical Readers We had hypothesized that the negative relationship between dialect density and literacy skills would be greater for struggling readers than for typical readers. We assumed that struggling readers would, as a group, tend to have lower language abilities than typical readers, and thus would code-switch less deftly than their more linguistically-adept peers.

The struggling and typical readers did not systematically differ from one other in any of the non-linguistic traits we measured, and were similar to one another in distribution of age and gender. However, the two groups did differ in their language profiles. Looking separately at the dialect density measures of the struggling and typical readers, we found that the struggling readers used significantly more nonstandard phonological features in their speech than the typical readers, but did not use significantly more morphosyntactic features. This finding was somewhat surprising, since we had expected that the least linguistically-capable children would struggle with the literacy battery, and would use a high percentage of morphosyntactic features in their speech as a reflection of their presumed difficulty in code-switching. The lack of such a finding may be due to the relatively small sample size and the relatively limited variation in morphosyntactic dialect density in the sample, or it may genuinely indicate that the struggling readers do not on the whole use more morphosyntactic features.

One possible interpretation is that lower linguistic ability can lead to lower literacy scores, but does not lead to less morphosyntactic code-switching in this interview protocol. Of course, the interview paradigm was designed specifically to encourage the children to speak in the vernacular, but given the school setting and the unfamiliar adults present, we had assumed that most children would use more SAE than they would do at their most unguarded moments. It is possible, however, that our interview protocol was more effective in eliciting truly vernacular speech than we had anticipated, and that the friendly African-American interviewers gave the students the cue that they should or could speak

in AAE. In such a scenario, then degree of code-switching would not vary, and high use of morphosyntactic features would not likely reflect either a poor ability to code-switch or a lack of familiarity with SAE. Prior researchers discovered a U-shaped relationship between prevalence of morphosyntactic features the speech of AAE-speaking preschool children, and their literacy skills (Connor & Craig, 2006). However, the current sample did not demonstrate such a pattern: instead, struggling and non-struggling readers used comparable levels of nonstandard AAE features in their speech.

The struggling readers did not generally use significantly more nonstandard AAE features than did the typical readers, but the distribution of the morphosyntactic features they produced was slightly different. The struggling readers used more instances of nonstandard subject-verb agreement than the typical readers, and more instances of zero copula than the typical readers. Several possible causal relationships could produce this observed correlation. One possibility is that children who more often delete the copula and use nonstandard subject verb agreement may have more trouble gaining proficiency in reading, presumably because the disparity between these morphosyntactic features and the morphosyntax of printed English is particularly difficult to reconcile. But since zero copula is a rare and optional feature in most speakers, and nonstandard subject-verb agreement is most often realized as minor variations of the same recognizable verb form, it seems unlikely that prevalence of these two features would have a uniquely injurious effect on children's literacy skills. Causality may also flow in the opposite direction. The more struggling readers

probably spend less time reading than their peers, and consequently have less exposure to written SAE. As a result, such struggling readers might learn SAE at a slower rate than stronger readers, and consequently use more features such as zero copula and nonstandard subject-verb agreement than stronger readers during interviews. Finally, both phenomena might stem from a third cause. Most plausibly, the children with greater overall linguistic ability might use fewer highly-marked morphosyntactic features such as zero copula and nonstandard subject-verb agreement in their speech at school, and might also become better readers.

The struggling readers also used significantly more nonstandard morphosyntactic features not included in Craig et al.'s taxonomy, which were classified as "other" morphosyntactic features. While some of these features are likely characteristic of AAE or other nonstandard dialects to which the participants have been exposed, other features are likely either developmental or are idiosyncratic to the child. Such developmental or idiosyncratic nonstandardisms would most likely occur in either very young children or in children with lower overall language ability than their peers. Since the struggling readers did not differ from the typical readers in their age distribution, then it is probable that some of these unclassified nonstandard morphsyntactic usages are attributable to the struggling readers' overall weaker language ability. This weaker language ability would lead both to poor reading and to unusual nonstandard speech patterns, and the nonstandard speech patterns would be harder

to remediate than in a strong reader since struggling readers usually have reduced exposure to standard morphosyntax in written text.

We examined the relative performance of the struggling and the typical readers on three measures of phonological awareness. While we expected that the struggling readers would perform more poorly on phonological awareness, we thought that we might not find such a relationship, bearing in mind prior indications that phonological awareness does not as strongly mediate reading ability in AAE-speakers as it does in SAE-speakers (Sligh & Connors, 2003; Connor & Craig, 2006). Indeed, we found that the struggling and non-struggling readers performed similarly on all three phonological awareness tasks as measured by the CTOPP: blending, segmenting, and elision. This null finding indicates that the variation observed in children's reading ability is most likely not attributable to differences in phonological awareness, or to impaired phonological recoding due to discrepancies between AAE and SAE phonology.

There was no significant difference between the real-word spelling ability of struggling and non-struggling readers, though the non-struggling readers did tend to have higher scores, with a higher mean and higher minimum and maximum scores. This null finding could indicate that reading status does not relate to spelling ability for this sample, though it more likely is a function of our relatively small sample size. With a larger sample, we would expect to find a significant association between struggling reader status and real word spelling ability, since decoding and encoding are so intricately interlaced in most readers.

The struggling readers performed significantly more weakly on the Lines task than their non-struggling peers, as we had anticipated. Morphological ability greatly facilitates reading by allowing readers to recognize chunks of words, to analyze word structure, to learn new words accurate and rapidly, and to break larger words into smaller, comprehensible, and pronouncable parts. Morphological knowledge consistently predicts reading ability in children (e.g., Carlisle, 1995), and the positive relationship between morphological ability and reading ability is self-reinforcing: morphological ability makes reading easier and more enjoyable, while increased reading time further develops a reader's morphological knowledge. We would thus expect that the stronger readers would have richer knowledge of morphology. This relationship between morphological ability and reading ability may indeed be even stronger among speakers of AAE than it is among speakers of SAE if, as some studies suggest (Sligh & Connors, 2003; Connor & Craig, 2006), phonology is not as strongly associated with reading for AAE-speakers as it is for SAE-speakers. Readers who do not rely on a phonological word attack strategy most likely rely on either a whole word memorization strategy, or a morphological analysis strategy, of which the morphological analysis strategy is by far the more efficient and flexible. As a result, morphological ability may be disproportionately associated with reading ability for AAE speakers, since it may provide them with the best route towards decoding and learning words.

As explained above, we had originally predicted that the relationship between dialect density and reading ability would be stronger among struggling

readers than among non-struggling readers. However, this hypothesis was not supported. Instead, we found that the relationship between dialect density and literacy skills was stronger for typical readers than it was for struggling readers. All three measures of dialect density were negatively associated with ability to read sight words, and with phonemic decoding efficiency for the non-struggling readers. For spelling, we found a similarly unexpected scenario in this sample: while MDD and TDD were negatively associated with overall correct spelling of real words for non-struggling readers, no such relationship existed for struggling readers. This surprising finding could be a statistical anomaly attributable to our small sample size, or to the often fairly-weak literacy skills of even our "typical" readers. This study should certainly be replicated with a larger sample, with a greater range of reading abilities represented, and with a larger difference between the "struggling" and "non-struggling" readers. Furthermore, the study should be replicated by using criteria to identify struggling and non-struggling readers that are not dependent on elements of the literacy battery, such as performance on a state reading assessment, or designation by the teacher. Such a study design would allow for analysis of the relationship between dialect density and all elements of the literacy battery, since no elements of the literacy battery would be included in the original struggling reader criteria.

If, however, this unexpected relationship is found to hold even with larger and better-distinguished samples of struggling and non-struggling readers, then the question becomes: why would dialect density be more strongly associated with poor literacy outcomes among typical readers than among struggling

readers? One possible explanation is that struggling readers often receive remedial reading instruction, which tends to be more explicit than the standard reading curriculum in many classrooms. Perhaps through such remedial instruction, the struggling readers learn the phonological and morphosyntactic patterns of SAE, such that their literacy skills are less strongly influenced by their dialect density than would be the reading skills of stronger readers who are not offered such supplemental instruction. Another possibility is that the more linguistically-able stronger readers are more aware of the differences between SAE and AAE, and this awareness is more a cause of confusion than enlightenment for them. Though presumably a speaker needs conscious awareness and knowledge of his or her two dialects in order to master code-switching between them, perhaps in children this awareness of dialect difference leads to extra cognitive effort, and perhaps incorrect working hypotheses about the systematic differences between the dialects. Such confusion could be reinforced by a school environment in which instructors do not teach the differences between their dialects, and leave children to untangle such differences themselves. If this relationship is correct, then it could explain why literacy skills and nonstandard dialect use were more strongly related among the better readers than among the struggling readers.

Study 1: Conclusions

PDD and MDD We had predicted that both PDD and MDD would be negatively related to all the measured literacy skills, but that the relation of MDD to the literacy skills would be stronger. We had expected that this study might

provide further support for the idea that phonological features need not be counted when determining dialect density, since morphosyntactic features are more significant. Instead, however, we revealed a complicated relationship between PDD, MDD, and the various literacy skills, a relationship that does not allow for neat or facile conclusions.

PDD was individually associated with one reading subskill that was unrelated to MDD: the TOWRE sight words task. This task requires accurate and relatively rapid decoding of familiar words in isolation. This finding suggests that AAE-speaking children are better able to read and analyze single real words when the phonological structure of their speech more closely matches SAE. Thus, PDD may be particularly important for children at the early stages of literacy, when children are focusing more on initial decoding than on comprehension of connected text.

Though MDD was not associated with TOWRE sight words, it alone was associated with CTOPP elision. As mentioned above, it is not immediately clear why MDD and not PDD should be associated with elision, but perhaps children whose language more closely matches the morphosyntax of written English are better able to recognize, separate, and manipulate the parts of words. Thus, while PDD may be particularly important in determining the degree to which children can accurately read single known words, MDD may be particularly important in determining the degree to which children can accurately and quickly manipulate sounds to decode or spell words.

Both MDD and PDD were associated with three important literacy skills: phonemic decoding as measured by the TOWRE, real word spelling, and connected text reading. Phonemic decoding of nonsense words requires accurate and automatic knowledge of sound-letter correspondence, plus adequate skill in sound blending. It is easy to understand why children whose phonological systems more closely match the writing system would be superior at phonemic decoding than other children. It is less clear how MDD is associated with phonemic decoding, but it is likely that both MDD and phonemic decoding ability are functions of overall language ability. Furthermore, we know that the more a person knows about a word, the faster and more accurately the person can recall, read, and spell that word. Thus we would expect that any additional linguistic knowledge about words would result in better word reading, regardless of the type of knowledge.

MDD and PDD also are jointly associated with real word spelling, an observation whose mechanism seems clear. A low PDD likely contributes to spelling by allowing children easily to establish stable mental representations of sound-letter correspondence, and to use this knowledge easily to encode words. A low MDD likely contributes to spelling by allowing children easily to recognize the morphemic structure of words, and to develop stable orthographic representations of word parts. ORF measures rate and accuracy in reading connected text, a complicated and high-level skill that requires meticulously-timed and accurate automatization of numerous reading subskills. High nonstandard dialect density of any type is likely associated with lower ORF

because speakers with high nonstandard dialect density struggle with the cognitive load of "translating" text, and may deviate from the text by substituting AAE constructions or pronunciations.

Overall, these findings suggest that researchers should continue to measure both PDD and MDD, since their spheres of influence only partly overlap. Furthermore, we need to measure them both so that we can continue to learn about how different features of a nonstandard dialect separately influence literacy skills, and move towards better understanding of the mechanisms behind this influence.

Struggling and Typical Readers We had predicted that the expected negative relationship between nonstandard dialect density and literacy skills would be stronger among struggling readers than among typical readers, reasoning that struggling readers do not have the linguistic skill to compensate for dialect discrepancies. However, we found the precise opposite of our predictions: the negative association between nonstandard dialect density and literacy skills was stronger among the typical readers than it was among the struggling readers.

This surprising finding should certainly be tested in larger and more rigorous studies. If it is confirmed, however, it raises serious questions about many of the research community's assumptions about the relationship between nonstandard dialect density and literacy. We had assumed that overall linguistic competence, and in particular code-switching ability, is a critical mediating factor in determining the degree to which nonstandard dialect density negatively influences literacy skills. Children with overall greater linguistic competence

would be expected to code-switch adroitly, and also to use their superior metalinguistic awareness successfully to acquire literacy skills. We had expected that for such linguistically capable children, bidialectalism could even serve as an advantage in literacy acquisition, by granting children a precocious and explicit understanding of the form and function of language. Converse, children with lower linguistic ability might be handicapped by high-density use of a nonstandard dialect, since their bidialectal status would lead to confusion, and would render the orthographic code forbiddingly opaque.

Despite such strong assumptions, the above-reported preliminary finding suggests that, instead, that the density of nonstandard dialect use is more strongly negatively associated with literacy skills among stronger readers, than it is among weaker readers. If this finding is confirmed in future larger and more-rigorous experiments, then it would suggest that code-switching and overall linguistic competence may not mediate the relationship between dialect density and literacy skills in the expected manner, and that perhaps the stronger readers struggle more with their bidialectal status than had been assumed.

We were also sharply limited in the analyses we could perform on struggling reader designation because we were unable to obtain an independent measure of struggling reader status. By using two of our study variables to define the categories of struggling and typical readers, we gravely reduced the number of variables we could consequently study in reference to their struggling reader status. Future research should replicate the study with a reliable outside indicator of struggling reader status.

In light of the Deeney and Gidney (1999) pilot study described above, it is also possible that the overall variation in reading ability, and especially the number of profoundly struggling readers in our current sample, were insufficient to allow for detection of the anticipated relationship between struggling reader status and predictive value of dialect density. While the struggling readers in the current sample performed significantly below grade level on at least one measure, few of them were as severely reading disabled we were the children in Deeney and Gidney's (1999) sample, all of whom met stringent requirements for developmental dyslexia. Furthermore, as mentioned above, many of the non-struggling readers showed near-deficits in at least some subskills, and the study included very few highly-skilled readers. Thus, our sample was skewed towards low-average and low readers, while including very few severely delayed readers. Future research should replicate the study with profoundly dyslexic, average, and above-average readers, to see if the discrepancies noted by Deeney and Gidney (1999) might hold for a better-differentiated sample.

The Reading Circuit The complex findings of Study 1 are not surprising, given the multifaceted task of reading itself. Fluent reading demands the seamless and near-automatic integration of many cognitive processes, each with its own demands, and each with its own vulnerabilities. In a little more than half a second, a competent reader must perceive and recognize a word's visual form, connect its visual form with its phonological and articulatory-motor form, connect these with its context-specific semantic content, recognize and analyze its morphological structure, identify its role in the syntax of a sentence, and create

sentence-level-and passage-level meaning, plus original thought (Caplan, 2004). Each of these varied acts has its own cognitive requirements, and it is logical to assume that each has a unique pattern of sensitivity to variations in MDD and PDD.

Though this study measured reading multiple reading subskills, most of those subskills are themselves composed of multiple cognitive components. For example, sight word efficiency requires recognition of letters, letter patterns, and possibly of whole words, and subsequent connection of these visual patterns with both phonological and articulatory patterns, all as quickly as possible. We observed that PDD is uniquely associated with sight word efficiency in this study, but it is unclear what aspect(s) of the complex task of sight word reading are most sensitive to variations in PDD. PDD seems most logically connected with the task of stably representing the phonological form of a word, and then reliably connecting this form with orthography. However, without further research we cannot know what aspect(s) of a complex task might be influenced by differences in dialect density. Future research should focus on assessing the influence of PDD and MDD on each of the components of the subskills measured here, in order to elucidate more precisely the way in which types of dialect density might affect various stages of the reading circuit.

The three measures of phonological processing included in this study are best able to approximate the isolation of a single cognitive process within the reading circuit. However, even these relatively-isolated measures risk a confound with variations in working memory. As mentioned above, neither measure of

dialect density was significant related with either blending or segmenting, though MDD was significantly negatively associated with elision. Thus, for this sample, dialect density seems to have a limited influence in the phonological processing stage of the reading circuit.

Study 2: Method

Participants The participants in Study 2 were the same as those in Study 1.

Procedure We conducted a Type Analysis of the morphosyntactic nonstandard dialect features the participants produced during their sociolinguistic interviews. We classified the features according to the taxonomy of child AAE features compiled and validated by Craig, Thompson, Washington, and Potter (2003). We additionally counted morphosyntactic deviations from SAE not included in Craig et al.'s (2003) taxonomy, classifying these in the category "other."

Study 2: Results

Though all the participants used phonological nonstandard features in their speech, two participants used no morphosyntactic nonstandard features. The remaining children each used at least one morphosyntactic feature during their interviews. We observed at least one instance of most of the morphosyntactic features included in Craig et al.'s (2003) taxonomy, though no child produced either the fitna/sposeta/bouta or the completive done pattern. This finding is somewhat surprising since fitna/sposeta/bouta was observed in children using

low, moderate, and high levels of AAE in one study, though the discrepancy is probably due to regional variation and/or language change over time (Washington & Craig, 1994).

Some of the features were relatively rare, and were only observed in a handful of children. Regularized reflexive pronouns, double copula/auxiliary/modal, and remote past been, were the least common features observed, and only one child used each feature, each on a single occasion. Two children said "ain't," each just once. Preterite "had" was observed in only three children, two of whom used it once, and one of whom used it twice during their interviews. Four children deleted the article, each just once. Omission of the infinitival "to" was observed in only five children, four of them using it once, and one participant using it twice. Five children used multiple negation, each just once. Six children omitted the suffix "ing," each doing so just once.

Another set of morphosyntactic features were used by more than a few children, but were not extremely common. Eight children used double marking in their interviews, seven doing so each once, and one doing so three times. Ten participants omitted prepositions, eight doing so once, and two doing so twice. Ten participants used the article "a" before a vowel, six doing so once, three doing so twice, and one doing so five times. Twelve participants used invariant be, five doing so once, four doing so twice, and one each doing so five, six, and eight times. Seventeen participants omitted the plural marker, twelve doing so once, two doing so twice, one doing so three times, and two doing so four times.

Five morphosyntactic features were fairly common among the 67 participants, used by between a quarter and a half of the children. 19 children omitted the possessive marker, 13 doing so once, four doing so twice, and one each doing so three and four times. 22 children used the appositive pronoun, nine doing so once, nine doing so twice, and one each doing so three, four, five, and six times. 24 children used zero copula, twelve doing so once, five doing so twice, four doing so three times, two doing so four times, and one doing so five times. 25 children omitted auxiliary verbs, 14 doing so once, seven doing so twice, and just one doing so each of three, four, five, and seven times. 27 children used existential it, seventeen doing so once, seven doing so twice, two doing so three times, and one doing so four times.

Two features were observed in more than half the participants. 40 children omitted the past tense marker, 23 of them doing so once, seven doing so twice, three doing so three times, two doing so four times, one doing so five times, two doing so six times, and one each doing so seven and eight times. 52 children used nonstandard subject-verb agreement, seventeen doing so once, seventeen doing so twice, five doing so three times, two doing so four times, five doing so five times, two doing so six times, two doing so seven times, and one each doing so ten and thirteen times.

43 children used nonstandard morphosyntactic features during their interviews that are not included in Craig et al.'s (2003) taxonomy of features characterizing child AAE. Twenty children did so once, thirteen children did so twice, four children did so three times, four children did so four times, and one

child each did so five and nine times. We decided to count these morphosyntactic deviations from SAE since we assumed that any deviation may contribute to reading difficulty, whether or not it is characteristic of a particular nonstandard dialect. The "other" features counted probably each fall in one of the following categories: developmental features that are found in the speech of many young children, characteristics of adult AAE or of another nonstandard dialect, or idiosyncratic speech patterns specific to a child.

We compared the distribution of the participants' use of AAE morphosyntactic features with those found in the 2003 study conducted by Thompson, Craig, and Washington in 2003. Time limitations in the current study prevented us from similarly comparing types of phonological features observed. Below is a description of the 24 morphosyntactic features described by Thompson, Craig, and Washington (2003), their observed frequency in the current sample, the percentage of participants who used the features in the current sample, and examples of each feature from the current study.

Table 10. Frequency, Percent Using, and Examples of Morphosyntactic Features.

Feature	Frequency	Percent	Description	Example(s) from study
Ain't	2	3.3	Ain't used as a negative auxiliary	"You **ain't** supposed to eat in three minutes because your mouth gon' start hurting."

				"**Ain't** that a shame that you messed up on your birthday."
Appositive pronoun	20	32.8	A pronoun plus a noun or two pronouns used to signify same referent	"**This other guy, he** give him his life so Optimus can defeat the fallen." "**Dad, he** was the owner of them."
Completive done	0	0.0	Done used to emphasize recent completion of action	N/A: none found in sample
Double Marking	8	13	Multiple agreement marking of regular nouns and verbs, or hypercorrection of irregulars	"I play my baby brother that punch me in the face—that **hurted**!" "Well, the **ghostses** are real, you can actually see them."
Double copula, auxiliary, or modal	1	1.6	Doubling of the copula, auxiliary, or modal verb	"That'**s is** Rocky's brother."
Existential it	24	39.3	"it" used instead of "there" to indicate existence of reference without adding meaning	"**It**'s this girl and a boy…" "We ate tacos yesterday and **it** was some cheese in it."
Fitna/sposeta/bouta	0	0	Abbreviated forms indicating imminent action	N/A: none found in sample
Preterite had	3	4.9	"had" appearing before regular past tense verbs	"It was about this girl, she **had** met this boy…"

				"And when she got older she **had** worked in a restaurant."
Indefinite article	10	16.3	Use of "a" instead of "an"	"They had **a ice-cream** factory for the little kids." "And **a apple** and some cake."
Invariant be	10	16.3	"be" used to indicate habitual actions or states	"She lives with a family that **be**'s kind of cruel to her." "Summers I like to ride my bike, don't have to wear coats outside, cause it **be** hot."
Multiple negation	5	8.2	Two or more negative used within a clause	"He did**n't** have **no** super powers or anything like that." "It do**n't** have **no** weight at all."
Regularized reflexive pronoun	1	1.6	"hisself," "theyself," etc., used for reflexive pronouns	"We had a pajama party, every class for **theyselves**."
Remote past been	1	1.6	"Been used to indicate action taking place in the remote past	"We got some tickets—we **been** able to—and we won something."
Subject-verb agreement	46	75.4	Subject and verb differ in number	"Spongebob and Plankton, **they was** best

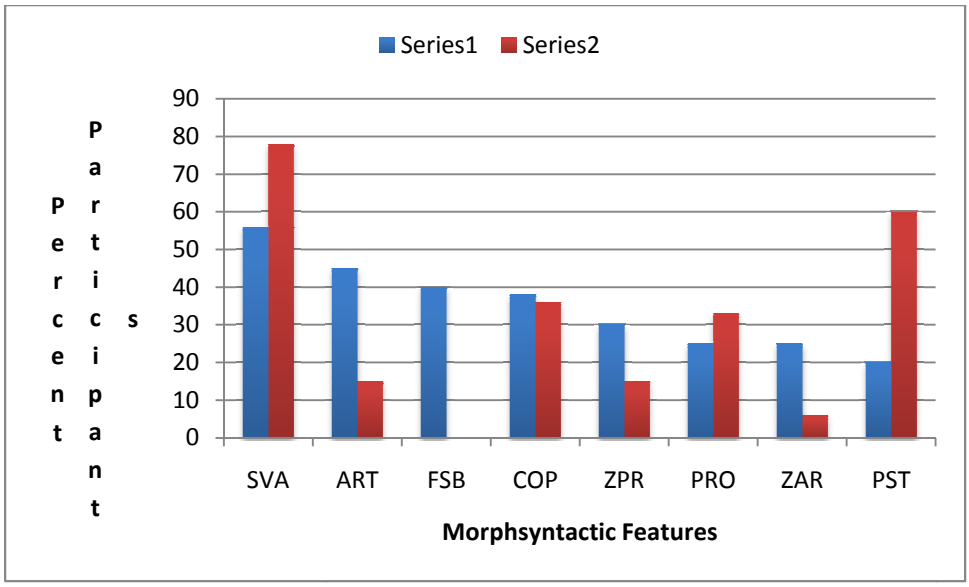
				friends ever." "When **my mama take** me somewhere."
Undifferentiated pronoun case	8	13.1	Pronoun cases used interchangeably	"You can't mess up **them** suits, they cost a lot." "You know **them** little vampires?"
Zero article	3	4.9	Omission of the article	"And my sisters, one of them is 14, **other one** is 19."
Zero copula/auxiliary	20	67.2	Omission of forms of the verb "to be"	"**He half man** and half spider." "You know how **it called**, **it called** Mountain Dew."
Zero "ing"	6	9.8	Omission of the progressive suffix "ing"	"He be keep on **say**, 'Can I take your order?'" "My mama was **video-camera** something."
Zero modal auxiliary	23	37.7	Omission of a modal auxiliary verb	"**I seen** some scary movies." "**He got** hearing aids in."
Zero past tense	39	63.9	Omission of past tense markers	"I played with my friends and

				I **make** new friends." "Back in the old days I **like** to do food fights in the cafeteria.'
Zero plural	15	24.6	Omission of the plural marker	"I like noodles and I like **pop-tart**." "I don't remember the other people **name**."
Zero possessive	18	29.5	Omission of possessive 's marker, or changing of possessive pronoun case	"I don't remember the other **people name**." "He cut the **boy daddy head** off."
Zero preposition	10	16.4	Omission of preposition	"They're **going Chicago** and they start dancing on the dance floor."
Zero "to"	3	4.9	Omission of infinitival "to"	"I **like eat** a lot of food." "We went into the bathroom **go puke**."

We examined the nine morphosyntactic features that were used by at least 25% of participants in Thompson, Craig, and Washington's 2003 study, as summarized in the chart below to determine whether the distribution of these

features was similar in our current sample and in the 2003 sample. "Series one" is the 2003 study, "series two" the current study.

Figure 1. Morphosyntactic AAE features, by type, in a 2003 study and in the current study.



Note. SVA = nonstandard subject verb agreement, ART = indefinite article, FSB = fitna/sposeda/bouta, COP = zero copula, ZPR = zero preposition, PRO = appositive pronoun, ZAR = zero article, PST = zero past tense.

In the current study four other categories of morphosyntactic AAE features were observed in a fairly large percentage of participants, though they were observed in less than 25% of the 2003 sample (Thompson, Craig, & Washington, 2003). 28% of our sample deleted the possessive marker, 40% used existential it, 38% deleted the auxiliary, and 64% used another nonstandard morphosyntactic feature not including in the taxonomy.

We explored this "other" category in an attempt to understand whether these deviations from SAE morphosyntax reflext variations of AAE, other

dialects, or either developmental or pathological processes within individual children.

The table below summarizes the types of "other" features observed, and provides a list of examples of these types of features.

Table 11. Examples of other morphosyntactic features observed.

Category	**Examples**
adjective form in adverbial role	Treating him **mean** (109) It's **real** funny (303) She was talking **crazy** (305) If I do **good** (310)
personal dative pronoun	I would get me some… (320) (x4) I would have me… (310) (x2) **I got me** a iPod charger (531) I'm picking me out a cake. (535)
"a" as indicator of futurity	Cause they were **a** hit him (117) **Imma** have my favorite (310) **Imma** ask my mom (512)
gon'	You gon' (512)
indicators of cause	They put stuff into her mouth **for** she could calm down (522) **Because so** you can enjoy the fun (544)
relative pronouns	The persons **that** was in the car (306) Boys **that** has a red hat (407) The place **that** she belongs (501) A girl **that** do a webshow. (508) Some of them **that** I haven't met yet. (508) It's high school people **that** graduate (508) My baby brother **that** punched me in the face (534) She couldn't stop laughing **that** they were home (522) A toy helicopter **that** you got a remote control. (539) I got a brother is five (512) (x3) You know **how** it's called (503) The minute **when** I was stop playing (530)

	We went to this place name was escape (208)
addition or substitution of a preposition	I don't have any **of** cats and dogs (102) Where they are **at** now (114) Where they're **at** (514) where **at**? (514) We went **to** out of town. (540) We went **to** the downstairs (544) Make stuff **on** accident (109) My mom take me…**to** going out to eat. (527) We spent the night **into** the hotel (544)
past tense construction	They s**inged** (102, 115) My favorite movie that we **wents** to see (104) I **drunk** it (105) I **haven't saw** the movie. (105) Another minion **came was flying** (117) After we **watching** that (322) He **telled** his momma (512 He **brung** it home (522) They **spinned** around (525) I **gots** to play (533) I **rided** on this big circle coaster (544) We then **drunk** pop (544) The minute when I **was stop playing** (530)
	He **gots** a tie (322) It **gots** talking animals (507) And then he **do's** good (514) I **gets** to get whatever I want. (533)

	I **gets** to learn and be educated (533) Sometimes I **having** a good dream, but every time I go to sleep **I'm having** a nightmare. (536) He**'s** just **starts** smashing things. (545)
use of do	Do you heard of this restaurant? (305) She always do jokes (501) Well, **we would do for dinner**, we just have ice-cream and cake. (517) She wanted to do with her friends (533) I just **do** sit in the house (524) I **do** is play my video games. (536)
embedded indirect questions	I forgot **what's the name of it**. (304) I don't know **how old are them**. (508) Imma ask my mom **can we get..** (512) You're asking me **what did I get**? (518) I asked my momma **was it in the water** (530)
sentence object placement	And then he puts on **it** (304)
word omission	His momma went down there said… (512) I would some cereal (535)
determiner number	This stuff, **this** sprinkles (503)

Study 2: Discussion

Type Analysis The above-described AAE feature token analysis revealed considerable variation across children in the degree to which they use any AAE phonological or morphosyntactic features overall in their speech. The morphosyntactic type analysis revealed comparable variation across participants in the distribution of specific morphosyntactic features that they use.

Methodological and sampling differences between the 2003 study by Thompson, Craig, and Washington, and the current study, may explain some of the discrepancies in the findings of the two studies' respective type analyses.

Thompson, Craig, and Washington's 2003 sample were 50 third grade African-American children from Detroit, all of whom were typically developing, whereas the current sample were 67 first through fourth grade African-American children from Indianapolis, some of whom were struggling readers. The data reported from the 2003 study were obtained through a picture description task, whereas the data reported from the current study were obtained through a sociolinguistic interviews. However, these differences in sampling and data collection are unlikely to account for all of the observed differences between the two samples of children. While the 2003 and current 2010/2011 samples were comparable in their use of zero copula and appositive pronoun, they were widely divergent in their use of the other seven highlighted features. Many more of the 2010/2011 participants used zero past and nonstandard subject verb agreement than the 2003 sample, and many more participants in the 2003 sample produced a nonstandard indefinite article, zero preposition, and zero article than in the 2010/2011 sample. Furthermore, while fitna/sposeda/bouta was a fairly common feature in the 2003 sample, it was not observed at all in the 2010/2011 sample. The relative prevalence of nonstandard past tense constructions in the 2010/2011 sample may be partly explained by the prompts use to elicit speech samples, two of which tended to produce narratives in the past tense. Additionally, as mentioned above, AAE undoubtedly varies considerably from region to region, and from speech to community to speech community. The observed differences between these two samples of child speakers are probably a function of such regional variation, and they should emphasize the critical importance of maintaining caution when

attempting to generalize descriptions of AAE use from a narrow region to a broader one.

We sought to determine whether sampling differences could account for some of the variation between our 2010/2011 sample and the 2003 sample of Thompson, Craig, and Washington's 2003 study. In particular, we assumed that younger children might use more AAE features, and might especially use more highly-marked features. To our surprise, however, multivariate regression analyses revealed that age did not independently contribute to variation in any of the measured morphosytntactic features. There was a significant interaction between age and sex in use of zero prepositions only, such that children omitting prepositions were more likely to be younger and female than were the children were did not omit prepositions. We had anticipated that younger children and boys would be more likely to use all nonstandard dialect features, since this relationship has been found in previous research (Green, 2002). Furthermore, since the "other" category likely included developmental speech features, we had expected that younger children would be significantly more likely to use this category of features, but such a relationship was not found with this sample. Since there was a relatively low incidence of many of these features in the speech samples, we should repeat the study with a larger sample of children and a wider variety of speech collection methods before making any large conclusions about the relationship between age, gender, and prevalence of nonstandard features in speech. These findings do, however, suggest that the differences in distribution of nonstandard features observed between our sample and the 2003 sample in

Thompson, Craig, and Washington's study is probably not due to sampling differences, and instead is due either to methodological variation, or to real differences in the speech patterns of the communities of Detroit and Indianapolis.

Other Morphosyntactic Features Observed Craig, Thompson and Washington (2003) have developed a thorough and well-validated taxonomy of AAE features commonly observed in children's speech, and we were interested in characterizing the speech of this sample of children using their taxonomy. However, our model anticipates that any deviation from the standard dialect, whether or not that deviation is characteristic of AAE, might hinder children's ability readily to acquire literacy skills in SAE. Accordingly, we recorded all deviations from SAE, and counted those morphosyntactic deviations not included in the taxonomy (Craig, Thompson, & Washington, 2003) in the category "other."

A fairly common deviation from standard written English was the adverbial use of an adjectival form of a word, used by six of the participants. This feature is common in most nonstandard dialects of English, and seems to be linked to social class rather than racial or ethnic identity: lower-SES adults and adolescents are significantly less likely to derive adverbs using the suffix –ly than are higher-SES children and adults (Macaulay, 2002). As reported above, the children in the current sample were predominantly from lower-SES homes. However, such a form does not often occur in written text or in the careful, formal speech often encouraged and used in schools, so its regular use could plausibly contribute to a discrepancy between one's spoken and written languages. The most common example of this feature was the use of "real" as an adverbial

intensifier, such as when one child described a roller coaster as “real steep,” and another characterized a television show as “real funny.” Participants also used the words “mean,” “crazy,” and “good” as adverbs. “Good” was the only example of an adjective used as an adverbial, for which the standard adverbial form is irregular, but “good” is also used as an adverb frequently in many dialects.

Four children expressed acquisition or possession through the phrases “have me,” “get me,” or “pick me out,” and of these four children, one used the form four times, and another used it twice in their respective interviews. The use of the personal dative pronoun in transitional clauses is well-documented, though not well understood in nonstandard Southern and Appalachian dialects. It must obligatorily co-index with the subject, but does not obviously contribute additional syntactic or semantic information (Horn, 2008). Though anecdotal evidence would suggest that the personal dative pronoun is a common feature in at least some varieties of AAE, its use has not yet been systematically documented or studied. The prevalence of this feature in the current sample, however, suggests that it may be an important syntactic feature of some AAE language communities, especially since the children sampled are so far from the Appalachian and Southern communities whose use of this feature is better understood.

Many of the children used nonstandard constructions to code causation, futurity, or intention. Nearly all of these children used “gon’” in place of the more standard “going to” or “gonna,” in which the alveolar nasal was sharply reduced to just a hint of nasalization in the vowel. Labov describes this feature as “highly

characteristic" of AAE (Labov et al., 1968), and it is commonly used to indicate both distal and proximate futurity (Poplack & Taglimonte, 2000) for all persons but the third person singular (Green, 2002). The reduction "gon'" could plausibly be considered a phonological variation rather than a morphosyntactic one, if one assumes that a child uttering "I gon'" is expressing the underlying morphosyntactic form "I am going to." However, since "gon'" bears little phonological similarity to "am going to" and does not include any overt infinitival markers, its use may indicate a nonstandard underlying morphosyntactic representation. We thus classified it along with the other morphosyntactic features of AAE.

All other nonstandard expressions of causation, futurity, and intention were observed in only a handful of participants. When describing an unfortunate trip to the dentist, one girl related, "They put stuff into her mouth **for** she could calm down," substituting "for" for the likely standard form "so that." While the construction "for to" has been documented in some AAE samples (Green, 2002), "for" used to mean "so that" is not well documented. Perhaps this participant was shortening the "for to" sequence, or perhaps her construction is idiosyncratic.

Another participant used two causational conjunctions when one would have sufficed in standard English, explaining that a water park was designed "because so you can enjoy the fun." While this utterance could potentially be attributed to an on-line self-correction, all of the listeners who heard her interview believed that this construction was intentional and did not believe that the child

perceived it to be an error. "Because so" is not normally considered a feature of AAE.

Two children used the contraction "Imma" to stand in for the full phrase "I am going to." While "I'm gonna" is extremely common, even in the standard dialect, "Imma" is more marked and more characteristic of nonstandard speech. Green (2002) reports that it is the most common AAE construction indicating futurity in the first person singular. "Imma" is far enough removed from what children will encounter in text that its use might very well precipitate trouble decoding and spelling the standard forms of the construction. Indeed, one boy's utterance suggested that perhaps his mental representation of "Imma" does not contain the component parts "I am going to." A boy recounting an action movie plot explained that a father had to defend his son against attackers "because they were a hit him." This construction may derive from the "Imma" abbreviation . A child who frequently uses and hears the construction "Imma" may parse it as "I'm" plus "a," in which "a" is an indicator of futurity or intention. Then, the child could logically extend the use of "a" as a futurity marker to other subjects, such as in the target utterance, "they were a hit him." Alternately, Green (2002) describes "a" as a standard marker of futurity in AAE, and explains that it is a radical abbreviation of the auxiliary "will."

Two participants produced nonstandard forms in which they apparently omitted words that would have been obligatorily included in SAE. When recounting an anecdote, one child uttered, "His momma went down there said…," presumably omitting the conjunction "and" between "there" and "said." Craig

and Washington (1994) noted examples of such coordinating conjunction ellipsis in the speech of AAE-speaking preschoolers, and considered them to be incomplete attempts at the use of complex syntax. The speaker in the current study was an eight-year-old girl in the third grade, significantly older than the participants in Craig and Washington's (1994) study. Without further evidence of the rate of use of coordinating conjunction ellipsis in the speech of elementary-aged children, it seems safest to assume that this example of coordinating conjunction ellipsis is likely a function of a single child's slightly-delayed language development.

Another child apparently omitted the verb "have," responding to the question, "What would you have for breakfast?" with the utterance, "I would some cereal." Many of the participants sharply reduced their pronunciation of the word "would" in the phrase "would have," sometimes only preserving its vowel sound, but this child was unusual in pronouncing "would" fully, but in omitting "have." Variable inclusion of the main verb "have" is not widely documented in AAE, and this was the only instance observed in the current sample. As a result, it seems most likely that this construction was an incomplete attempt at a complex syntactic form, as described by Craig and Washington (1994) in preschoolers. The speaker was two months shy of his seventh birthday, and so was not greatly older than a preschool sample. His omission of the verb "have" is likely indicative of a developmental process, and not a dialect feature.

Many of the participants used nonstandard forms of relative pronouns, most of which are common in other English varieties. Most frequently,

participants used the relative pronoun "that" when standard English conventions would dictate requisite use of a different pronoun: the pronoun "who," as in "the persons **that** was in the car," or "where," as in "the place **that** she belongs," or "whom" as in "some of them **that** I haven't met yet," or "for which" as in "a toy helicopter **that** you got a remote control." Substitution with the relative pronoun "that" is common in many dialects of English, and is used casually by many speakers of SAE. However, it is not characteristic of written English, and so its use could contribute to the disparity between spoken AAE and written standard English.

We recorded several instances of ellipsis of the relative pronoun, which is expected since the relative pronoun is optional in many sentences in AAE (Green, 2002). One child omitted the relative pronoun "who" three times when describing his three siblings, as in, "I got a brother is five." Another omitted the word "whose," producing the sentence "We went to this place [whose] name was Escape." This last sentence could alternately be interpreted as being "We went to this place. [Its] name was Escape," which could then be coded as omission of the possessive marker. However, the speaker did not pause perceptibly between the words "place" and "name," and the listeners interpreted the utterance as a single sentence. Omission of relative pronouns has been noted before in child speakers of AAE (Wolfram, 1991; Wolfram & Schilling-Estes, 1998), though some studies have not yet carefully disambiguated relative pronoun omission due to dialect differences, and relative pronoun omission due to developmental processes or delays. Green (2002) records examples of relative pronoun omission in adults,

explaining that relative pronouns need not always introduce relative clauses that modify a noun in the predicate nominative or object position.

One participant in the current study produced the sentence, "You know how it's called," replacing the more standard relative pronoun "what" with "how." While this construction is not typical of SAE, it is comparable to the construction used in languages such as French. It is possible that its use in an AAE-speaking community could reflect the influence of languages such as Haitian Creole on AAE. Future research is needed to determine if this construction is indeed characteristic of AAE, and then to identify its probable origin. Another child said, "She couldn't stop laughing that they were home." In the context of the story, it was clear that the girl wasn't laughing *because* they were home, but that she could not stop laughing *even after* they were home, such that the relative pronoun "that" is substituted for either "after" or "when." Since "that" is the relativizer with the least restrictive range of use, it is likely that this child extends its use into contexts its which its use would not be considered grammatical in SAE, and might not be considered grammatical by adult speakers of AAE. Finally, one child uttered the following in the middle of an anecdote: "The minute when I was stop playing I went…I didn't want no cake or ice-cream cause I was feeling sick." Clearly this utterance includes multiple nonstandard features including multiple negation, and the speaker stops and reframes the sentence midway through its production. However, the sentence also includes the relative pronoun "when," in a context in which standard English would usually dictate use of "that."

Several of the unclassified deviations from standard morphosyntax involved the addition of prepositions that would not normally occur in SAE. Omission of a preposition is included in the taxonomy of child AAE features, but not addition of a preposition (Craig, Thompson, & Washington, 2003). Most commonly, participants inserted the preposition "at" following "where," as in "where at?" and "I don't know where they're at now." The inclusion of the preposition "at" is common in many nonstandard dialects of English, and is not exclusive to AAE. Another child described her lack of pets by saying, "I don't have any of cats and dogs," inserting the preposition "of" where it would not usually be included in SAE. This construction does, however, mimic constructions in language such as French, which could conceivably indicate a cross-linguistic influence. It is also possible that this child typically produces multiple negation, and was striving to use the standard negative form in the relatively-formal interview context. In such a scenario, this nonstandard construction could reflect the child's lack of mastery over the standard negative form. None of the other children extended the "any of" construction to nonstandard contexts in this study, which suggests that it may not be a feature of a commonly-shared dialect, and may instead be an idiosyncratic feature of the child's speech.

Four children added the preposition "to" to form nonstandard constructions. In the utterance "We went to out of town" the speaker adds the preposition "to" before the more standard prepositional combination "out of." This construction may simply reflect this child's association of the word "to"

following the word “went,” or it may represent a broader dialect feature. Another child said, “We went to the downstairs.” While in SAE the component preposition and noun of the compound word “downstairs” are generally jointly treated as an adverb to describe the direction of movement, this participant is treating it as a noun, and adding the definitive article “the” accordingly. The participant then inserts the preposition “to” to indicate direction, which is logical since the speaker is apparently not interpreting the “down” in “downstairs” as a preposition. Another child described his favorite moments by saying, “My mom take me…**to** going out to eat,” adding both the preposition “to” and the verb “going” to the SAE construction. This utterance suggests that the child does not process the phrase “taking some one out” as a coherent unit, and so inserts additional words between “me” and “out” in an attempt to clarify the sentence. Finally, a fourth participant said, “We spent the night **into** the hotel,” including the preposition “to” immediately after the preposition “in” in a way that would not occur in SAE. While “in” suggests a resting state within something, “into” suggests movement into the interior of something, and so “in” seems like the more obvious preposition to use to describe a constant state of being inside a hotel for the night. These four examples of insertion of the preposition “to” are distinct, and seem to arrive from different processes. However, it is striking that all four examples include insertion of the same preposition, suggesting that further research is warranted to understand whether “to” is treated differently overall in AAE than it is in SAE.

Several students also substituted prepositions in a nonstandard way. One child used the expression "on accident." While still deviating from standard English, this construction is becoming increasing common, especially among younger low-income speakers. In particular, one informal study found that 89% of surveyed children in Indiana used this construction, as well as a majority of children in Georgia and California, so it is unsurprising that children in our sample would use it (Barratt, 2006). This study (Barratt, 2006) did not account for potential racial differences. Some theorize that "on accident" arose as an extension of the construction "on purpose," though such an explanation cannot account for the lack of use of a "by purpose" construction.

Fourteen of the examples of "other" morphosyntactic features were nonstandard formations of the past tense, in a manner not outlined in Craig, Thompson, and Washington's (2003) taxonomy. In five of those cases, the participants regularized a verb whose simple past tense form is standardly irregular. Two different children uttered, "They singed," one said, "He telled his mama," one said, "They spinned around," and one said, "I rided on this big plastic coaster." Such regularization of irregular verbs is common in the development of young children (Marcus et al., 1992; Xu & Pinker, 1995), and may persist in typically-developing SAE speakers through early elementary school, particularly in uncommon words (Marchman, Wulfeck, & Weismer, 1999). While overregularization of the past tense is present among most childen in the early elementary years, a study of six-year-old African-American children suggests that it may be especially prevalent among speakers of AAE (Pruitt & Oetting, 2009).

82% of the nonstandard forms produced by the sample of that study occurred with irregular verbs, and of these forms 25% resulted from an overregularization of the verb (Pruitt & Oetting, 2009). So as is so often the case, it is difficult to discern whether the overregularization observed in these five speakers is a feature of their dialect or a lingering speech pattern attributable to their ongoing language development.

Several other nonstandard past tense constructions involved irregular past tense verbs, but were not simple overregularizations of these verbs. In two cases, participants appended the suffix "s" to the irregular past tense form of the verb, while the syntax and context of the sentence indicated that the tense remained in the past. One child started a sentence with, "My favorite movie that we wents to see," and another said, in the middle of a past-tense anecdote, "I gots to play." In her analysis of the suffix "s" in AAE, Green (2002) states that it occurs in AAE in narrative, habitual, and third person singular contexts. However, her account does not include the case observed here, in which the suffix "s" is appended to a nonstandard past tense verb.

In one case, a participant substituted the past participle form of a verb for its irregular simple past form, producing the utterance "I drunk it." Conversely, a different participant replaced the past participle with the simple past form, uttering "I haven't saw the movie." It is clear that both past participle and simple past forms are used in AAE, and that a distinction is made between them in a manner distinct from SAE (Green, 2002). However, the exact rules governing use of the past participle and the simple past are not yet clearly outlined for AAE

(Green, 2002), so it is impossible to determine if these children's constructions are indeed features of AAE. In another case, a child likely extended the irregular conjugation of words such as "hang" to produce the past tense utterance "He brung it home." Such analogical learning is common in language acquisition, and such forms appear frequently in the speech of most English-speaking children (Bybee & Slobin, 1982). "Brung" and "brang" are also accepted forms of multiple nonstandard dialects (Oetting & McDonald, 2002), including AAE (Pruitt & Oetting, 2009). So again, this utterance could be attributed variably to the child's ongoing language acquisition or to nonstandard dialect use.

Finally, three children uttered past tense constructions that were not easily classified, and which may be idiosyncratic. One participant continued a past-tense story with the clause "After we watching that," instead of the standard construction "After we watched that." The underlying form of this utterance may have been "after we were watching that," and the speaker may have omitted the word "were," as is often permissible in AAE. However, even if the speaker did omit "were," the choice of the past progressive tense is still nonstandard in that it described an action that had been completed. Another child uttered an equally ambiguous statement, saying that she felt ill "the minute when I was stop playing," instead of the more standard verb constructions, "The minute when I had stopped playing," or "the minute when I stopped playing." The underlying form of the verb "stop" may or may not have included the suffix "ed" in this child's mental representation, in which case the only nonstandard element would be the choice of the auxiliary "was" in place of "had."

While recounting the plot of an action movie, a boy said, “Another minion came was flying.” He was talking quickly and retelling a complicated plot, and he may simply have switched streams mid-sentence and intended the phrase “was flying” as a substitution for, or clarification of, the preceding verb “came.’ Alternatively, he may have intended the entire verb phrase “came was flying” to serve as a single unit, which would be an unusual and possibly idiosyncratic construction. While “come” functions as a semi-auxiliary in AAE, it precedes a verb in the present progressive tense and is not conjugated in the past tense (Green, 2002).

One child substituted an alternative auxiliary verb, creating the sentence “Do you heard of this restaurant?” instead of “Have you heard of this restaurant?” There is no discussion of such a construction in the literature, so it is likely idiosyncratic and maybe developmental in nature. Lisa Green (personal communication, April 2012) confirms that this usage is not typical of either child or adult AAE. However, this construction might be related to other nonstandard uses of the word “do” observed in this sample. One child asked, “What do it called?,” substituting “do” for the copula. Green (2002) reports certain nonstandard uses of the auxiliary “do” in AAE, but not those observed in this sample. For example, auxiliary “do” can appear with aspectual “be” and with resultant state “be done” when a statement is either negative or emphatic, and “do” generally supports aspectual “be” in questions, negations and emphatic constructions (Green, 2002).

Other children seemed to replace more specific main verbs with the very general do, as in: "We would do for dinner," "She always do jokes," "She wanted to do with her friends." The construction "We would do for dinner" may be an extension of sentences like, "What do you want to do for dinner?" or "I don't know what to do for dinner." However, since the participant in question continued the sentence by listing the food items in the anticipated dinner, the construction does not seem to be the standard usage of the word "do." "Doing" jokes might imply a more formal performance that the casual telling of jokes. While "doing for dinner" and "doing jokes" are nonstandard objects attached to the transitive verb "do," "She wanted to do with her friends" seems to be an intransitive use of a verb that is transitive in SAE. Lisa Green (personal communication, April 2012) notes that AAE is the only nonstandard dialect that does not use unstressed auxiliary "do," and agrees that this construction is not typical of AAE. Perhaps for some of the children in this sample, the very general verb "do" is used widely to substitute for other more specific words that may be harder to recall or retain, or whose rules of use the children may not have mastered.

Two children inserted a nonstandard use of "do" in answer to a question that began with the phrase, "What do you do…?", and it seems likely that these children felt obligated to retain "do" when responding. For example, when asked "What do you do on the weekend?," one girl responded, "I just do sit in the house," apparently including "do" to echo the construction of the question to which she was responding. When a boy was asked what he does for fun after

school, he answered, “I do is play my video games,” including not just a nonstandard use of “do,” but also a nonstandard use of “is.” Perhaps the underlying representation of this utterance was “What I do is play my video games” and the child omitted the word “what.” There does not seem to be extant literature documenting higher-than-average use of the verb “do” in either AAE or in child speech, but this phenomenon was observed broadly enough in the current sample that it might indeed constitute a broader speech pattern of either the AAE-speaking community or of the child community, at least in Indiana.

Indeed, it seems that “do” is used with a broader range of meanings by some adult speakers of AAE as well. For example, the 1924 hit song written by Gene Austin and Roy Bergere contains the line, “How come you do me like you do?” and “Do me right or just let me be.” While arguably the songwriters included the vague verb “do” to allow for non-explicit sexual innuendo, the lines nonetheless make use of a construction that would not be permitted in SAE. An apparently African-American woman submitted a question entitled, “Should I do him like he did me?” to Yahoo Answers on April 22, 2012. To “do” a person is a slang term meaning to have sexual intercourse with a person, but in these examples the word “do” seems to mean something closer to “treat.” This meaning is even more apparent in a quotation from Mildred Taylor’s classic children’s novel *Roll of Thunder Hear My Cry*, when the child narrator laments that her grandmother did not adequately defend her from a white man and girl who were tormenting her, angrily insisting: “I wouldn’t’ve done her that way “ (p.118). It seems clear that “do” in AAE can possess distinct semantic content

from the word in SAE. The hip-hop artist Young Jeezy uses "do" in a similarly distinct way in his "Umma do me," with lines like, "You just do you, Imma do me," and "Wanna see how it's done? Then watch me do me." In this rhyme, "do" seems to mean to take care of oneself, especially financially. A broader effort should be made to determine the precise range of meanings of "do" in AAE, and the rules for its use, both among child speakers and mature speakers.

Two children uttered nonstandard present tense conjugations of the verb "to get." In two cases, children produced the third person singular present tense of "to get" as "gots," uttering, "He gots a tie" and "It gots talking animals." In both of these cases "to get" is nonstandardly conjugated, since the SAE third personal present singular would be "get," and is substituting for the standard verb "to have." In informal situations SAE may allow a speaker to indicate possession with the verb phrase "have got" instead of the more formal "have," but omission of the "have" is not allowed in SAE. The inclusion of the suffix "s" seems to reflect the suffix's general role as a marker of third personal singular verbs, though it is not standardly affixed to "got," since "got" is standardly the past tense form of the verb. Present tense third person singular "gots" has been noted previously in mature speakers of AAE (Wolfram & Fasold, 1974).

In two cases, children conjugated the first person singular present tense of "get" as "gets," producing the sentences "I gets to get whatever I want," and "I gets to learn and be educated." These sentences likely represent the unique role of "s" in AAE as a marker of habitual action (Green, 2002). A girl uttered, "I gets to get whatever I want" to explain why she likes being the youngest child in

her family, and another girl said, “I gets to learn and be educated” to explain why she likes school. Both thus seem to describe habitual states or actions.

Three other nonstandard present tense constructions were observed, each just in a single speaker. One child replaced the nonstandard third person singular form “does” with “do” plus the suffix “s,” uttering, “And then he do’s good.” The “do’s” construction is documented in other AAE samples (Green, 2002), but was not observed in any other children in the current sample. If “do’s” is not common in the participant’s regional variety of AAE, this construction may indicate a child’s attempts to distinguish the separate morphosyntactic rules of his two dialects. In AAE it would be permissible to omit the third person singular marker altogether, producing, “he do good,” but in SAE the marker is required. The child speaker may have understood the basic outline of the two dialects’ rules, but might not yet have mastered the irregular third person singular forms such as “does.”

Another child used the present progressive tense to describe a habitual action when SAE morphosyntax would require the simple present tense. This boy watches a lot of scary movies, and was describing how his fears disrupt his sleep: “Sometimes I having a good dream, but every time I go to sleep I’m having a nightmare.” In a case that might be related, one child inserted the contracted form of the auxiliary verb “is” in the sentence, “He’s just starts smashing things.” Since the auxiliary “to be” is required in the progressive but not the simple present, this utterance may indicate confusion about the construction of the simple present and present progressive tenses. Considering that the third person singular

may be formed differently in AAE and SAE, with both the auxiliary and the suffixes “s” and “ing” variably included in AAE, it is reasonable that bidialectal children might show lingering confusion about the formation of these two tenses.

One child produced a nonstandard form by placing the sentential object in a location different from the one dictated by SAE, saying “And then he puts on it.” In SAE, the phrasal verb “put on” is treated as separable when the object is a noun, such that the object may occur before or after the word “on,” but it is fixed when the object is a pronoun, such that the pronoun must be placed before the preposition “on.” This participant may not yet have mastered the fairly complicated rules governing phrasal verb use in English. Considering that this is the only instance of such variable placement of the sentential object in the sample, it seems unlikely that it is indicative of a broader dialectal trend.

One child produced a determiner whose number did not agree with the noun, in the phrase, “this stuff, this sprinkles.” This child appeared relatively unfamiliar with the word “sprinkles” since she struggled initially to retrieve it, and it is likely then that she had not fully processed the plurality of “sprinkles” when she uttered the second instance of “this.” She may also have been aiming for a parallel construction with the phrase “this stuff” in her repetition of “this,” as opposed to “these.” We would need to assess if this child fails to achievement determiner agreement with words that are familiar to her before deciding whether this construction is intentional or habitual for this child.

Indirect embedded questions in AAE can be structured slightly differently from such utterances in SAE. In AAE embedded questions, the auxiliary can be

placed before the subject, verbs other than "wonder" and "ask" can introduce the embedded question, and the embedded question can include auxiliary verbs other than the modals "would" and "will" (Green, 2002). We observed five utterances in the sample that follow the rules governing embedded question formation of AAE: "I forgot what's the name of it," "I don't know how old are them," "Imma ask my mom can we get…," "You're asking me what did I get?," and "I asked my momma was it in the water." The utterance "I don't know how old are them," also includes a pronoun with undifferentiated case, which is not as aspect of embedded question formation, though it is a feature of child AAE.

Study 2: Conclusions

The current sample of children produced most of the AAE forms previously documented in child populations, though the distribution of morphosyntactic features was distinct from that observed in an earlier sample of children. This disparity likely represents regional variation in dialect characteristics. The current sample also used many nonstandard features not included in common taxonomies of child AAE, though these features could plausibly influence literacy acquisition. Some of these features are characteristic of adult AAE, some are characteristic of other dialects, and some are either developmental or idiosyncratic. This analysis underscores the need thoroughly to document AAE use in multiple regions, and to develop an understanding of normative development of AAE speakers across the country.

Study 3: Background

Researchers who study dialect frequently need to assess the relative degree to which dialect features influence utterances, so that researchers can classify dialect users along a continuum. However, it is not completely straightforward to measure the density of a speaker's dialect use, and to compare one speaker's density with another's. In the literature review above, we described some of the methodological questions that researchers must wrestle with when designing a study of dialect. They have choices in how, and in what context, they elicit language; in how they define dialect features; and in whether they conduct a type analysis, token analysis, or listener judgment study.

Many recent studies use the Dialect Density Measure (DDM) version of a token analysis to estimate the relative degree of dialect use of speakers. However, even among those researchers using DDM, there remain methodological questions and discrepancies, which should be resolved in order to guarantee maximally accurate and comparable research.

Researchers measuring DDM must make multiple decisions when deciding what to measure, and how to measure it, and these decisions likely produce both qualitatively and quantitatively different measures of speakers' dialect use. Researchers must determine which types of dialect features are to be considered. Most commonly, researchers classify dialect use based on phonological (Kohler, Bahr, Silliman, Bryant, Apel, & Wilkinson, 2007) and/or morphosyntactic (e.g., Washington & Craig, 2002) dialect features, perhaps because these are the most easily quantifiable. But the method of counting even these features are not necessarily uniform, and measures of phonological

differences in particular tend to be restricted to the most clear deviations from a standard dialect, generally remaining restricted to phoneme addition, ellipsis, or metathesis, and sometimes to phonological processes involving consonants. As a result, subtle phonological distinctions and minor variations in vowel sounds may not be considered, even though such features almost certainly play a role in distinguishing dialects from one another in the mind of a listener.

Beyond measuring phonological and/or morphosyntactic dialect features, researchers might also attempt to account for lexical, semantic, or pragmatic deviations from a standard dialect, since such deviations clearly play a role in differentiating one dialect from another. For example, researchers could classify a language sample's dialect density using a measure of characteristic prosodic patterns. However, such features are rarely if ever used to classify dialect density, perhaps because semantic, lexical, and pragmatic features of dialects are harder to quantify, and less well-understood than are phonological and morphosyntactic features.

DDM measurements estimate the relative "density" (Washington & Craig, 2002) of a speaker's dialect use in relation to that speaker's overall language use. There are several possible ways of calculating such density. DDM generally involves a ratio, with a token count of AAE features (morphostyntactic, phonological, or both) divided by some count of total language produced (total words, total sentences, total terminable-units, or total morphemes). Washington and Craig (2002) have developed what is probably the most widely-used DDM, which is a ratio calculated by dividing the number of AAE morphosyntactic

tokens by the number of words in the entire sample. Alternatively, Kohler, Bahr, Silliman, Bryant, Apel, & Wilkinson (2007) calculated dialect density by dividing the number of phonological features by the total number of terminable units (T-units), in order to calculate the percentage of words affected by AAE phonology in the language sample.

Although DDM is a relatively well-established method of measuring degree of dialect use, it does not directly account for variability in opportunity for occurrence of AAE features in a speaker's language sample. While some AAE features, such as final consonant deletion, may have a high rate of opportunity in any language sample, other features, such as zero copula, may have very limited opportunity for use in some language samples. In the current study, for example, some children retold the narratives of a movie or TV show primarily in the present tense, others in the past tense. The children who told the stories in the past tense generally had multiple opportunities for omission of suffix –ed, but little opportunity for omission of the third person singular suffix –s. The relative rates of opportunities were reversed for children who told their narratives in the present tense. The variation in opportunities for appearance of dialect features poses a potential problem of validity, since researchers must be careful that they are in fact measuring differences of dialect density, and not confounding dialect density with dialect opportunity. Washington and Craig (2002) write that their measure of DDM to some extent controls for differences in opportunity because it is calculated based on total number of words, rather than on number of utterances, and there are often multiple words within an utterance. However, their DDM

does not directly measure the opportunity for appearance of AAE features. In a sentence repetition task Charity (2005) measures dialect density by dividing observed features over possible instances of those features, but this sort of analysis is much more common in such a restricted tasks, and more difficult in a narrative task.

When researchers design a study and determine the way in which they will measure degree of dialect use, they must strive for the proper balance between thoroughness and efficiency, while of course preserving validity, reliability, and replicability. It is impractical and probably impossible to measure type and token of every possible feature of AAE, and calculate DDM in multiple possible ways. Since it is not feasible to measure everything every time, the challenge is to determine which features and which methods of calculation most validly assess the construct of nonstandard dialect density, so that the method of measurement can be winnowed down to its most streamlined and most effective form. Responding to converging evidence that morphosyntactic features are more predictive of literacy than are phonological features, and claiming that morphosyntactic features are the "core" features of a dialect since they are unaffected by regional variation, Washington and Craig (2002) limit their DDM to morphosyntactic features.

The present study aims to further our understanding of the relative benefit of various methods of calculating dialect density, by beginning to test the claim (Washington & Craig, 2002) that DDM provides some control for opportunity for appearance of dialect features. The study began with the following hypotheses:

3. Calculating dialect density as the ratio of total dialect features divided by the total number of morphemes will produce the same relative ranking of participants as will calculating dialect density as the ratio of observed dialect features divided by possible total dialect features.
4. Calculating morphosyntactic dialect density as the ratio of total morphosyntactic dialect features divided by the total number of morphemes will produce the same relative ranking of participants as will calculating morphosyntactic dialect density as the ratio of observed morphosyntactic dialect features divided by possible morphosyntactic dialect features.

Study 3: Method

Participants Four participants were chosen at random from the larger study. Child 105 was a seven-year-old female second grader, 306 was an eight-year-old female third grader, 522 was a seven-year-old female first grader, and 530 was an eight-year-old female second grader. All four randomly-chosen participants were female, and it is known that gender does affect use of AAE (e.g., Green, 2002). However, in the current study, the absolute frequency of AAE features was not important, and there was no reason to assume that the relative ranking of the four participants' AAE density using two different methods would be affected by the children's female gender. As a result, the four original randomly-selected children were all retained in the study even though their gender distribution does not reflect the gender distribution of the larger sample of children, or of the broader population from which the sample was drawn.

Procedure Dialect density was calculated in an alternative way that directly took into account the relative opportunity for appearance of dialect features. Three phonological features of AAE, and four morphosyntactic features, were chosen because they were the most commonly observed categories of features in the overall sample. The three categories of phonological features were final consonant deletion or reduction or consonant cluster reduction (FCD/CCR), syllable initial consonant cluster reduction, and stopping of interdental fricatives. After coding of the four transcripts was complete, syllable initial consonant cluster reduction was eliminated from consideration because it only occurred once across the four children's language samples, in child 306. The four categories of morphosyntactic features studied were omission of possessive "'s," omission of the third person singular suffix -s, nonstandard variations of the verb "to be" including zero copula and habitual be, and omission of the suffix -ed. More morphosyntactic features were studied than phonological features because no morphosyntactic features were as common as the common phonological features, and because morphosyntactic features are considered the "core" of the dialect (Craig & Washington, 2002).

Within each of the child's language samples, the total number of observed AAE features of each type was calculated, as well as the total number of opportunities for possible occurrence.

Study 3: Results

When looking at phonological features, child 306 used 23 out of 83 opportunities for FCD/CCR, and 16 out of 51 opportunities for stopping of the interdental fricative. Child 105, a fairly light user of AAE, used just 18 out of 230 opportunities for FCD/CCR, and 2 out of 15 opportunities for stopping of the interdental fricative. Participant 522 used 103 out of 338 opportunities for FCD/CCR, and 37 of 47 possible opportunities to stop the interdental fricative. Finally, participant 530 used AAE features in 70 of 324 opportunities for FCD/CCR, and 43 of 52 opportunities for interdental fricative stopping.

The evaluation of morphosyntactic features revealed that child 306 omitted no possessive ‘s, and had only a single opportunity to do so. She produced three nonstandard variations of the verb “to be” (“they was”) with eleven opportunities. She omitted the suffix –ed once, with two opportunities, and she had no opportunities to omit the third person singular s. Participant 105 had no opportunities for possessive ‘s, used a nonstandard variation of “to be” in two out of 16 opportunities, and never omitted either –ed or third person singular –s, though she had five and two opportunities to do so, respectively. Participant 522 had no opportunities to use possessive ‘s, used a nonstandard variation of “to be” in nine out of fifteen opportunities, omitted “ed” in five out of five opportunities, and omitted third person singular s in four out of five opportunities. Finally, child 530 omitted possessive ‘s in two out of four opportunities, used a nonstandard variation of “to be” in five of 25 opportunities, omitted –ed in five of seven possibilities, and omitted third person singular s in the one possible opportunity to do so.

New measures of dialect density were calculated for each of the four participants based on the observed features over the possible features, and, as in the larger study, were divided into phonological, morphosyntactic, and total measures. Participant 105's total new measure was .080, her phonological measure was .082, and her morphosyntactic measure was .090. Child 306's total measure was .290, phonological measure was .291, and morphosyntactic measure was .290. Child 522's new total measure was .359, her new phonological measure was .385, and her new morphosyntactic measure was .720. Finally, participant 530's new total measure was .305, her new phonological measure was .301, and her new morphosyntactic measure was .351.

We compared the new measures of dialect density with the scores originally calculated using the DDM measure of total number of target features divided by total number of morphemes. The two sets of calculations are summarized in the table below.

Table 12. Comparing Methods of Calculating Dialect Density.

Child	**TDD**		**PDD**		**MDD**	
	Original DDM	**New DDM**	**Original DDM**	**New DDM**	**Original DDM**	**New DDM**
105	.088	.080	.076	.082	.012	.090
306	.197	.290	.161	.291	.036	.290
522	.367	.359	.310	.385	.057	.720
530	.282	.305	.250	.301	.032	.351

As is evident from the above table, the two different methods of calculating dialect density sometimes produced very similar results, and other times produced highly disparate results. For example, the TDD and PDD scores for Participant 105 were nearly identical with the two methods of calculation, while the MDD scores in particular varied widely between the two methods. This wide variation in MDD scores was expected, since each of the measured morphosyntactic features occurs with relatively low frequency within a given speaker, and most of the features have a fairly low frequency of possible occurrences. As a result, we would expect the ratio of observed features over possible features to be higher than the ratio of observed features over total number of morphemes.

The gross numbers of the DDM measures are less important than the relative rankings of the participants by their DDM. We use DDM to make distinctions among participants, and so it is important to know if the two methods of measuring dialect density distinguish among participants in the same way. The four children would be ranked identically by the two methods according to their TDD and PDD scores. For both the TDD and PDD scores, both methods would order the participants 105, 306, 530, 522, from least to greatest total dialect density. However, the two methods order the participants differently according to their MDD scores. The original morpheme-based method would rank the children from lowest to highest MDD 105, 530, 306, 522, while the new possible occurrence-based method would rank them as 105, 306, 530, 522.

Study 3: Discussion

As noted above, Washington and Craig (2002) write that their measure of DDM provides some control for differences in opportunity because it is calculated based on total number of words, rather than on number of utterances. However, this preliminary study suggests that token-based DDM calculations may not adequately control for differences in opportunity for appearance of dialect features.

The two formulas for calculating dialect density produced different numbers for the four participants, and the numbers varied most widely among the measures of MDD. More troublingly, the two methods ranked the four participants differently according to their MDD. Even though this study is rough and preliminary, this discrepancy suggests that methods of calculating DDM may not adequately control for opportunity for feature occurrence. Future research is needed to determine if these two methods continue to produce disparate rank orders among larger samples of children.

Given the potential for DDM measures not controlling for opportunity for occurrence, the research community needs to work harder to understand how methods of calculating dialect density differ from one another, and which method is most accurate in meaningfully distinguishing among speakers. Following in the footsteps of Oetting and McDonald (2002), we need to conduct a larger study in which we measure the dialect density of AAE speakers in multiple ways, and then compare and contrast the measurement systems. At a minimum, such a study should measure phonological, morphosyntactic, and total features, and should calculate the ratio of the token count of these features to the total number of

words, the total number of utterances, the total number of morphemes, and the total number of possible occurrences of each feature. Such an ambitious study will provide researchers and methodologists with a much clearer understanding of the way in which each method of calculating dialect density performs, and will allow study designers to select a method of calculating dialect density with knowledge and foresight.

Limitations

The three studies contained within this dissertation have multiple limitations. First, we were not able to determine the external validity of our study. We had a fairly small sample size, and it is unclear to what degree we can generalize our findings to a larger population of African-American children. Half of our participants attended either charter schools or parochial schools, which suggests that they all had parents who were actively involved in their educations. Furthermore, all of the participants' parents voluntarily completed and returned the permission slips. Thus, it is possible that a large portion of our participants differed systematically from children in the larger population, in that their parents may be more involved in education than are most parents. In addition, all the students included in the analyses were present at the times of measurement, which may indicate systematic differences between the included students and those who were never tested. The selection biases of our study design may thus have led us to a sample that is moderately homogenous, and is not representative of the larger population of African-American first through fourth grade students.

As described above, we were unable to obtain an independent indicator of being a struggling reader, which sharply limited the comparative analyses we could conduct on the typical and struggling readers. Since two of our variables defined students' struggling reader status, we were left with only a subset of variables that we could use to explore differences between the two sets of readers.

Our failure to control for certain important variables further limited our study. Since we had minimal access to the parents of the participants, we were not able to measure, or control for, student Socioeconomic Status (SES). As a result, our study may confound SES and dialect use as possible predictors of literacy skills. We were also unable to control for general student cognitive level, since we did not have the time or permission to administer an IQ test. We are thus unable to measure the possible contribution IQ makes towards the relationship between nonstandard dialect use and literacy skills.

The temporal design of our study presents additional limitations. As with any cross sectional design, we are unable to observe student changes over time, and thus cannot draw conclusions about causes and effects. We are unable to determine if patterns of literacy skills preceded, were concurrent with, or followed, patterns of dialect use in speech.

It is also possible that some other feature of our study design inhibited our ability to detect a possible relationship between students' nonstandard dialect use and their literacy skills. Even though the sociolinguistic interview is designed to encourage participants to use their most natural and unguarded speech, it is possible that the school setting, and the SAE spoken by the researchers, led the

children to incorporate more SAE into their speech than they normally would. Furthermore, we did not perform a completely comprehensive literacy battery, and we only included a single measure of each skill. It is likely that we could more effectively have measured literacy skills through a larger battery including measures of comprehension, oral language ability, silent reading fluency, and multiple measures of the originally included subskills.

Future Directions

In our future research we will attempt to gain further insight into the degree and manner in which the use of AAE in children's natural speech is able to account for variability in literacy skills. We will design a similar experiment with a larger and more diverse group of African-American participants, drawing children from a broader geographic area, from public, private, and charter schools, and representing a range of SES. In this future study, we will account and control for SES, as measured by maternal educational attainment, and for general intelligence, as measured by the Kaufman Brief Intelligence Test 2 (Kaufman & Kaufman, 2004), as well as a measure of code-switching proficiency. Such a design will allow us to interpret the relationship of dialect with literacy separately from the relationship of intelligence and SES with literacy. This future study will also include a broader range of literacy assessments, including multiple measures of spelling, oral reading fluency, morphology, and decoding, as well as measures of comprehension and silent reading fluency. It will also include measures of other underlying foundational skills, such as rapid naming and letter recognition.

We also aspire eventually to complete a longitudinal study in which we follow African-American children from Kindergarten through fourth grade, measuring their dialect use and literacy skills at each grade. Ideally, we would like to use a sequential design to control for all sources of temporal variance, and we would like to include both retest and attrition control groups. Such a longitudinal design would help us to understand how the interaction between dialect use and literacy skills may change over the course of development.

The proposed research focuses on AAE because African-American children constitute a large percentage of the nation's schoolchildren, because AAE is well-studied and reasonably well-understood, and because, as outlined above, African-American children as a group consistently perform below European-American and Asian-American children in reading. However, it is highly likely that any findings in relation to speakers of AAE would also be found in speakers of other nonstandard dialects. Thus, future research should replicate the above-outlined studies on speakers of other nonstandard dialects, in order to determine the degree to which phonological and morphosyntactic deviations from standard dialect *in general* may relate to reading attainment. The research should perhaps first be extended to those dialects most associated with poverty and low educational attainment, since the speakers of these dialects most critically require the attention and understanding of the educational community.

As outlined above, this dissertation was unable adequately to explore the potential relationship between struggling reader status and the relative association between nonstandard dialect density and literacy. We hope to extend this

research with a more various sample, including a well-defined group of profoundly disabled readers, plus a group of average and above-average readers. We would define these categories through external diagnostic measures not included as variables in the study. Such future research will help to clarify whether, as predicted, the negative relationship between dialect density and literacy ability is stronger among reading-disabled children than it is among stronger readers who are better able to compensate for orthographic discrepancies.

This dissertation revealed intriguing differences between the AAE spoken by the current sample, and the AAE spoken by an earlier sample in a different region. We would like to extend this research into a much more ambitious type analysis of the AAE spoken by African-American children in many diverse regions of the country, including both urban and rural sites in the South, West, Midwest, and East. Such a comprehensive type analysis would help both researchers and educators to understand the language patterns that are typical in any given region, and would help to guide both assessment and instruction. Such a study would help the educational and policy community to comprehend observed regional differences even on standardized tests, and to help to design tests that more accurately assess children's knowledge and skills.

We hope that this dissertation, as well as future research, will help to clarify the way in which children's use of AAE predicts reading ability, and their performance on reading subskills, as well as to elucidate the way in which AAE use may vary from region to region. Future research should explore the potential educational implications of discovered relationships, and the best possible

methods of reading instruction and assessment for children who use AAE in their speech.

Implications

Implications for Assessment Teachers and practitioners have struggled for decades to discover fair ways to assess the language and literacy abilities of AAE-speaking children. It is often challenging to disentangle language difference and language disorder, both because until recently we have had no clear model of typical language development in AAE speakers, and because many testing instruments are unable to distinguish between typical and problematic language and literacy development in AAE-speaking children. Some grammatical forms that are acceptable in AAE, such as the zero copula, can be a sign of pathology in a speaker of SAE (Wyatt, 1996). However, it is vitally important that researchers identify valid language and literacy assessment measures for speakers of AAE, to prevent both the devastating under-identification, and the devastating over-identification, of language and literacy problems.

Valid measures must be developed or identified for several different types of assessment needs. First, educators need to determine their students' dominant dialect, and their students' grasp of the standard dialect, so that the educators can respond sensitively and in a targeted way to the students' knowledge. Next, educators must be able to distinguish between typically-developing AAE speakers, and atypically-developing speakers. Third, educators must be able to measure their AAE-speaking students' educational attainments, both in comparison with one another, and in comparison with the broader student

population. Each of these assessment goals represents a unique and complex set of challenges for test creators.

Many spoken language tests do not accurately distinguish between impaired and unimpaired AAE speakers. The majority of standardized articulation tests are biased against AAE speakers, and using SAE criteria, many typical AAE speakers are diagnosed as phonologically impaired using these tests (Cole & Taylor, 1990; Wilcox & Anderson, 1999). These tests are generally developed for, and normed on, speakers of SAE, and the scores of speakers of AAE often cluster well below the mean (Craig & Washington, 2002).

The Test of Language Development (TOLD) and the Peabody Picture Vocabulary Test-Revised (PPVT-R) are two common tests demonstrated to be ineffective in distinguishing among speakers of AAE (Craig & Washington, 2002), and many other formal and informal assessments similar fail to measure speakers of AAE accurately. Typically developing AAE speakers may be identified very early as impaired, since low-SES AAE-speaking preschoolers perform an average of one standard deviation below the expected mean on the Preschool Language Scale. Though low SES may partly explain their poor performance, the African American children have particular trouble with six test items, including ones measuring negatives and possessives. It is likely that these test items are biased against speakers of AAE, and may lead to the over-identification of preschoolers with language delays (Qi et al., 2003). Furthermore, African American first graders who read at normal levels perform below the expected mean on the Test of Phonological Awareness. These first

graders struggle particularly to delete final consonants (Thomas-Tate, S.; Washington, J.; & Edwards, J., 2004), a skill we have already seen is less advanced in AAE speakers due to the phonological features of their dialect.

Despite the paucity of fair and effective language tests for speakers of AAE, recent study has identified several valid assessment tools for this population. The Black English Scoring System (BESS) is a general way to score language samples that is consistent with AAE (Nelson, 1993), and which reduces the number of children falsely identified as impaired. The Arizona Articulation Proficiency Scale (AAPS) (Washington & Craig, 1991), the Wilcox African-American English Screening Test of Articulation (WAAESTA) (Wilcox & Anderson, 1999), and the Preschool Language Scale (PLS) (Qi et al., 2003) can successfully distinguish between young AAE speakers with and without speech problems, and can be used by clinicians minimally educated in AAE. However, though these tools are useful in comparing AAE speakers with one another, they are probably less helpful in comparing AAE speakers with SAE speakers. The Peabody Picture Vocabulary Test-III (PPVT-III), though not the PPVT-R, seems to be a fair measure of the vocabulary of AAE speakers, and produces a normal distribution of scores among low-SES preschoolers (Washington & Craig, 1999).

Craig and Washington (1994, 1998, 1999, 2000) have identified a battery of language tests that reliably distinguishes between impaired and unimpaired AAE speakers, including AAE speakers with Specific Language Impairment (SLI), and between those whose low language is or is not commensurate with their IQ. These researchers recommend using measures of 1) Mean Length of

Clausal Utterance (MCLU), 2) frequency of syntactic complexity, 3) responses to Wh-questions, 4) distinction between active and passive sentences, and 5) number of different words in a child's speech, perhaps also in conjunction with the PPVT-III, and with both the face recognition and triangles subtests of the Kaufman Assessment Battery for Children (Craig & Washington, 2000). Craig and Washington (2000) have established means and standard deviations for this battery for African American preschoolers and Kindergarteners (Craig & Washington, 2002; Washington & Craig, 2004), and the battery is also appropriate for children in grades one through five (Craig & Washington, 2000).

Wolfram (1992) proposes a manner of categorizing the phonological differences observed in speech in reference to the linguistic features used by mature speakers within a community. Ideally, such a framework should be used to develop a phonological assessment that would be valid for speakers of AAE, as well as for speakers of other nonstandard dialects.

Predictably, many standardized reading tests are just as biased against speakers of AAE as are standardized test of oral language. On the GORT-III, 21% of second through fifth grade African American children's deviations from print were due to AAE. Using the traditional, SAE-based GORT scoring system, most AAE speaking children taking the assessment fall in the "below average" category. However, if the scoring is revised to allow for AAE features, most children fall in the "average" category (Craig, Thompson, Washington, & Potter, 2004). Clearly standard use of the GORT-III would result in over-diagnosis of reading problems in this population. Similar results were found during several

experiments in the seventies, though the populations of AAE speakers were not as rigorously defined. Using an earlier version of the GORT, Hunt (1975) identified 46% of African American students' miscues as resulting from dialect differences. Hutchinson (1972) found that 58% of African American third graders read below grade level on the Word Discrimination subtest of the Metropolitan Achievement test with standard scoring, while only 26% performed below grade level when the dialect-biased test items were excluded. Some level of testing bias may actually be due to differential scoring of undereducated teachers, since many teachers are inaccurate when trying to distinguish between dialect differences and reading errors (Lamberg & McCaleb, 1977). The dialectal ignorance of such teachers could significantly affect the scores children receive on measures such as reading running records. It is imperative that as we learn more about typical reading acquisition among speakers of AAE, we work concurrently to develop reading assessment tools that can accurately measure their progress. Most likely, the best assessments will focus on non-contrastive features of SAE and AAE, so that speakers of both dialects can be fairly compared (Seymour, Bland-Stewart, & Green, 1998).

As the research community develops a more complete understanding of regional variation in AAE production, assessment norms may need to be adjusted to reflect the prevailing speech patterns in different parts of the country (Charity, 2007). Otherwise, assessments may inadvertently over-identify AAE speakers in some parts of the country as language disabled, depending on the population of children on which the assessments were normed. It may not be possible to

establish nationwide norms for certain assessments and instead regional norms may be required.

Implications for Student Intervention and Instruction Researchers should not be content with simply describing AAE and its relationship with literacy. Instead, as we learn more about AAE use in children and its relationship with academic skills, researchers should carefully design and then rigorously test instructional materials and methods in order to determine the best possible manner of teaching language and literacy skills to AAE-speaking children.

Teachers of children who speak AAE need to consider two distinct but interrelated instructional goals. First, they must give their students explicit, non-judgmental, and accurate information about their two dialects, and enable students to master each dialect, and to code-switch adroitly between the two. Second, instructors must teach children to read and write English as well as any of their peers. Since written text is generally in SAE, mastery of literacy may presuppose mastery of SAE and of code-switching.

To date, efforts to identify and establish an effective reading and writing curriculum for speakers of AAE have been scattered. Some studies identify valid teaching techniques, while others describe other pilot programs, but the combination of these studies has not yet given us a comprehensive understanding of what curricula work best for what children in what circumstances. Further adding to the confusion, some studies focus exclusively on literacy instruction or on dialect instruction, whereas others fuse the two. And while some studies integrate discussion and respect of cultural differences with dialect instruction,

others discuss dialect as if language existed in a sociocultural vacuum. We do not yet have the research base confidently to identify the relative quality of each approach, and the appropriateness of each approach for different sub-categories of students.

A 2010 intervention study (Morris et al., 2010) suggests that children who speak a nonstandard dialect may respond to reading interventions in the same way as do children who speak a standard dialect. This longitudinal randomized control experiment explored the response of a sample of 279 reading disabled students to both multi-componential reading programs, and to phonics and mathematical control programs. The study found that the rate of growth of the African-American participants was comparable to that of their peers, though a gap persisted between the performances of the two groups. While the dialect use of the participants was unfortunately not measured, it is very likely that the African-American participants used more nonstandard AAE features than did the other participants. This study suggests that, at least among reading-disabled students, successful interventions for nonstandard dialect users may be similar or identical to those proven successful with standard dialect users.

The findings of this study underline the way in which nonstandard dialect use likely interacts with multiple aspects of the reading circuit, and suggests that successful reading instruction for most nonstandard dialect speakers will require multi-componential instruction. Children who use both phonological and morphosyntactic nonstandard features in their speech, and whose learning may be affected in phonological, orthographic, morphosyntactic, semantic, and pragmatic

realms, will likely require well-integrated instruction in all stages of the reading circuit. To date, no such comprehensive and multi-componential literacy curriculum has been designed for the unique needs of speakers of nonstandard dialects.

Teaching Dialect Mastery Teachers must have access to curricula that teach children about dialect differences in a manner that is structured, explicit, and direct, and that gives children accurate and non-judgmental information about the linguistic value of every dialect. Such curricula should also teach children to code-switch between their two dialects, and should help them to understand the social implications of dialect use, and to feel empowered to use their dialects in strategic and creative ways.

Labov (1995) suggests that teachers explicitly teach SAE morphosyntax by drawing direct connections between AAE and SAE patterns. Teachers should first review the AAE morphosyntactic patterns with which children are at least implicitly familiar, and then teach the corresponding patterns in SAE morphosyntax. This approach is termed "contrastive analysis," and is seen as a superior alternative to a correction approach to teaching the standard dialect. This approach requires educators to be able to differentiate between the contrastive and non-contrastive features of the target dialects, and systematically to teach children the ways in which the contrastive features operate in each dialect (Seymour, Bland-Stewart, & Green, 1998).

Harris-Wright (1999) studied fifth and sixth grade classes in Georgia that used contrastive analysis with African-American bidialectal students in Georgia.

Students in this program evaluate minimally contrasting pairs of utterances in two dialects in order to discover the separate but similar rules governing each dialect. A longitudinal study of this program in Georgia reveals that it has improved the reading comprehension skills of the students enrolled in it (Harris-Wright, 1999). Wolfram and Schilling-Estes (1998) concur that the contrastive analysis technique is one of the most promising strategies of teaching the standard dialect to AAE-speaking children, especially since it capitalizes on children's existing language knowledge, rather than teaching SAE as if it were an unfamiliar language. Green (2002) stresses that such a contrastive analysis program will need to emphasize instances in which identically-sounding lexical items play distinct grammatical and semantic l roles in the two dialects, since such situations can be particularly challenging for children to sort out. For example, "done" and "been" have roles in AAE that never occur in SAE

Research has identified certain strategies that can be effective in teaching AAE-speaking children to use SAE features in their writing. In one study focused on teaching third and fourth grade African-American students to use SAE morphosyntactic features in their writing, researchers found that they were most successful if they used a combination of strategies: exposing children to SAE features in literature, explicit explanation of SAE morphosyntactic rules, and focused, direct practice converting sentences reflecting AAE morphosyntax into sentences reflecting SAE morphosyntax (Fogel & Ehri, 2000). Students may particularly benefit from focused instruction on topics such as medial and final consonants (Sligh & Connors, 2003), and how to disambiguate AAE homonyms

(LeMoine, 2001). Early research suggests that college-aged speakers of AAE are more accurate in their reading and spelling of SAE after receiving training in narrow transcription using IPA (Fitts), though this method would likely be too complicated for younger students. Explicit instruction in dialect awareness, and in code-switching, would almost certainly benefit AAE-speaking students (Wheeler & Swords, 2006). As already mentioned, transitional readers or reading programs might be just as pedagogically valuable (Rickford & Rickford, 1995) as they are politically inflammatory, but it seems implausible that any such method would be widely embraced in the current cultural climate.

Some mainstream literacy programs have created special editions aimed for use with AAE-speaking populations. Such programs are nowhere near as drastic as the defunct *Bridge* readers, and instead minimally alter existing curricula to increase teacher sensitivity to the language of AAE speakers, and to help AAE speakers more consciously and effectively code switch. One such program is the AAVE version of Vocabulary Power (2007), which attempts to engage African American students through literature centered around African American characters, some of which uses AAE in its dialogue. This series also gives teachers tips specific to AAE, explicitly reinforces the difference between "formal English" and "casual English," and highlights words that might be pronounced differently in SAE and AAE. Though curricula such as Vocabulary Power are unlikely to reduce the reading achievement gap by themselves, they make valuable inroads in our attempts to address the unique challenges facing nonstandard English speakers in the classroom.

Given the limited published curricula explicitly teaching dialect differences, most teachers for the time being will need to create most of their own lesson plans and materials. Though they have generally not been systematically tested, several types of activities hold particular promise for explicit instruction in dialect difference. Many experts recommend using literature to highlight differences among dialects (e.g., Sweetland & Rickford, 2004). Teachers can provide high-quality literature written in different dialects, and lead children in identifying the systematic differences between the dialects. Teachers can also choose texts written in different dialects by the same author, such as the poet Paul Laurence Dunbar, and discuss the author's likely social, cultural, and/or stylistic motivations in his/her use of code-switching.

Alexander (1985) outlines several strategies that she believes are effective in teaching children dialect differences as a bridge into enhancing literacy skills. She leads children in explicit discussions about why dialects differ, and asks them to consider why dialect differences should be respected. Taking such a direct approach to a topic that is often avoided gives children the message that dialect diversity is not negative, and that the community demands respect of dialect diversity. She suggests that teachers role-play scenarios in which different dialects might be used, and then lead children in discussions about situational code-switching. Such practice would develop proficiency among speakers of nonstandard dialects, and would help all students recognize and respect the diversity in their own, and in others' speech. In addition to more discussion-oriented approaches, Alexander (1985) also drills students in spelling patterns that

differ between SAE and AAE, to ensure that they recognize the patterns and can use them facilely.

Any curriculum in dialect differences must maintain a delicate balance between granting children access to full use of the standard dialect, while also valuing the linguistic and cultural heritage of the nonstandard dialect. Earlier studies have documented what any reasonable person would guess: that treating AAE as "wrong" and constantly "correcting" children who speak AAE leads students to become withdrawn, frustrated, and unwilling to speak or read aloud in class (e.g., Dandy, 1991; Rickford, 1999).

Educators must teach children that all dialects are linguistically equal, but not shy away from addressing dialects' vast cultural inequalities. Ultimately, students should grow to understand their role in an often unjust social context, and should learn to view their mastery and deliberate use of two dialects as an empowering tool that enables them to shape and comment upon their role in society. Rather than dictating to students when they must use which dialect, teachers should give students the knowledge and the skill to make such decisions themselves. Rather than teaching children which features are "correct" or "proper," teachers should give students mastery over all features of both dialects, and give students the freedom to decide for themselves how and when they want to use their dialects, and for what purposes. While not dwelling upon the injustice of dialectal oppression, teachers should make students aware of social linguistic injustice, and give students the linguistic, moral, and reasoning tools they need to determine how they want to operate within an often-unjust social system.

Teachers should give students the information they need to succeed within an SAE-speaking community, while also giving those students the political and social understanding to recognize the injustice of dialect discrimination. Teachers could thus empower students to navigate communities at their will and to make their own well-informed and strategic choices about dialect use.

Teaching Literacy **T**eachers must have access to curricula that have been proven to teach children who speak AAE to read and write as effectively as their SAE-speaking peers. Such curricula might or might not include readers written in nonstandard dialects, and might or might not include instruction in dialect translation. It will likely include explicit instruction in SAE, since many believe such instruction may enhance the literacy development of AAE speakers toiling to unravel the literary code (Fogel & Ehri, 2000). Though some aspects of such curricula are optional, another is mandatory: these curricula must provide AAE-speaking children with the training and practice they need to read as well as any other children in the country. At the very least, they must eliminate the intra-SES literacy achievement gap: high-quality literacy instruction cannot eliminate all the disadvantages associated with living in poverty, but it can ensure that all children at a certain SES level perform comparably. Curriculum designers and researchers should not rest until this long-overdue goal is achieved. Future research will determine the exact elements of such a literacy program, as we come to understand better how best to teach AAE-speaking children.

To date, we do not have well-tested curricula proven to meet the two primary needs of AAE- speaking children: acquisition of literacy skills, and

explicit mastery of two dialects. However, experts have focused on some teaching strategies that are very promising.

Labov (1972) makes several concrete suggestions for how teachers could more effectively teach reading to children who speak AAE. When listening to AAE-speaking children reading aloud, teachers should identify deviations from SAE in a way that does not categorize dialect features as inherently wrong. The teachers could point out *reading* errors, when a child says a word that is not printed on the page. Such errors are likely to occur if a child replaces SAE morphosyntax with AAE morphosyntax. When a child says a word differently from SAE, however, the reading teacher should not call such a deviation from print an error, should not "correct" it as if it is wrong, and instead should describe it as a difference in pronunciation.

Labov (1995) suggests that teachers focus special instruction on the dialect-specific homophones AAE children might struggle to disentangle, since as told/toll, mist/miss, and past/pass. Children might, for example, listen to a read list of words, and then either hold up each target word from a set of prepared cards, or else write the target words on a graphic organizer, sorted by its spelling pattern.

Labov (1995) further suggests that teachers should dedicate extra instructional time to teaching word endings, since many of the important phonological differences between AAE and SAE occur in word-final positions. Meier (1998) proposes basing discussion of word-final differences in pronunciation around multiple examples of different dialects in use, including

recordings and literature. Teachers might be able to teach SAE final consonant patterns most effectively if they take care to present words containing such clusters in the phonological environments in which the consonant sounds are most likely to be fully pronounced (Labov, 1995). For example, final consonants and final consonant clusters are most likely to be clearly enunciated when they are followed by a vowel. So, teachers attempting to expose children to SAE-patterned final consonants should carefully select sentences to ensure that the phonological features are maximally salient. Once children are able to discern the final consonants and consonant clusters characteristic of SAE, they need to engage in structured practice reading and writing these spelling patterns, both in single words and connected text.

Green (2002) suggests a way in which teachers well-versed in dialect differences can target the particular orthographic patterns that may be causing difficulty for their AAE-speaking students. She suggests that teachers should listen to their students reading out loud, and notice when the students' reading deviates from print. If these deviations are systematic, and especially if they are characteristic of AAE, then the teachers should generate a list of words that contain the target pattern. The teachers could then give the students a mini-lesson in a particular phonological difference between AAE and SAE, and provide the children with systematic practice reading and spelling words that contain the target orthographic pattern. For example, a child who uses the word-initial consonant cluster "skr" when SAE would require "str" could gain systematic practice reading and writing "str"-initial words. The point of such instruction,

according to Green (2002), would be to use the rules governing AAE phonology with which children are already familiar to teach the children the corresponding rules in SAE phonology and orthography. When led knowledgably and sensitively, such an approach would develop children's reading and writing skills, and their code-switching and dialect knowledge, while validating the rules of each dialect.

The current study, in conjunction with prior research, has highlighted the relative importance of morphological dialect differences in influencing literacy attainment. And decades of research have confirmed that adequate morphological knowledge is central to reading success, and is particularly critical for students whose phonological abilities are compromised. Morphological analysis can allow phonologically-challenged students to analyze to decode words without having to resort to an inefficient strategy of whole-word memorization (Deacon, Parrila, & Kirby, 2008; Reed, 2008).

However, despite the widely-recognized importance of morphological ability in reading acquisition and mastery, very few curricula systematically address morphology, particularly in the lower grades. When morphology is taught, it is usually taught solely as a strategy for spelling or vocabulary, and is not taught holistically or comprehensively.

The reading interventions Basic RAVE-O (Wolf, 2011), RAVE-O Plus (Wolf, under preparation), and Language! (Fell Greene, 2005) demonstrate how morphology might be included in a more complete language and literacy program. These programs teach the morphological structure of words in conjunction with

their phonology, orthography, semantics, and syntax, so that children are able to integrate this morphological knowledge with their complete knowledge of words and sentences. They all explicitly teach morphology's role in determining word spelling and word meaning, though they provide limited information about morphology's connection to etymology.

Basic RAVE-O is designed for reading-disabled second graders, and RAVE-O Plus is designed for reading-disabled third graders, though Basic RAVE-O has also been used successfully with whole classes of typically-developing first graders. There is every reason to assume that the strategies included in the two RAVE-O programs would be effective for older students as well. Language! is a multi-year structured language program designed for students in grades three through twelve who are performing below the 40th percentile. One version of Language! is designed for English Language Learners, and might be effectively adapted for bidialectal children learning the standard dialect.

While RAVE-O and RAVE-O Plus are intervention curricula specifically designed for struggling readers, their approach suggests a manner in which morphology instruction could be integrated into a classroom curriculum for the benefit of all readers, but most critically for the benefit of children with reading disabilities or who speak a nonstandard dialect. Such an integrative approach to morphology instruction might provide AAE-speaking students with an alternate word attack strategy that they could use in conjunction with a phonological strategy. While both phonological and morphological word attack strategies are

sensitive to dialect discrepancies, children would likely be more successful and more confident in applying them together. Furthermore, since PDD and MDD have partly separate spheres on influence on literacy skills, children equipped with two strategies might be able strategically to compensate for dialect confusion in any given subskill.

Alexander (1985) encourages instructors to focus heavily vocabulary instruction with AAE-speaking children, since deep and broad semantic knowledge will allow children to help compensate for any difficulties caused by morphosyntactic of phonological dialect discrepancies. She recommends teaching at least one new word a day. Such vocabulary instruction is likely to be particularly useful for children if it includes deep discussion of polysemy, word associations, and morphological structure. Alexander (1985) further recommends frequent dictation exercises that include target SAE constructions. She notes that such dictation activities give AAE-speaking children explicit, focused practice in conventional spelling of SAE patterns and punctuation, while also providing a chance to use studied vocabulary words in new contexts.

Many experts believe that AAE-speaking beginning readers would benefit from transitional leveled texts that are written at least partly in the children's native dialect. However, the use of such readers is politically inflammatory, and often provokes particular ire from African Americans who fear that encouraging and validating AAE might keep African-American children from positions of power in society (e.g., Baugh, 1983). The best-known such series is the *Bridge* readers (Simkins, Holt, & Simkins, 1977), that transition children through three

levels, first reading entirely in the vernacular, then in a blend of dialects, and finally exclusively in SAE. Labov (1995) supports this approach to early literacy instruction, noting that reading in a child's own dialect reduces the cognitive burden of the task, and renders the text more culturally familiar. A fairly recent pilot study using the *Bridge* readers reported that children were better able to understand the stories written in AAE than they were the stories written in SAE (Maroney, Thomas, Lawrence, & Salcedo, 1994), though their report does not provide adequately detailed information about the researchers' method. Given the current political climate and the linguistically diverse classrooms in which many children learn, it is probably unrealistic to expect that many AAE-speaking children will be taught to read primarily through dialect readers. However, a more realistic goal may be to incorporate some dialect readers into the classroom library and lesson plans. Rickford (1995) believes that the use of such texts provides a valuable platform for respectfully teaching about dialect differences, and welcomes AAE-speaking children to literacy by giving them the message that their dialect is legitimate and included.

While supporting the merits of dialect readers, Green (2002) indicates several potential pitfalls of using dialect readers. Such readers would need to be updated frequently to ensure that the lexical items sound current and are familiar to the children. Green (2002) points out that the *Bridge* readers contain many lexical items no longer commonly in use in AAE. Also, writers of dialect readers need to determine how to spell dialect-specific words and constructions, most of which do not have standardized conventional spellings (Green, 2002). Attempts

to help children read might instead prove gratuitously confusing if different readers spell particular AAE features in different ways. In order to be helpful and developmentally appropriate, dialect readers would also need to be precisely leveled to children's expected level of morphosyntactic development in their native dialect. Readers written to reflect adult AAE may well include patterns that children have not yet mastered, and as a result would not likely achieve the goal of rendering text easily accessible AAE speakers (Green, 2002). In order to level text appropriately, then, researchers will need a fuller understanding of how AAE is typically acquired. Such knowledge will also allow skilled writers to create realistic-sounding dialogue in dialect readers by appropriately matching patterns to speech to characters of particular ages.

Our long-term goal should be to create well-researched curricula that are proven to be effective with AAE-speaking children. However, real children do not function in the timeline typical of academia. A solid longitudinal randomized control experiment on a new curriculum, and the follow-up revisions, re-testing, and production of the curriculum, may take a decade or more. In that span of time an AAE-speaking struggling reader could progress from a second grader just starting to decode, to a high school senior faced with long and complex literature. Clearly, the demands of real children living outside of the ivory tower require that until such validated curricula are established, researchers and educators should attempt to work together to identify those instructional methods and materials that are highly likely to help AAE-speaking children, and then to make such resources as accessible as possible. The research community should strive to maintain open

communication with the education community so that new knowledge about the relative effectiveness of instructional techniques can be put into practice as soon as possible.

Implications for Teacher Training Before teachers could possibly teach students the differences between AAE and SAE, teachers must first acquire a solid understanding of such differences themselves. However, dialect variation is not generally taught at our nation's teachers' colleges, nor is it even standard coursework for linguistics majors. One survey found that fully one third of members of the National Council of Teachers of English (NCTE) and the Conference on College Composition and Communication (CCCC) have never taken a course in either linguistics or language variation, but that those teachers who *have* taken such courses report fewer negative stereotypes associated with nonstandard dialect use (Smitherman & Villaneuva, 2000). Thus, in the quest to help teachers to educate AAE-speaking children more effectively, a first and enormous hurdle must be training the teachers to discern and comprehend the distinctive features of their students' dialects. The NCTE/CCCC survey suggests that such training would not only enhance the content of instruction, but would also improve the attitude of teachers towards their AAE-speaking students. Teacher impressions of students can, of course, critically affect their self-concept, motivation, and educational attainment.

As an encouraging beginning to such needed professional development, the Center for Applied Linguistics and the American Speech and Hearing Association have recently collaborated to create a CD-ROM continuing education

course that trains teachers in AAE, and in the ways in which it varies from SAE. Though this course might not be comprehensible to teachers with minimal backgrounds in language structure, it should provide a valuable resource for those teachers or speech language pathologists who have a good understanding of SAE, and who desire a deeper understanding of AAE. For more general training in language variation, teachers may benefit from the materials on dialect awareness created by Carolyn Temple Adger and Jeffrey Reaser to supplement the PBS program "Do You Speak American?" Well-trained teachers of reading hoping to learn more about distinguishing dialect features from reading errors may make use of the short article "Distinguishing dialect differences from reading errors in oral text reading by speakers of African-American Vernacular English" (Scarborough, Hannah, Charity, & Shore, 2004). Rebecca Wheeler has created a helpful series of exercises for teachers that help them to understand how dialect differences might be instantiated in children's writing, and her work should be rigorously evaluated and then perhaps expanded to include reading.

Several well-designed pilot programs aim to train teachers and students in dialect variation. Norma Lemoine's 2004 Academic English Mastery Program in the LA Unified School Districts, for example, introduces students to dialect variety, and aims to teach SAE to all speakers of nonstandard dialects, including AAE. It aims to balance training of teachers in dialect difference, with strategy instruction in scaffolding content, identifying cues in written text, and cultural inclusion in the classroom. Lemoine's school district also developed a promising, though unproven, screening tool used to identify features of common nonstandard

dialect, so that children can be targeted for special instruction in SAE. Along a similar line, Wolfram has designed a well-received program in Ocracoke, North Carolina, that teaches children about differences between dialects in the community, and that teaches children to appreciate the special dialect features they encounter at home and at school. Future development should aim to expand programs such as Lemoine's and Wolfram's to a larger audience, ideally encompassing all schoolchildren in the United States. Such a dramatic scaling up of a successful pilot project is, of course, fraught with potential complications, including political opposition and questions of fidelity and validity as the program is expanded to a wider audience.

Beyond the phonological and morphosyntactic differences between AAE and SAE, teachers should also be made aware of certain lexical, semantic, pragmatic, and idiomatic differences that might pose particular challenges to AAE-speaking children, especially when those children are asked to follow directions. For example, in many linguistic communities AAE-speaking children might not understand what is meant by the "head of the line," and may not be familiar with the intention of indirect requests such as, "Would you like to put away your crayons?" If teachers become aware of these potential sources of miscommunication, they can help guide their AAE-speaking students towards success in an SAE-dominant classroom, and can help prevent students from being inappropriately categorized as disobedient, disrespectful, or unintelligent.

Charity (2005) used exercises created by Wolfram, Adger, and Christian (2003) to give teachers practice applying the rules governing the use of specific

AAE features. She found that the difficult exercises not only enhanced teacher knowledge and appreciation of AAE, but also helped them to comprehend at a visceral level the challenge and anxiety many nonstandard English speakers face when attempting to succeed within an SAE-dominant classroom. Many of the teachers struggled to apply the AAE rules "correctly," just as their AAE-speaking students might struggle with the rules of SAE, many of which are rarely explicitly taught (Charity, 2005). Such a teacher-training model seems immensely promising in its dual role of developing knowledge and fostering compassion and understanding. If this program could be scaled up significantly in both its content and its audience, it could potentially dramatically improve the attitude and capability of our nation's teachers of AAE-speaking children.

Any approach to educating teachers about dialect must also explicitly strive to alter any preconceived negative attitudes teachers may have about nonstandard dialects such as AAE. Teacher attitude towards AAE is too vital an issue not to tackle directly and explicitly. Prior research has demonstrated a pernicious association among negative teacher perceptions of stigmatized dialects, lower expectations of the children who speak them, and inadequate student achievement (Ferguson, 1998). Godley et al. (2006) propose three elements of an effective teacher training program that would lead teachers towards understanding and accepting dialect diversity: expecting and overcoming initial teacher resistance to dialect diversity in the classroom; discussing the interrelationship among language, identity and power; and emphasizing practical teaching applications of research on language diversity. Teachers are taught to look for

language variation within their own speech, in order to recognize that everyone adapts their style of speaking to context. Teachers learn to consider each person's language knowledge to be a "repertoire" of language choices, elements of which might include written and spoken forms of SAE and AAE. By considering each person's language knowledge to be a repertoire, teachers come to view certain dialect patterns as valid, rather than deviant. Finally, teachers learn factual information about the variation found in every language, so that they comprehend the way in which dialect functions in society, and the linguistic equality of standard and nonstandard dialects (Godley et al., 2006).

Many teachers in the United States are not themselves proficient in SAE, and these teachers face an especially formidable challenge in attempting to teach their students about the systematic differences between dialects, and about effective strategies of code switching. The educational community must also strive to understand the effect that nonstandard dialect use of teachers may have upon the linguistic and academic outcomes of their students.

Labov (1972) recommends that teachers be educated in homonym pairs that occur in their students' dialects, and to accept that AAE-speaking students may have additional homonyms not found in SAE. Some teachers may require supplemental training in phonological awareness and phonics in order to teach children about homonyms effectively. Finally, many teachers will need to receive perception training in order to learn to help them to teach children to make distinctions among speech sounds in SAE.

Educational researchers interested in achieving racial parity in literacy must lead an intense effort to study the promising strategies outlined above, in order to discover the ones that are most effective in teaching AAE-speaking children both dialect mastery and literacy. Once researchers have established which strategies work best for which groups of children, then curriculum designers will need to create structured, easy-to-follow curricula employing the target strategies. Most critically, we need such curricula for grades Kindergarten through two, since most children learn to read during those years of school, and it is vital that AAE-speaking children learn to read as early and as well as their SAE-speaking classmates. However, it is possible that bidialectal children will benefit from a subtly different educational approach throughout the school years, in which case curriculum designers will need to create literacy curricula for the upper grades as well. As bidialectal children progress to the upper grades, for example, they may benefit from enhanced instruction in complex SAE morphosyntax, and strategies for decoding the sort of multimorphemic words typical of higher-level text. The final step will be for researchers to study these curricula using rigorous experimental or quasi-experimental designs, to determine and fine-tune their effectiveness. Cleary, we as a research and educational community face a formidable challenge and many years of hard work. But the difficulty of facing this challenge head-on is nothing compared to the tragedy of letting successive generations of African-American children fall below their potential.

Implications for the Broader Sociolinguistic Picture We began this dissertation by considering the role that dialect plays in human society general. It allows groups of people to establish a shared identity, and to recognize and categorize outsiders. Accordingly, language mutability and dialect diversity serve a distinct evolutionary purpose. However, beyond its role on the natural evolutionary stage, dialect diversity also plays a role in that more sinister human construction, social Darwinism. Around the world, people in power can use dialects to label the powerless as inferior, and to justify their oppression. In societies with common educational institutions, schooling generally privileges the dialects of prestige, and may denigrate the dialects of the powerless. Schools often teach children that nonstandard dialects are "wrong" and perhaps indicators of stupidity or incompetence, and they usually give advantages to students who arrive at school already in command of the high-prestige dialect.

The research contained in this dissertation, as well as that reviewed above, suggest that many nonstandard dialect speakers will face challenges in learning to read and write that are above and beyond the challenges faced by speakers of the standard dialect. When the orthography of a language more closely matches the dialect of high-prestige dialect than it does the other dialects of a language, those students who speak the high-prestige dialect will have an easier time with phonological processing, single word reading, novel word decoding, passage reading, and spelling. Based on the reviewed research, we can predict that both phonological and morphosyntactic deviations from the standard dialect and the standard orthography will result in increased struggles for students. If this

relationship does indeed hold across languages, then such a finding has staggering implications for the prospects of oppressed and powerless people around the globe. Schools that privilege standard dialects may be systematically holding back the social advancement of the lower classes, however unconsciously. Such a situation can only compound their other burdens with the added struggle of relative difficulty learning to read.

Clearly, the research community needs to expand efforts to understand the association between speaking nonstandard varieties of non-English languages, and literacy attainment, and then design appropriate and effective curricular materials that will meet the need of those students who are most likely to encounter challenges with the written code. The ideal teaching methods will likely vary from language to language, from orthography to orthography, and from culture to culture.

Of course, in order for any education effort to adequately meet the needs of nonstandard dialect speakers, teachers and communities need to believe that nonstandard dialects are not inferior, and that dialect diversity is not negative. This is a tall order, especially as we consider the problem on a world-wide scale, and it is nearly impossible that we will ever really achieve such a lofty goal. However, linguists around the world can help by striving to disseminate reliable information about dialect diversity in a way that is accessible, relatable, and comprehensible, to people both in and out of power. And civil rights advocates lead campaigns in countries across the world teaching that linguistic discrimination and oppression are no less acceptable than the forms of

discrimination and oppression based on ethnicity, sex, or sexual orientation. Such public information campaigns certainly would not change everyone's mind, but they might engender a fruitful conversation, and might help many people rationally to question the linguistic stratification they formally took for granted. The formation of social hierarchies may be an inherent human trait, but we also have the capacity to think critically, and to evaluate the form of our societies. The time has come in history to reevaluate the role that dialect plays in establishing and reinforcing hierarchies, and to consider an educational and societal approach that would grant equal opportunity to all speakers.

Appendix 1

Real Word Spelling Inventory

With
Call
Door
Stand
Strap
Fist
Bent
Ask
Isn’t
Those
Either
Color
Bathe
Desks
third

Appendix 2

Nonsense Word Spelling Inventory

Mith
Vall
Soor
Slamp
Sprat
Bist
Yent
Pask
Thode
Fose
Ither
Bolor
Wathe
Resks
Thid
lird

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