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Language Learning and Language Change in Children with Specific Language Impairment Who Speak African American English

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Language Learning and Language Change in Children with Specific Language Impairment Who Speak African American English

by

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Dedication

This work is dedicated to the men who have shaped my life in remarkable ways.

To my father, Solomon Gort, Jr., thank you for placing in me a desire for learning that has lasted long past your untimely death. You encouraged me to be a learner. I hope I have made you proud. I miss you terribly!

To my husband, Reginald, your support has given me the strength to carry on in difficult times and immeasurable good times. Thank you for understanding the person that I am always becoming. I love you!

To my son, Isaiah, thank you for giving me unspeakable joy and a new song in my heart. I never knew I could love someone so much until you showed me how. Mommy loves you!

Acknowledgements

I am young enough to still have a lot to learn, yet old enough to have discovered that I can do nothing apart from God…

I do not know how to give God adequate praise for all that He has done in my life. The Word of God has kept me and I have seen His promises manifested in every situation that I have faced. I have been amazed over and over again by His power and love for me. I thank Him for being my Provider, my Peace and my Victor. He has provided everything that I have needed and in His infinite wisdom He knew that I would need someone to cover me during this trying time and blessed me with a phenomenal husband.

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The love I have for my husband can only be rivaled by that for my son, Isaiah. Isaiah Solomon Clark…he has a powerful name and a personality to match. Isaiah means “the salvation of the Lord” and Solomon means “peace.” He has been both salvation and peace in my life. It only takes a smile or a hug from him to soothe whatever hurts. Who knew that someone so little could make

such a big impact? His arrival in my life has made me a better person. Being blessed with him has given me clarity on what it really means to be a parent.

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I am young enough to still have a lot to learn, yet old enough to have discovered that I can do nothing apart from God… I give God the glory for all that I have accomplished and ask for His wisdom during the next phase in my life. Again, I thank all of my family, friends and colleagues for seeing me through this process. May the peace of God be with you always. I love you all.

Language Learning and Language Change in Children with Specific Language Impairment Who Speak African American English

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The nature of dialect use and dialect change was investigated in children with specific language impairment (SLI) who speak African American English (AAE). Participants ranging in age from 6; 11 (years; months) to 8; 11 (mean age = 7; 6) were assigned to one of four treatment conditions: Individual Language Intervention (ILI), Computer-Assisted Language Intervention (CALI), Fast ForWord-Language (FFWL), or Academic Enrichment (AE). Changes in type, frequency, and grammatical use of AAE dialect features were analyzed over time (pre-intervention, post-intervention and six months post-intervention) via contextual analysis and measures of dialect density.

Contextual analysis indicated that this group of AAE speakers with language impairment demonstrated a varied repertoire of dialect patterns. The grammaticality of AAE features was highly variable across time. There were no

statistically significant differences in measures of dialectal density, grammaticality, or in standardized test scores for the four experimental groups. Intervention in mainstream English did not have an effect on dialect use in this sample of AAE speakers with SLI.

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Chapter One: Introduction

There is an abundance of research studies addressing the assessment and intervention issues of children diagnosed with specific language impairment (SLI). However, there have been few studies that have investigated the nature of language impairment among children who speak nonmainstream dialects such as African American English (AAE). One important problem is that researchers have yet to agree on the means for successfully classifying linguistic features of SLI separately from the linguistic features of acceptable dialect use. As yet, there are no published investigations that examine the language profiles of dialectal speakers who are also language impaired (SLI-AAE). This lack of information about the language patterns of dialect speakers with language impairment presents a challenge for speech and language professionals who are faced with identifying language impairment in children who speak nonmainstream dialects. Specifically, there is no empirical evidence concerning how the rule governed use of linguistic features of AAE varies for language impaired children that clinicians can use as the basis for differentiating between language difference and language disorder in children who are AAE speakers. Clinicians who evaluate children who are potential AAE speakers and who may have language impairments are unsure about how to classify linguistic variation that these children may exhibit. As a result, service providers are either overly cautious concerning the legitimacy of the dialect, which can result in the under diagnosis of those who are in need of intervention, or they may mischaracterize dialect

features as signs of impairment when they really are not, which can result in the over diagnosis of children who really are developing typically. Currently, there is no empirical evidence that provides information about the systematic use of AAE dialectal features in the language of children who are also language impaired or the variability of feature use that might result as a product of language impairment.

Some recent studies have attempted to get at the heart of the language difference versus language impairment conundrum. Researchers debate whether or not empirical studies and clinical efforts should focus on the unique features of a dialect or those that are commonplace in both mainstream and nonmainstream dialects. Some researchers (e.g., Battle, Seymour, Bland-Stewart & Green, 1998) contend that dialectal features that are shared by two or more vernaculars are most likely to support conclusions about the language status of a child. These researchers avoid evaluation of non-shared or contrastive features of two vernaculars due to their surface similarity or indistinguishable appearance from patterns of language impairment. Contrastive linguistic patterns of AAE are often characterized as features of language impairment which results in misdiagnosis for many children. To avoid this dilemma, features that are unique to the dialect are not addressed during assessment. Bland-Stewart (2005) contends that noncontrastive or shared features such as pronouns, demonstratives and articles are more diagnostically salient when attempting to distinguish dialect from disorder; however, relying on these particular shared features alone as hallmarks to support a suspicion of language disorder can prove to be disastrous. Although

the morphologic and syntactic representations of the noted features are characteristically Mainstream American English (MAE), they also share their characteristics with AAE, and frequently appear within the language profiles of young, school-age AAE speakers as well as mature speakers. For example, the language profiles of AAE speakers frequently include pronouns that are undifferentiated (*Me and him are cousins.*), objective pronouns that are used instead of demonstratives ("*She broke them bottles,)*, and indefinite articles (*a)* that precede nouns that begin with a vowel (*It's a apple.).* Although the presence of these features can be developmental, they are also characteristic of AAE and should not be excluded when evaluating the grammaticality of AAE usage.

Oetting and McDonald (2001) have suggested that focusing exclusively on noncontrastive features limits the linguistic structures that are available for examination, and requires researchers to make a priori statements about what may or may not be important for characterizing language impairments. These authors suggest that researchers should investigate the presence and prevalence of contrastive (nonmainstream) features to determine morphosyntactical limitations of dialectal speakers with SLI.

Craig, Washington and Thompson-Porter (1998) also evaluated the frequency of dialect feature production that is unique to AAE. In their studies, the presence of AAE contrastive features and the frequency of their occurrence are expressed through the use of a dialect density measure (DDM). This measure provides a sum of total dialect feature usage via a feature to word ratio. A proportion that represents the ratio of features to words, rather than the ratio of

features to utterances, was established in order to control for differences in utterance length which often provides increased opportunity for features to occur. The DDM ratio may reflect the single use of many features or the multiple uses of a few features. The ratio is calculated by dividing the total number of AAE features by the total number of words produced in a language sample. This density measure may be calculated to state the sum total of all AAE features of occurrence (DDM) in a language sample, the morphosyntactic features (MorDDM), the phonological features (PhonDDM) or a combination of morphosyntactic and phonological features (CombDDM).

Noting a feature's existence and frequency of occurrence could provide important information regarding the dialectal profile of a speaker; however, it may add little to characterizations of the speaker's linguistic competence. Dialect use is not simply a matter of variety and occurrence, and shallow observations can yield AAE features that are identical to features of language deficit in MAE. Consequently, a comprehensive investigation of AAE usage should involve an analysis of the grammaticality or rule-governed use of each AAE pattern in addition to measures of dialect density.

One method for examining the grammaticality of AAE features is known as contextual analysis. Contextual examination of dialectal features can reveal important information about the linguistic competence of the speaker as well as the speaker's language status. Contextual analysis can also yield useful information about feature maintenance and the stability of dialectal features in the presence of language impairment. This is accomplished via an environmental

examination of the utterances preceding and following each utterance containing a dialectal feature. The surrounding utterances provide contextual evidence that the researcher can use to determine if the speaker was following the rules of the dialect. In addition, patterns of typical AAE use or disordered language can be uncovered. This type of analysis is one way to assess language knowledge and language performance in children who have been identified as having language impairments.

Once an AAE speaker is appropriately characterized as both disordered and linguistically diverse, what changes can we expect to see within their dialectal profile after completing intervention? Changes or shifts in dialect have been documented due to prolonged exposure to MAE, such as that experienced as a result of initial entry into the educational system and as a result of instruction in certain academic areas such as literacy. Craig and Washington (2003, 2004) indicated that variation in the number of morphosyntactic features used by AAE speaking children was the result of exposure to MAE and that the shift in dialect use occurred during the initial years of being introduced to the mainstream variety. Sharp declines in morphosyntactic features were observed at first grade when students begin full school days in the classroom where they receive formal exposure to MAE. The dialectal shift observed within the speech of AAE speakers upon school entry is often viewed as a spontaneous response to a sudden and extended immersion into the MAE educational system (Adler, 1992; Battle, 1996). Since the language of education is that of the mainstream, AAE speakers must adapt linguistically to the demands of MAE curriculum. This

adaptation is in line with pragmatic models of language acquisition, which suggest that some aspects of language learning are a matter of discovering how to complement linguistic forms to the function for which they are used. Dialectal variation might also then be expected as an outcome of language intervention which explicitly targets deficits in the area of morphology and syntax.

The SLI-AAE children in the current study were extracted from an existing data set that was collected as part of a study comparing the effects of language intervention programs. This study, titled, “Comparison of Language Intervention Programs” (CLIP) tested auditory temporal processing theories of language impairment by comparing the auditory processing skills and language outcomes of children who were treated with a computerized intervention program with acoustically modified speech stimuli (Fast ForWord-Language), other language intervention software without modified speech, individualized language intervention with a clinician, or academic computer instruction software. Although the CLIP study was designed to examine the utility of intervention that targets deficits in temporal processing, it also provided a superb opportunity to characterize the language status of young children who met the qualification criteria for the diagnosis of specific language impairments and who speak AAE, and to evaluate language changes in these children after receiving intervention in mainstream English.

The overall purpose of the project described in this proposal is to investigate morphosyntactical AAE feature use within the SLI-AAE population through contextual analysis and a measure of dialectal density. Information

obtained from this analysis will be used to make a statement about whether or not a child is indeed an AAE speaker based on their rule-governed use of the features and to provide information about any systematic variation in the data. Furthermore, this study seeks to determine whether the dialectal feature type, frequency, and/or pattern of use in SLI-AAE children are altered as a result of intervention. Finally, we will investigate the means of dialect change and change over time.

The language of young school-aged children with SLI who speak AAE was assessed prior to intervention to obtain baseline data. Pre-intervention language samples were analyzed to yield a profile of morphosyntactical feature presence, frequency of feature use, and the rule-governed use of AAE features. Language samples collected immediately after language intervention and six months after intervention were examined to detect both immediate and long-term variation of morphosyntactical feature use within the language of AAE speakers with SLI.

Information concerning the characterization of AAE speakers and the variation of dialect feature use following MAE intervention has both theoretical and practical implications. Theoretically, the results of this study will provide further insight into what is known about dialectal change in AAE, when speakers receive formal Mainstream American English (MAE) instruction. Results may add support to pragmatic language acquisition models (Craig, 1995; Ninio & Snow, 1999) which suggest that a language mismatch such as that which occurs when AAE speakers receive formal MAE instruction, causes an attempt to quickly match form to function. Study outcomes might also reveal more drastic dialect

shifts that persist over time as a result of explicit intervention, not just immersion in the MAE academic culture.

Practically, the results of this study will be of value to speech-language pathologists who assess AAE speakers. This study will yield information to help speech-language pathologists determine if contextual analysis of dialectal features is an accurate means to characterize the dialectal status of an AAE speaker and whether or not this type of analysis is useful for revealing trends of dialect use when it is influenced by language impairment.

Chapter Two: Literature Review

AFRICAN AMERICAN ENGLISH

Historically, AAE speakers were perceived to use an insufficient form of American English. Currently, AAE is appropriately viewed as a language difference and not a deficit by speech-language pathologists, socio-linguists, and educators (Seymour et al, 1998). Investigators and clinicians in Communication Sciences and Disorders regard AAE as a legitimate dialect, and they are becoming increasingly interested in the identification and treatment of language impairment in children who are AAE speakers.

AAE is viewed as a rule-governed system that is characterized by syntactic, morphological, semantic, phonological and pragmatic features that distinguish it from the mainstream English. AAE speakers are predominately working class African Americans (Terrell & Terrell, 1993). However, not all African Americans speak the dialect, and among those that do, there is a wide continuum of usage. The continuum includes speakers who use few dialectal features in limited communicative environments, those who frequently switch between AAE and MAE according to context, and speakers who use AAE during every communicative exchange in all environments (Terrell & Terrell, 1993).

AAE differs from Mainstream American English and other varieties of English (Green, 2002). The linguistic forms produced by AAE speakers vary from Mainstream English according to the type of features and the frequency with which the features are represented within the language profiles of dialectal

speakers (Rickford, 1999, Wolfram & Schilling-Estes, 1998). Several factors including age, geographic region, level of education, occupation, socioeconomic status and identification with the culture may account for the fluctuation in content, form and use (Terrell & Terrell, 1993).

Both AAE and MAE utilize the same word order to form utterances. However, AAE permits greater flexibility with the way in which words can be combined and regarding the obligatory presence of words. For example, is can be used by both AAE and MAE speakers in the sentence, "*He is my brother".* The difference is that AAE speakers have the option of including or omitting the copula *is* in some environments while the copula is obligated for Mainstream English speakers.

Morphological rules within AAE allow competent dialectal speakers to demonstrate linguistic combinations that are different from MAE. The possessive *-s* inflection provides a good example. In the sentence, "*They went to Grandma's house*," the possessive inflection is required to state ownership in MAE. However, the possessive *-s* is optional in AAE. For speakers of this dialect, the MAE construction and the utterance, "*They went to Grandma house,"* are both considered to be grammatically acceptable and both express ownership.

The sound and word combinations constructed by AAE speakers in the areas of syntax and morphology are defined by systematic rules that constrain production within specific parameters. Typically-developing AAE speakers are not haphazardly omitting words or morphemes in an effort to simplify MAE.

Rather, they are demonstrating their knowledge and use of a rule-governed linguistic system (Green, 2002a).

A difficulty for speech-language pathologists is that the knowledge of skilled AAE speakers is not easily distinguishable from the linguistic errors of children with language impairments. Because dialect features such as zero copula, zero possessive *–s,* and final cluster reduction are grammatically unacceptable in MAE, AAE speakers who produce these forms appropriately for their dialect may be misdiagnosed as language impaired. To avoid misdiagnosis, clinicians must be knowledgeable about which features are most likely to appear within the language of typically developing speakers and when those features may and may not be used in accordance with the dialect.

Current research has focused on a core group of features that appear to be important for investigating dialect use in the language of young children who are developing normally (Oetting & McDonald, 1991, 2001; Craig & Washington, 1995). Feature types include syntactic properties such aspectual markers (stressed BIN, aspectual *be*, completive done), auxiliary features (auxiliary/copula *be omission*, modal/auxiliary omission, ain't substitution, use of double copulas, auxiliaries or modals), preverbal markers (fitna, sposta, bouta), multiple negation, existential it, and preterite *had*. Additional syntactic constructions include subject-verb agreement with *don't* and *be* forms, and omissions of tense markings, articles, prepositions, and infinitives. Morphological features include omissions of plural -*s*, possessive -*s*, and regular past -*ed*, as well as multiple tense markings (see Appendix A and B.). Descriptions of the

dialectal features that appear in the appendices and the subsequent sections were taken primarily from Oetting and McDonald (2001), Green (2002b), and Craig and Washington (2004). Examples from actual speakers and sample participants were used whenever possible.

Aspectual verb markers in AAE are similar in form to auxiliary verbs in Mainstream English; however, the role of aspectual markers and the meaning they convey is different from mainstream auxiliary verbs. Aspectual verb markers express habitual occurrences, remote past occurrences, duration or completion. Because these forms carry a specific meaning, omitting them from an utterance would result in ambiguity, making their presence obligatory. Aspectual markers are not conjugated to complement person or number and are followed by past tense verbs or verbs ending in *–ing*. Consider the following sentences, "*I be tired after work*," and "*They be making too much noise."* Both sentences are grammatical even though one subject is singular and the other is plural. The aspectual marker *be* will always appear in the bare form regardless of the number marker of the subject. In addition, the marker precedes verbs with the appropriate tense past and *-ing* marking.

Auxiliaries like *be* forms also precede verbs ending in *–ing*, while copula *be* is followed by nouns, prepositions, adverbs or adjectives. Auxiliary and copula *be* is often omitted in utterances; however, its presence is mandatory in past tense constructions or when the noun *it* or the pronouns *I* and *that* are the subject of the sentence. For example, constructions such as, *"That hot,"* and "*I mad,*" are not expected to occur in the language of typically developing speakers of AAE

who have emerged from the normal stages of development. Although auxiliaries are generally optional in questions, past tense auxiliary and copula *be*, as well as modals, are not optional for statements of inquiry. Auxiliaries are not obligated to agree with subjects in tense and may have more than a single occurrence in an utterance.

Preverbal markers such as *fitna* and *bouta* indicate events that are forthcoming, specifically in the near future, while *sposta* designates events that are expected to happen. Forms appear prior to nonfinite verbs that are not marked for tense or agreement. These forms precede nonfinite *be* forms, contracted *be* forms or the omitted *be* form.

Negative markers in AAE, such as *no*, *don't*, *ain't* and *nothing,* and negated auxiliary contractions (i.e., don't, can't), are often used together to create a single negative expression. Consider the following sentence containing four negative markers: *"I don't want to go cause' I ain't got no money to buy nothing with."* Using multiple negations expresses negative meaning, although it is not clear whether the use of multiple negative forms adds additional negative emphasis. Negative concord can be accomplished using an infinite number of negative markers or as few as two.

In addition to negation, AAE features also mark existence and simple past tense. Existential constructions contain existential forms, such as *it,* which are used to indicate the presence of something or its existence (i.e. It be too much junk in the yard). The existential marker must be followed by a verb form such as

be, *have* or *got,* which serve as a link between the existential marker and the ensuing noun phrase.

The preterite *had* feature is similar to past perfect constructions in form for both AAE and other dialects, but it is used differently by AAE speakers. Preterite *had* marks the simple or immediate past, while past perfect forms indicate events that occurred prior to the immediate past. Preterite *had* constructions are formed when *had* is followed by a past tense verb forms such as in *"He had broke my game."*

Several morphological features appear in the speech of AAE speakers. The omission of bound morphemes such as regular past tense -*ed,* possessive -*s,* and plural -*s* heavily characterizes the vernacular. AAE speakers adequately express past relationships without the use of the past tense morpheme –*ed*. Regular verbs that form the past tense using –*ed* appear in bare form when this construction is produced. For example, "*I taste it last night."* is produced rather than "*I tasted it last night*."

Another common pattern is the omission of the possessive –*s*. Possessive –*s* is often omitted from formations where ownership is indicated (i.e. *I'm riding in my dad car*.). The possessive –*s* inflection is not required to state the condition of belonging because ownership *is* expressed through word order. In constructions where the possessive –*s* is excluded, the owner or possessor (i.e. dad) must precede the object of ownership (i.e. car), allowing the sentence order to express ownership rather than the possessive –*s* morpheme. Also, in rare instances AAE speakers do not make a distinction between the singular and plural noun forms.

When this distinction is not made, singular nouns are produced when the number or weight requires a plural noun (i.e. *I ate three pickle.*).

Likewise, subject-verb agreement with *be* and *don't* also demonstrate the neutralization of singular and plural verbs in AAE. These constructions in AAE adhere to the same sentence order rules as similar productions in MAE (i.e. subject-verb-object). However, different rules are adhered to in AAE to state identical meaning. For example, because verbs are neutralized and singular-plural distinctions are not made, utterances such as "*We was too busy."* and "*He don't care."* are both grammatical despite the lack of overt agreement between the subject and the verb. AAE speakers also exhibit alternative tense marking for both regular and irregular verbs. Verbal *–s* is often omitted and the plural verb form is produced instead of the singular form (i.e. *When she play with it I don't cry.)*. Zero marking of the regular third person present tense on verbs becomes somewhat of a default feature and, although on the surface the feature appears identical to past tense *–ed,* the two forms are distinguishable via contextual analysis of the speaker's intent.

Speakers of the AAE variety also produce variation in irregular past tense and irregular third person constructions. For example, AAE speakers produce the irregular third person feature by using unmarked verb forms *say*, *have*, or *do* even though the subject of the sentence in Mainstream English requires the form *says, has,* and *does (i.e. He do it all the time*). Irregular past tense is expressed in AAE; however, the irregular verb is often not marked for past tense (i.e. *I run all over the playground.*) or an alternative irregular past tense verb is used.

Subject-verb agreement, along with many other features characterizes AAE in a way that is distinctly different from the mainstream. Differences observed in the language of AAE speakers demonstrate rule-governed language, not aspects of language impairment.

SPECIFIC LANGUAGE IMPAIRMENT

Specific language impairment is often viewed as a diagnosis of exclusion. Children who are diagnosed with SLI present with significant limitations in language learning abilities, yet these limitations are not accompanied by common factors such as hearing loss, neurological dysfunction, mental retardation, oral mechanism problems or pervasive developmental disabilities. It is estimated that approximately 7% of children are affected by SLI. The impairment is more prevalent in males than in females, and those who are diagnosed are more likely than other children to have family histories positive for language learning difficulties (Leonard, 1998).

Children diagnosed with SLI vary in the extent of their linguistic and nonlinguistic impairment, as well as in the modality that is affected (Watkins, 1994). Certain subsystems of language such as syntax and morphology are particularly difficult for children with SLI. But, this group is far from homogeneous in their language abilities and do not fit conveniently into one category or subcategory.

There are a number of theories that attempt explain why some children with no overt sensory, intellectual, motor, social, or emotional disorders

nevertheless have unusual difficulties learning language. These theories can be classified into competence or performance models. Competence-based models `focus on the speaker's knowledge of the linguistic rules that govern language, while performance-based models focus on how speakers process language.

Performance-based theorists agree that information processing deficits are responsible for the language difficulties in children with specific language impairment; however, there is a theoretical divide regarding whether processing deficits are specific or generalized. Miller, Kail, Leonard, and Tomblin (2001) proposed that generalized limitations in processing capacity are responsible for language impairment in children with specific language impairment. Processing speed was investigated in seventy-seven third-grade children. Children with SLI were compared to typically developing children (NLD) and children with nonspecific language impairment (NLI - below age expectations on both IQ and language). Performance on ten linguistic (i.e. picture naming) and nonlinguistic (i.e. tapping) tasks was evaluated and mean response times (RTs) were calculated. Results showed that children with SLI responded slower than normally developing children on all tasks, but not as slowly as children with NLI. Data indicated that the children with SLI had slower information processing on both linguistic and nonlinguistic tasks. This outcome provided support for theories of generalized slower processing in children with SLI across domains.

Tallal et al (1996) proposed that the language difficulties in children with SLI are secondary to a specific processing mechanism--temporal auditory processing--rather than a generalized deficit. In one of her many articles on this

subject, she reported on the comparison of two groups of children with language-learning impairment (LLI) as part of dual study. Study 1 (Tallal et al, 1996) included seven children between the ages of five and ten years of age, and study 2 (Tallal et al, 1996) was comprised of twenty-two children with a mean age of seven years; four months.

Children in both studies received extensive daily exposure to modified speech over a period of four weeks via computer. Rapidly changing speech syllables (i.e. ba and da), believed to be difficult for LLI children to discriminate, and were altered to create a more salient acoustic cue. Speech modification included both emphasizing and extending the duration of a signal. The children with LLI in study 1 showed significant improvement in speech discrimination and language comprehension with gains in test scores that approximated or exceeded normal limits for their age. The children in study 2 were divided into two groups. Half of the children received computer training with acoustically modified speech and the remaining half received identical computer training with natural, unmodified speech. Results of the study showed improvement for both groups; however, the children who received training with acoustically modified speech demonstrated significantly greater gains on speech, language, and auditory processing measures post training. The outcome of these studies added support to theories of information processing that propose a specific deficit in temporal auditory processing as the root of language difficulty within the SLI population.

A number of researchers do not completely embrace the data in support of information processing deficits. These researchers often look to competence-based models to explain the difficulties exhibited by children with SLI. A well-known competence-based perspective of specific language impairment is the optional infinitive model (Rice, 1994, 2003, 2004; Wexler, 2003). This linguistic explanation focuses on the verb tense and agreement morphemes that are required for marking the finite nature of the verb form. Young English speaking children, as well many other language speakers go through a language acquisition period where the obligatory features of finiteness observed in adult speech are produced as nonfinite verbs. For example, mature speakers mark tense and agreement in clausal structures and produce forms such as *He walks;* however, the optional use of the finite verb is often seen in young children who produce structures such as *He walk*. Rice and Wexler (1993) propose that this developmental period of optional infinitive use is extended in children with SLI and emerges as a prolonged delay in the acquisition of verbal morphology. This model highlights one important way that children with SLI differ from young children who are developing language without delay.

Rice, Wexler, Marquis and Hershberger (2000) evaluated the longitudinal development of regular and irregular verb acquisition for children with specific language impairment. Participants were assessed at six-month intervals from age 3 to age 8. The researchers compared age-matched and language matched peers in order to evaluate their understanding of the syntactic restrictions associated with both categories of past tense verbs. Elicitation probes were

utilized to assess past tense performance. Probes consisted of picture pairs in which one picture illustrated a child engaged in an activity while the second picture depicted an action that had been completed. Children with SLI were more likely than their normally developing counterparts to produce and accept nonfinite irregular verbs and overregularized verb forms in sentence contexts in which finite verb forms were obligated. Children with SLI did not demonstrate an understanding of the distinctions between finite and nonfinite irregular verb forms; however, the SLI group performed similarly to the language-matched controls in their overregularization of regular past tense *–ed* for irregular past tense verbs.

Leonard, Deevy, Miller, Rauf, Charest and Kurtz (2003) also studied verb tense difficulty in children with SLI. They compared the usage of regular past tense inflections and passive participle verb tense in 12 children with SLI, 12 age-matched peers, and 12 language-matched peers. The children with SLI ranged in age from 4;5 and 6;10, while the language-matched peers who were similar to the children with SLI on mean length of utterance measures (MLU), ranged in age from 2;8 to 4;11. The children in the SLI group and the two groups of normally developing children were assessed with a sentence completion task in which one sentence obligated the use of past tense verb forms and the second sentence obligated the use of passive participle verb forms that shared the surface form of past –ed but served a grammatical function other than conveying tense (i.e. subject-verb agreement). The children in the SLI group performed more poorly than children in the ND-A and ND-MLU groups on both past tense

and passive participle verb forms. These results indicated that children with SLI had problems with verb morphology that were not confined solely to the surface properties of past tense *-ed*. Their difficulties also existed with verb forms such as passive participle regardless of whether verb tense was involved.

Another way to examine the nature of the underlying linguistic mechanisms in SLI is to compare the characteristics of language impairment in children who speak different languages. Crosslinguistic studies of children with SLI enable researchers to test hypotheses about the nature of SLI that were based on studies of language impairment in one language within the linguistic framework of another language. The study of SLI in different languages provides an opportunity to observe data in one language that may not be available in another language (Leonard, 1998). For example, inflectional tense marking is widely researched within SLI English speakers; however, this examination would not be possible in such languages as Inuktitut, which are heavily inflected but do not use inflection for marking tense.

Comparisons of children with SLI and their nonimpaired peers in Spanish and Hebrew suggested that children with SLI who spoke these languages had poor lexical development and slower emergence of word order combinations. Italian-speaking children with SLI mirrored English speakers in their difficulty to use articles in obligatory context (Leonard, 1998). In addition, crosslinguistic studies of SLI have shown that optional inflection use is present in the language of children with SLI in languages such as Quebec French and Inuktitut, as well as English (Paradis & Crago, 2003). However, the specific error forms that occur out

of this optional use vary as a function of the different grammatical structures within each language (Paradis & Crago, 2003; Wexler, 1998).

The Optional Infinitive or Extended Optional Infinitive account asserts that children who demonstrate limited verb agreement should also demonstrate problems with the marking of regular past tense. As young children who speak MAE mature and understand tense, the optional marking of tense improves (Rice & Wexler 1993). Yet, this is not the case with AAE speakers who continue the optional use of the nonfinite forms long after they demonstrate competence with marking tense and agreement (Oetting & McDonald, 2001; Craig & Washington, 2004; 2006). For example, forms such as *she go are* regularly produced in place of *she goes* by mature dialectal speakers who have mastered tense marking. Mature AAE speakers understand the differences between finite and nonfinite verbs; however, they often exercise the flexibility of the dialect when choosing which form to produce.

Researchers interested in AAE have not speculated about the applicability of a specific theory of SLI as it pertains to optional inflection for AAE speakers; however, general language impairment within the AAE and other dialectal varieties has been investigated.

LANGUAGE IMPAIRMENT AND DIALECT

Oetting, Cantrell and Horohov (1998) investigated the effects of nonmainstream dialect on standard measures of spontaneous language production and on the characterization of SLI. Spontaneous language samples of

31 Caucasian children living in the southern region of the United States were analyzed. The children ranged between the ages of four to six years and were matched for age and language abilities. Mean length of utterance (MLU), Developmental Sentences Score (DSS) and the Index of Productive Syntax (IPSyn) were utilized to assess expressive language abilities via spontaneous language samples. When dialect was considered, feature use did not hinder the grammatical characterization of SLI. Likewise, dialect features did not significantly affect the standard measures of language production.

Studying the relationship between nonmainstream dialect and standard measures of linguistic complexity is of particular importance because performance on standardized tests is frequently used to determine the language impairment status of the child; however, the current data available are relevant only for MAE.

Oetting extended her work to speakers of AAE (Oetting & McDonald, 2001) through the investigation of the relationship between dialect use and specific language impairment (SLI). Southern speakers of AAE were compared to Caucasian children who spoke Southern White English (SWE). Ninety-three children between the ages of four and six participated in the study. Thirty-one children classified as SLI were matched for age with thirty-one 6-year-olds and matched for language development with thirty-one 4-year-olds. Spontaneous language samples were collected and analyzed for nonmainstream patterns. Although MAE and AAE share common linguistic features, there were morphosyntactical patterns that distinguished between typically developing

dialect speakers and dialect speakers with SLI. The study was successful at identifying patterns that resulted in main effects related to SLI and developmental processes. The patterns that best distinguished the SLI group from their age-matched peers were zero marking of *be* forms, zero marking of irregular past, omission of auxiliary *do* and noninversion of Wh-questions. Children in the SLI group produced all four dialectal patterns more frequently than their typically-achieving, age-matched peers. These results suggest that there are promising means by which to successfully identify language impairment in dialectal speakers during assessments.

Seymour, Bland-Stewart and Green (1998) also investigated language impairment within AAE speakers. The language samples of seven typically developing AAE speakers were compared to seven language impaired AAE speakers. A comparison of features unique to AAE (contrastive features) and features that were shared between AAE and MAE (noncontrastive features) was undertaken to evaluate their utility as diagnostic tools. Data indicated that the noncontrastive features were more diagnostically salient between groups than the contrastive features that were unique to AAE. Difficulty with shared features was highly correlated to language impairment whereas contrastive features did not yield a significant difference. However, the contrastive past tense *–ed* morpheme was an exception to these findings. This contrastive form did yield significant group differences. This group difference would not have been observed if the contrastive past tense *–ed* feature was excluded from the examination.

PURPOSE

To avoid oversights of this nature, we have chosen to examine dialect features that are unique to the vernacular as we examine language use and language change within a sample of AAE speakers who have been diagnosed as language impaired. Current theories of SLI parallel theories of normal language development and use (Weismer & Evans, 2002), and although competence-based and performance-based theories of SLI predict changes in impaired language, we can also predict changes in dialect features; especially those that share the surface properties of MAE forms (i.e. omission of copula *is*, omission of plural *s)* targeted during intervention.

Performance based theories of auditory processing would predict greater improvement with language deficits as well as a decrease in dialect feature use in dialect speakers with SLI who received language intervention with acoustically modified speech(Fast ForWord Language: FFW-L). Acoustically modified speech is believed to improve auditory temporal processing and the perception of morphological features that are not highly salient. As a result, use of dialect features that are characterized by low salience forms such as morphological inflection would be expected to decrease after intervention designed to improve auditory processing.

Competence-based theorists might also expect greater improvement in language impairment and decreased use in dialect feature use in children who received individual language intervention (ILI). The therapeutic goal of ILI was to increase knowledge of grammatical rules in a natural context; however,

morphological and syntactical rules were targeted in intervention without exception. That is, rules of the dialect might have been annulled by language intervention that did not clarify the appropriateness of dialect feature use during remediation of deficits in MAE. Dialect features that served decidedly different functions in AAE than similar MAE forms would be expected to exhibit the least amount of change as a result of not being targeted during intervention (i.e. existential *it*).

The overall purpose of this study is to investigate the nature of language use in AAE dialectal speakers who had been identified as SLI according to the EpiSLI criteria and who received language intervention in Mainstream American English. Participants in the study were randomly assigned to one of four treatment groups: Individual Language (ILI), Computer-Assisted Language Intervention (CALI), Fast ForWord-Language (FFWL), or Academic Enrichment (AE). Each of the four treatment conditions was six weeks in length. Participants received intervention five days per week for 1 hour and 40 minutes a day. Participants were assessed prior to treatment, immediately following treatment and at three and six months post-treatment. Several language and literacy assessments were applied to measure intervention outcomes.

The design of this study enables us to examine whether the type and frequency of African American English dialectal features are modified due to language learning when direct instruction is provided and to determine the types of treatment modalities that result in change. The immediate variation in dialectal

patterns as well as the long-term effects of mainstream intervention will be investigated.

This study will address the following research questions:

1. What are the type, frequency and grammatical use patterns of AAE features by a group of school-age children with language impairment?
2. Does the type and frequency of AAE feature production change over time as a function of language intervention in MAE?
3. Do the four intervention types (ILI, CALI, FFW-L, AE,) yield different changes in AAE production as measured by grammatical feature count (GFC) and a dialect density measure (DDM)?
4. Which of the intervention types (ILI, CALI, FFW-L, AE,) result in the greatest amount of long-term change in type, frequency and grammatical use patterns of AAE features?
5. Does performance on a standardized language test change as a function of a shift in frequency of AAE feature production?

HYPOTHESES

We theorize that AAE speakers will demonstrate rule-governed use of dialectal features but also some deviant variation in the use of those features as a result of the presence of language impairment; which will allow us to simultaneously classify this population as both dialectal speakers as well as language impaired. Secondly, we expect a decline or dialect shift in the

frequency and type of AAE morphological feature use as a result of language learning due to language intervention in Mainstream English. We theorize that Individualized Language Intervention (ILI) conducted in Mainstream English and provided through direct interaction will produce the greatest amount of immediate and long-term change, followed by Computer Assisted Language Intervention (CALI) structured in Mainstream English without acoustically modified speech, and then Fast ForWord (FFW-L) computerized intervention with acoustically modified speech. The least amount of variance is expected from the Academic Enrichment (AE) control group.

The ILI condition is expected to produce the most significant dialect shift due to its competence-based focus that emphasizes knowledge of grammatical rules. AAE is morphosyntactical in nature and rule-governed. Failure to include allowances for the use of dialect rules combined with explicit prolonged instruction in MAE should facilitate a decrease in dialect forms. These results are supportive of competence-based theories of language impairment (Rice, 1994, 2003, 2004; Wexler, 2003), pragmatic models of language acquisition (Craig, 1995; Ninio & Snow, 1999) and theories of dialect change (Adler, 1992).

Participants in the CALI condition are expected to exhibit less significant change than participants in the ILI condition. CALI was also implemented in MAE for an extended period of time but it lacked the one-on-one explicit instruction of morphological and syntactical rules by a clinician.

The FFW-L condition is predicted to yield less significant language changes in dialect patterns than the CALI condition. FFW-L targeted improvement in auditory temporal processing and provided training in modified speech; however, a small portion of the computerized intervention targeted the comprehension of grammatical morphemes and complex sentence structures and might modify the use of language features.

The Academic Enrichment condition (AE) did not provide intervention or training and is expected to produce the least amount of language change. Participants in this group were exposed to computer games that were not designed to improve specific language skills and were equivalent to programming encountered in daily life via television or computer use.

POTENTIAL SIGNIFICANCE OF FINDINGS

Examination of dialectal change in African American English speakers can add to the core knowledge regarding the nature of language change in general. A decrease in the type and/or frequency of dialect features would provide support for theories of dialect change which suggest that formal and prolonged exposure to language instruction results in a dialectal decline. Likewise, a downward shift in dialect use would support pragmatic theories of language acquisition that suggest that language quickly changes in an attempt to match a language form to function. In addition, predictions might be possible concerning changes in feature type or frequency when African American English speakers are provided

with Mainstream English intervention and what type(s) of intervention result in this change.

Chapter Three: Methods

PARTICIPANTS

Sixty-five school age children participated in this study. The participants were previously identified as having specific language impairment (SLI) and were part of the larger Comparison of Language Intervention Program (CLIP) study. The CLIP project tested auditory temporal processing theories of language impairment at three different sites in the Southwestern and Midwestern regions of the United States (23 children from the Austin, Texas area, 8 children from the Dallas, Texas metroplex, and 34 children from the Lawrence, Kansas and Kansas City, Missouri areas).

The children were between the ages of 6; 11 (years; months) and 8; 11. The mean age of the participants was 7; 6 with a standard deviation of 9 months. There were more males than females in the sample, with 39 males (60%) and 26 females (40%). The sample consisted of 95.4% Black or African Americans; 4.6% were more than one race (Black or African American and White, non-Hispanic). Socioeconomic (SES) level was determined by the Hollingshead Rating Scale (Hollingshead, 1975). The Hollingshead has 5 different levels of SES placements based on the occupation and education of the parent(s). These levels are upper class, upper-middle class, middle class, lower middle class and lower class. A majority of the children in the study were from families that had a middle class SES level (N=34, 52.3%). The next most represented SES group was upper-middle class, with 15 children, which comprised 23.1% of the sample.

The lower-middle SES class included 20% of the participants (N=13). The lower SES class contained the smallest number of children with 3 children (4.6% of the sample). The higher end of the continuum, upper SES class was not represented in this sample.

Participant Selection

Participants in the study were referred by speech-language pathologists and special educators who worked in public school settings. The parents of all of the students in the subject selection pool received a written explanation of the research study, an identification testing consent form, and a case history questionnaire. Children in the overall sample who were identified as African American as well as those who were judged likely to be exposed to African American dialect due to their family structure and/or living environment were selected for further analysis of dialectal status within this current smaller study.

The children selected for participation in this current, smaller investigation were all monolingual, native English speakers. In order to be included in the study, children must have passed a hearing screening at 20dB in either ear at the frequencies of 500, 1K, 2K, or 4K Hz. Episodes of silent otitis media accompanied by transient hearing loss were ruled out by performing up to two additional hearing screenings repeated at two week intervals for any child who failed the initial hearing test. Based on parent, teacher and/or therapist report, none of the study participants had a history of otitis media in the previous twelve months, focal brain lesions, traumatic brain injury, cerebral palsy, or seizure

disorder. In addition, no abnormalities of the oral structure or function that impede normal language production were observed. Children evidencing severely restricted activities listed in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition-revised (DSM-IV) criteria for autism spectrum disorders, or any behavior that was characteristic of severely impaired social interaction were excluded. No previous intervention with Fast ForWord, Laureate, Earobics, and/or Lindamood-Bell auditory discrimination training was permitted.

On the Test of Language Development: Primary: 3rd edition, a spoken Language Quotient of 85 or lower was required to be identified as language impaired. The children diagnosed as language impaired achieved a standard subtest score between 75 and 125 (+/- 1.66 SD) on the Matrices subtest of the Kaufman Brief Intelligence Test (K-BIT). The score of 75 was chosen as the lower bounds of eligibility criteria to exclude children exhibiting mild retardation from the study.

Parents of children who met all criteria for inclusion in the study were provided with a second consent form to provide permission for the child to participate in the intervention phase of the study. Each parent was also provided with information about the requirements for study participation.

RANDOMIZATION

The intervention phase of the study occurred over the course of three consecutive summers. Each child attended for only one summer. Participants were randomly assigned to one of four conditions by the data management

center (DMC) at the Biostatistics Center at the University of Iowa. Randomization for SES was stratified. Half of the children with the highest SES were classified into one stratum and the remaining children with the lowest SES were classified into a second stratum. The DMC then randomly assigned children from each socioeconomic level to each of the four treatment groups at each site. This stratified randomization was carried out at each site each year.

BLINDING

The principal investigators for the CLIP study at each site, the parents of the children who participated, and the professionals who administered the assessments were blind to the treatment assignments of the children until all data were collected, reported to the biostatistics center, and checked for accuracy. This blinding was necessary to reduce the potential presence of experimenter bias and the halo effect. A principal investigator and a site coordinator were assigned to each study site (i.e., the University of Texas at Austin, the University of Kansas, and the University of Texas at Dallas). The site coordinator viewed the randomization assignments after the pretesting was completed, and was the only person at each site who had a record of subject names, subject identification codes, and treatment assignments. Neither the site PI nor the speech-language pathologist carrying out the intervention was aware of the randomization assignments. All treatment phase files were kept in a locked file cabinet that was only accessible by the research coordinator. After each testing phase, the test protocols were deidentified by replacing children's names

with subject numbers. All the outcome data were kept in a locked file cabinet that is only accessible to the site PI and a file manager who was responsible for making sure that all files are complete. No one but the PI and the file manager had access to the outcome data.

TREATMENT PROCEDURES

Children were assigned to one of four treatment groups. The four treatments were Individual Language Intervention (ILI), Computer-Assisted Language Intervention (CALI), Fast ForWord-Language (FFWL), and Academic Enrichment (AE). The duration for each of the four treatment conditions was 6 weeks, with intervention occurring for 1 hour and 40 minutes each day, 5 days per week for a total of 30 sessions. During the 6 week treatment period, each child attended a morning program for 3 and one-half hours. Of this time, one hour and forty minutes per day was devoted to the treatment. Children spent the remainder of the time in a classroom setting where structured games, creative play (e.g., art projects), snack and recess were offered. This organized activity period was directed by a certified classroom teacher who was assisted by undergraduate students. The individuals who worked in the classroom did not have formal training in facilitating language development in children with language impairments.

The order of treatment and classroom periods was reversed each week to avoid possible order effects. For example, the children who received treatment for the first one hour and forty minutes during the first week of the intervention

period would receive treatment for the second one hour and forty minutes during the second week.

Treatment Arms

Individualized Language Intervention (ILI)

The Individual Language Intervention (ILI) was delivered by certified and licensed speech-language pathologists (SLP). Intervention was carried out one-on-one in a quiet room. As with the other conditions, intervention sessions in the ILI condition lasted 1 hour and 40 minutes per day, five days per week, for six weeks.

The design of the ILI condition was based on the principle that the primary purpose of language is communication and that language intervention should take place within the context of meaningful, social interactions. A literature-based approach to language intervention was utilized. This approach was influenced by Gillam and Ukrainetz (2005), Norris (Norris & Hoffman,1993) and Strong (Hoggan & Strong, 1994; Strong,1996), who have suggested that language therapy should occur within realistic literature contexts that serve to embed language skills within thematic units and children's literature. The ILI intervention units were also based on the premise that opportunities for functional and interactive interactions should be a primary part of language intervention (Carrow-Woolfolk, 1988; Gillam & Ukrainetz, 2005; Leonard, 1998).

In the ILI condition, four main areas of language were targeted. Those areas were semantics, syntax (morphosyntax and clause structure), narration, and phonological awareness. The ILI units were developed around story books that had topics and illustrations that were of interest to school age children. The books chosen were also readable in a 10 minute period and contained a variety of vocabulary words. The vocabulary words ranged in difficulty level and were appropriate for children 6 to 9 years of age. We developed a total of 13 ILI book units. A minimum of 6 books units, at the rate of approximately one per week, were used with each child over the 6 week intervention program. The SLP chose the book unit that she thought would be the most interesting for the child with whom she worked.

There were 3 levels of difficulty for each of the areas of language intervention (i.e., semantics, grammatical morphology, clause structure, narration and phonological processing). Two language targets were provided at each of the 3 levels. Appendix 3 displays the language targets within the 3 levels of difficulty in each of the target areas. A minimum of six semantics activities, six morphosyntax activities, six clause structure activities, six narrative activities, and six phonological awareness activities were developed for each book.

On the first day of a book unit, the SLP and the child would develop a semantic map that focused on the concepts associated with the book. This would be followed by a pre-story discussion in which the SLP asked questions designed to activate the child's schema for the topic and events in the story. Next, the SLP and the child discussed specific book-related concepts (e.g.,

author, illustrator, and title) and took a “picture walk” through the pages. Then, the SLP read the book aloud to the child, stopping occasionally to check for comprehension and to discuss the story. After reading, the SLP presented semantic, syntactic, narration, and phonological awareness activities. The SLP began with a semantic activity in which each child developed a “Word Book” for new vocabulary words learned during the book reading. Additional vocabulary activities focused on extending the child’s word meanings. These activities were developed from procedures that have been empirically validated in the education and special education literature (Beck & McKeown, 1983; Gairns & Redman, 1986; Pressley, Levin, & McDaniel, 1987).

During the remainder of each ILI book unit, children participated in syntax, narration, and phonological awareness activities. The narrative activities included discussions of the critical narrative elements of the book, retelling the story through pictography, creating a retold book, reading and making an audio-tape of their retelling, creating a parallel story book, and making an audio-tape of their parallel story. Basic grammatical morphology and clause structure was targeted using a variety of activities related to the book unit and through language facilitation strategies. The activities were based on best practices in syntax intervention according to Nelson, Camarata, et al. (1996) and Scott (1995). Phonological awareness activities focused on phoneme identification, sound blending, sound matching, and phoneme reversal. These activities were based on procedures that have been studied by van Kleeck, Gillam, and McFadden (1998), and Catts (1991).

Throughout the ILI book unit sessions, the SLP used a variety of language facilitation strategies that have been shown to be effective with children. These strategies included slower rate (Weismer & Hesketh,1996), emphatic stress on target forms (Weismer, 1997), growth relevant recasts (Camarata, Nelson, & Camarata, 1994; Nelson et al., 1996), focused stimulation (Cleave & Fey, 1997; Fey et al., 1993), incidental teaching (Kaiser, Yoder, & Keetz, 1992), scaffolding (Schneider & Watkins, 1996), and mediation (Miller, Gillam, & Peña, 2001).

The SLPs tracked each day's activities on a daily tracking form. For each activity, they judged the amount of teaching effort (low, medium, high) and the amount of student responsiveness (low, medium, high). Teaching effort was rated as low effort if the SLP used utterances that were moderate in length (usually 8 to 12 words or more). Complex sentences were presented frequently during the activity. Directions and concepts were stated only once or twice. Only one or two examples were presented to clarify concepts or directions. Teaching effort was rated as moderate when the SLP used utterances that were short in length (i.e., 5 to 9 words). Simple sentence structure was usually used, although some complex sentences were presented occasionally during the activity. Directions and concepts were stated multiple times, and in more than one way, but once comprehension was established, there was no need to redirect or restate information. Multiple examples were provided, but verbal descriptions with visual support were usually adequate for teaching purposes. Teaching effort was rated as high when the SLP used utterances that were very short in length

(i.e., 3 to 7 words). Very few complex sentences were presented during the activity. Complex sentences that were used by the SLP were usually limited to coordination with “and”, “but”, “so”. Directions and concepts were frequently re-stated, at times recalled mid-activity to support the child's performance. Multiple examples were provided to clarify concepts or directions. Examples often used multi-modality support, including visual, acoustic, graphic, and/or tactile-kinesthetic exemplars, in addition to verbal input. Phonetic cueing that was not an integral part of the activity may have been required.

Student responsiveness was rated as low when the child was reluctant to speak or participate in the activities. Despite scaffolding support, the student's performance changed only minimally. Student responses were literal or very close approximations of the examples that had been provided. Poor accuracy in performance was demonstrated. Student had extensive difficulty retaining information across days. Student required continual support to complete the task. Student may have had extensive difficulty attending to the task or complying with the activity. Very little, if any, evidence of learning transfer was demonstrated.

A student was rated as having moderate responsiveness when they generated new ideas that were fairly accurate, but required continued shaping. With support, the student could draw upon prior experience for learning and generalization purposes. The student's performance improved throughout the duration of the activity and reflected an understanding of task concepts that extended beyond the examples provided. With support and encouragement the student recalled information across days. The student needed intermittent

support and practice to complete the task. Attention issues may have occurred, but did not substantially detract from performance. Some evidence of learning transfer may have been observed. A student was rated as having high responsiveness if, following initial support, the student generated multiple examples or ideas that were highly accurate and reflected an independent connection with their pre-existing knowledge or prior experience. The student readily interacted and demonstrated a high degree of learning retention across days. After the initial orientation to a task, the student required very little support to attend to and complete the tasks. Evidence of learning transfer was readily apparent.

Both teacher effort and student responsiveness were used to determine if a child had mastered a given activity. Mastery occurred when teaching effort was low or moderate, and student responsiveness was moderate or high. A book unit was determined to be mastered when at least 70% of the activities on all days received mastery for that activity, or at least 70% of the activities on the last day of the unit were mastered.

Computer Assisted Language Intervention (CALI)

The Computer Assisted Language Intervention Arm (CALI) arm consisted of seven computer assisted instructional modules that targeted language abilities that were similar to those that were addressed by the seven games present by the other computer intervention program described in the following section (Fast ForWord-Language). Although the language exercises presented during the

CALI condition were similar to Fast ForWord-Language, none of the speech stimuli in any of the CALI modules were modified acoustically. Like the FFW-L exercises, the CALI modules targeted discrimination and memory of nonspeech sounds, detection of individual phoneme changes, phoneme discrimination, identifying matched syllable pairs, discriminating between minimal pair words, recalling commands, and comprehending grammatical morphemes and complex sentences structures. A detailed description of these computer games can be found in appendix (4).

Similar to the FFW-L condition, each of the seven modules in the CALI arm were presented for 20 minute periods (a total of 1 hour and 40 minutes per day), five days per week for six weeks. Children started at the beginning of each CALI program. When a child attained 90% correct at a particular level for two days in a row, the level of the exercise was considered to be mastered, and the next level was presented. If a child reached mastery level on a game before the end of the six-week intervention session, he or she continued playing that game at the highest level until the six week intervention period ended.

Fast Forward Language (FFW-L)

Children assigned to the FFW-L condition played seven different computer games that targeted discrimination of tones (Circus Sequence), detection of individual phoneme changes (Old McDonald's Flying Farm), matching phonemes to a target (Phoneme Identification), identifying matched syllable pairs (Phonic Match), discriminating between minimal pair words (Phonic Words), recalling

commands (Block Commander), and comprehending grammatical morphemes and complex sentence structures (Language Comprehension Builder).

The speech and nonspeech stimuli in the FFW-L computer games were modified by an algorithm that prolonged segments and differentially amplified particular frequencies. The acoustic modifications were gradually decreased as children improved on each task. When children responded incorrectly, the correct answer was provided prior to the next stimulus. Correct responses were rewarded by points, jingles, and extra animations.

Five of the seven games were presented each day for 20 minute periods (a total of 1 hour and 40 minutes per day) until the child reached a criterion of 90% completion on any five games. Scientific Learning Corporation, the publisher of FFW-L, reported that children often completed the treatment in 30 intervention days, although the outcomes of treatment, as measured by formal language tests, could be predicted reliably after 20 days of treatment (Miller et al., 1999).

Academic Enrichment Condition

The Academic Enrichment Condition was designed as a nonintervention condition to which possible effects of the FFW-L, CALI, or ILI treatments could be compared. The activities in the AE condition were not specifically designed to improve specific language skills. The children in the Academic Enrichment group played academic computer games for 1 hour and 40 minutes per day, five days a week for six weeks. The computer games focused on mathematics, social

studies, and science. The games included: Magic School Bus Explores Dolphins and Whales (Scholastics, Inc., 2001), Magic School Bus Explores Flight (Scholastics, Inc., 2001), Coin Critters (Nordic Software, Inc., 1999), Zurk's Rainforest Adventure (Soliel Software, Inc., 1998), My Amazing World Explorer (Dorling Kindersley, 1998), Dinosaur 3D (Knowledge Adventure, Inc., 1999), and selected games from Arthur's 1st grade (TLC Education Properties LLC, 2001) and Arthur's 2nd grade (TLC Education Properties LLC, 2001).

Treatment Sequence, Reinforcement and Compliance

There was some flexibility and child choice associated with the interventions. For example, children could choose the *order* of the computer games for a given day for interventions that involved computer games; however, they had to follow a schedule of *which* specific games to play for that day. In particular, the FFW-L program has specific days that specific computer games must be played. We developed a similar schedule for the CALI and the AE games. The SLP administering the ILI condition could modify activities and the order of activities to maintain the child's interest.

It was rare for an SLP in the ILI condition to be absent or for technical problems to result in a missed computer sessions; however, these events did occur infrequently. When an SLP was ill or when a computer was not useable due to technical problems, the child would miss that day of treatment. Accordingly, each child participated in at least 30 consecutive work days unless they were absent or technology failures were present.

At the end of every day, children received a sticker if they were compliant. At the end of the week, the children who had five stickers could select a toy from a prize chest. The prizes were small items such as matchbox cars and small stuffed animals. Compliance was documented on a daily basis for all children in all treatment conditions.

Measurement of Treatment Effectiveness

The children were tested at 4 different points throughout the course of the study: before treatment, immediately after treatment (i.e., 6 weeks after pre-testing), 3 months after treatment and 6 months after treatment. Our primary outcome measure was the *Comprehensive Assessment of Spoken Language (CASL)* (Carrow-Wolfolk, 1995). Secondary measures included a battery of language, literacy and psychoacoustic measures that are discussed in the following sections.

General Procedures

Pre and Post-testing occurred during a full day of testing on a Saturday that included snacks, craft activities, and lunch. During the course of the day, each child received all of the language measures. There was no particular order for test administration. Once administered, each language measure was re-scored and checked for accuracy by three independent scorers.

Language Assessment

Every attempt was made to administer all language measures to each child in a quiet room. Some testing was carried out in a quiet area in the child's school while other children received some language tests in a quiet area in their home.

The *Comprehensive Assessment of Spoken Language (CASL)* is a norm-referenced, standardized test of expressive and receptive language. The *CASL* was selected for three primary reasons. First, it had strong psychometric properties, particularly with respect to reliability and validity. Second, it covered the age range under investigation, and third, it was a broad ranging language test that evaluated several areas of language. The CASL was administered by certified and licensed speech-language pathologists.

Five subtests were selected from the *CASL* because they covered a range of language areas (i.e., vocabulary, syntax, and pragmatics). The Antonym, Syntax Construction, Paragraph Comprehension, Nonliteral Language, and Pragmatic Judgment subtests of the *CASL* were administered to children between the ages of 7;0 and 9;11 (years; month). The Nonliteral Language subtest of the CASL was not designed for children under the age of seven years. Thus, for children between the ages of 6; 0 and 6; 11 years of age, the raw scores from the Antonym, Syntax Construction, Paragraph Comprehension, and Pragmatic Judgment subtests were used to compute the *CASL* Core Composite. For the children who were older than 6;11, the *CASL* Core Composite was calculated using the raw scores from the Antonyms, Syntax Construction,

Paragraph Comprehension, Nonliteral Language, and Pragmatic Judgment subtests.

A Systematic Analysis of Language Transcripts (SALT) (Miller & Chapman, 1996) was conducted. Mean Length of Utterance in words (MLU-W), percent of total words in mazes, and percent of appropriate responses to questions was assessed in order to appraise language productivity, language performance and pragmatics, respectively. Because morpheme omission characterizes many AAE features and has the potential to lower calculations, MLU in words rather than MLU in morphemes was measured within this sample of African American English (AAE) speakers (Craig, Washington, & Thompson-Porter, 1998).

Language Sampling and Reliability

The language samples analyzed for this study were spontaneous conversational samples that were 25 minutes in length. The sample elicitation remained constant across interviewers through the use of a conversational interview protocol for every child (Hadley, 1998). The language samples were collected individually as each child engaged in a conversational exchange with a certified and licensed speech-language pathologist or graduate students in a speech-language pathology program who were trained in the procedure. Topics included experiences with pets, family members and favorite things to do (see Appendix 5). The samples were entered in the SALT program as communication units (C-units) and transcription was performed using the SALT conventions

specified in the manual. Transcription was performed by trained research assistants who were students in communication sciences and disorders.

Each research assistant who transcribed the language samples was required to participate in transcription training and had to attain a minimum of 90% agreement with respect to segmentation and transcription of words and morphemes in a child language transcript. In addition, trained transcribers at each site independently transcribed and coded a random selection of ten percent of all language samples from the other 2 sites. Transcription reliability was assessed by having a second judge independently score the original transcriptions of 3 children from each group. Comments made by the independent judge were then reviewed by the original transcriber. Any disagreements were resolved through consensus between the two. If necessary, input from the study's Principal Investigators was obtained. Agreement in transcription between the independent judge and the original judge ranged from 90% to 100%.

Labeling and coding of AAE forms

A language summary or profile for each child was completed. The language profile provided a description of dialect feature types, frequency of occurrence, grammatical use and patterns of variation for each child. To create a dialect profile for participants in this study, utterances obtained from conversational language samples were analyzed for the presence of AAE patterns and the frequency of occurrence. The samples were examined and

coded for thirty morphosyntax patterns. This study focused on morphological inflections and syntactical features due to the difficulty these areas pose for children with SLI. The AAE literature in the area of morphosyntax is considerable, while very little descriptive data exist in the areas of semantics and pragmatics (Seymour, Bland-Stewart & Green, 1998). Children represented at the lower end of this age range are also immature motorically. Analysis of phonological processes may be complicated by phonological features that develop late in elementary school such as final cluster reduction.

The dialect features selected for examination were specified by Oetting and McDonald (2001) and Craig and Washington (1995). These features characterized African American dialect speakers in the South and Midwest regions. The combined dialectal patterns included: zero irregular past, over-regularization, omission of infinitive to, undifferentiated pronoun, zero *be*, aspectual *be*, subject-verb agreement with be forms, zero regular third present, zero irregular third present, subject-verb agreement with don't, zero regular past, preterite had, multiple negation, indefinite article, zero plural, zero possessive, zero of, demonstrative, ain't substitution, appositive pronoun case, resultant done, multiple markings, double copula/auxiliary/modal, existential it, use of fitna/sposta/bouta, regularized reflexive pronoun, stressed been, zero article, zero preposition, and zero modal/auxiliary.

Consistent with Seymour et al. (1988), a child was labeled as a speaker of African American dialect if three or more of the morphosyntactical forms appeared in the conversational sample. Secondly, the dialectal forms must have

been used according to grammatical guidelines of AAE as determined via contextual analysis.

CONTEXTUAL ANALYSIS

Contextual analysis was utilized to asses the grammaticality of dialect patterns. This analysis was achieved by evaluating the spontaneously produced language sample of each child for the presence and grammatical use of the dialect patterns listed in appendix A. The contextual analysis was performed for each of the thirty features pre-intervention, post intervention and six months post-intervention.

First, a dialect pattern was identified. Next, each pattern was evaluated within the context in which it was produced to ensure that usage was consistent with the rules of the dialect. Utterances containing a dialect pattern as well as the utterances immediately preceding and following it were examined to determine the meaning conveyed by the form used and to assess whether the appropriate environment for the use of the form existed. For example, a rule-governed occurrence of *stressed been* would include remote past meaning and would have to be followed by a past tense verb or a verb ending in *–ing*. Utterances containing dialect patterns that adhered to the rules of the dialect were noted, and the dialect pattern was coded as grammatically acceptable. Structures that resemble dialect features but did not follow the rules of the dialect were marked as ungrammatical. For example, consider the following child produced utterances:

1. You just got to go to Six Flags?
2. Man, I *been* [D:been1] went to Six Flags.
3. Have you been to The Millennium?
4. I thought you *been*[D:been0] go to Six Flags.

Only the first instance of *been* conveys both the distant past meaning of the feature and is also followed by the necessary verb form (past tense or –ing) to be considered grammatical according to the dialect. To indicate that the form is grammatically appropriate, the number "1" was placed inside the dialect code.

The second instance is not used as stressed *been*. Rather than expressing a remote past event, the second occurrence simply asks whether or not an action has occurred before. The third incidence communicates the remote past meaning put was not produced in the correct environment (i.e. followed by a past tense or –ing verb). Thus, it was not grammatically correct according to the rules of AAE and was marked as such by placing the number "0" inside the dialect code.

Each ungrammatical production was evaluated for systematic deviations from the rules of dialect use. Patterns of ungrammatical use were recorded by feature. Lastly, the number of different dialect patterns as well as the total number of dialect patterns was counted for each child and for the sample as a whole.

CODING RELIABILITY

To make certain that each AAE feature is coded accurately, thirteen randomly selected audio taped language samples (20% of the total) were reviewed by an independent, trained coder. Judgment regarding feature presence or non-presence was made on line by line bases. Disagreements between the coder and independent judge were resolved through consensus. A percentage of accuracy was calculated for each utterance and all percentages were totaled for a transcript average. This procedure was performed for both morphosyntactical and phonological coding.

STATISTICAL CONSIDERATION AND DATA ANALYSES

BASELINE COMPARISON

Preliminary analysis of variance (ANOVA) was conducted to determine whether significant differences on the CASL, K-BIT, Hollingshead Socioeconomic Scale, MorDDM or the grammatical feature count (GFC) exist between students in the four conditions (ILI, FFW-L, CALI, AE) prior to intervention. Significant differences between the measures were not found.

Chapter Four: Results

The primary purposes of this study were (1) to identify the type and frequency of African American English (AAE) patterns used by a group of children with specific language impairment (2) to investigate whether the type and frequency of African American English patterns used by children with specific language impairment changed over time as a result of language therapy, (3) to determine if the type of intervention that was provided differentially affected changes in the use of dialect patterns, and (4) to understand if changes in the type and frequency of African American English patterns influenced performance on a standardized language test. These questions were examined with four groups of children with specific language impairment who were speakers of African American English. Three of the four groups formed the experimental conditions (ILI, CALI, and FFW-L) and a fourth formed the control group (AE). Each group received language therapy over a six week period for one summer and was assessed for language prior to intervention, immediately post intervention and six months post intervention.

VARIATION IN DIALECT USE

The initial goal of the analysis was to evaluate the grammatical use of AAE within this group of children via contextual analysis. Contextual analysis of each dialect pattern was carried out prior to intervention, immediately post intervention, and at six months post intervention. Prior to intervention, all of the children in the study were found to produce nine or more of the thirty forms

investigated. A minimum of three out of thirty or four out of thirty patterns were produced by each child during immediate post-intervention and at six month post-intervention observations respectively (see Table 1). All of the children produced at least three of the 30 types of dialect patterns for each observation in time; however, some features were produced to a greater degree than others. See Table 2 for frequency means and Table 3 for the total frequency types and number of occurrences for the sample.

Table 1. Number of different grammatically correct dialect patterns produced by each child pre-intervention

	N	Minimum	Maximum	Mean	Std. Deviation
Total Features Pre-intervention	65	9.00	77.00	25.8769	14.40650
Total Features Post-intervention	63	3.00	68.00	22.3538	14.04728
Total Features 6 months post-intervention	64	4.00	90.00	25.1692	16.04931

Table 2. Number of occurrences for any one of the thirty dialect features produced over time

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-intervention	30	0	273	56.13	63.364
Post-intervention	30	0	230	48.43	55.105
6 months post-intervention	30	0	293	54.53	72.044

Table 3. Types and frequency of each dialect pattern over time for the entire sample of children

Feature Type	Pre-intervention	Post-intervention	6 month follow-up
Ain't	19	20	17
Appositive pronoun case	66	65	71
Aspectual be	77	34	51
Completive done	1	1	1
Demonstrative	8	11	1
Double copula/auxiliary/modal	0	0	0
Existential it	2	1	0
Fitna/Sposta/Bouta	3	2	9
Indefinite article	12	22	8
Multiple marking	2	6	4
Multiple negation	66	60	62
Preterite had	11	3	7
Regularized reflexive pronoun	2	5	7
SV agreement with be	105	67	99
SV agreement with don't	14	32	45
Stressed been	8	2	1
Undifferentiated pronoun	64	68	51
Zero article	102	84	70
Zero be	273	230	258
Zero -ing	29	20	18
Zero irregular past	159	104	160
Zero irregular third present	37	40	21
Zero modal/auxiliary	59	52	33
Zero of	26	13	17
Zero plural	93	70	84
Zero possessive	55	60	49
Zero preposition	37	26	26
Zero regular past	105	101	126
Zero regular third present	190	201	293
Zero to	59	53	47

Prior to, and immediately following intervention, the highest occurring feature was zero *be* with a mean frequency per child of 4.2 and 3.65 respectively; while the least occurring feature was double copula/auxiliary/modal, which was not produced by any of the children before, immediately after receiving language therapy or six months post-intervention. The most frequently produced feature six months post-intervention was zero regular third present. This pattern was observed to have a mean feature production of 4.57 per child. These results were similar to the frequency patterns of AAE seen previously in children with SLI. Oetting and McDonald (2001) found that children with SLI who also spoke AAE overwhelmingly produced zero *be* and zero regular third present as the first and second most frequent dialect patterns. Zero *be* and zero regular third present were observed 309 and 135 times respectively in a sample of 100 complete and intelligible utterances and significantly distinguished AAE speakers from speakers of Southern White English.

Although zero *be* and zero regular third present were the most frequently occurring, these features are thought to be secondary to such features as aspectual *be* and existential *it*. Aspectual *be*, existential *it,* as well as other patterns such as preterite *had*, stressed *been* and completive *done* are considered to be highly characteristic of African American English. With the exception of aspectual *be* and stressed *been*, whose appearance ranged between four and six percent of the sample across time periods, those features considered to be hallmarks of the dialect appeared minimally in the language samples collected from the children in this study. Existential *it*, preterite *had* and

completive *done* appeared in less than 1% of the utterances produced by all children across the three assessment points.

One explanation for this finding maybe the uncertainty that exists regarding which AAE dialect patterns are truly characteristic for young children. Valid developmental data that clearly shows growth and maturity of AAE patterns in typically developing children from the point of verbalization through childhood is not available. As a result, clinicians and researchers have no choice but to utilize static linguistic descriptions of AAE features.

Eight features had a mean grammatical occurrence that ranged between 1.18 and 4.2 per child across the four groups prior to intervention (aspectual be, zero plural, zero article, subject-verb-agreement with be, zero regular past, zero irregular past, zero regular third present, zero be). Those features were 4.57 to 16.21 percent of the sample total of AAE features that appeared in the pre-intervention language samples. A smaller set of features were observed to a mean occurrence per child of 1.01 to .846 (zero possessive, zero modal/auxiliary, zero to, undifferentiated pronoun case, multiple negation). The remainder of the AAE features (see Table 4.) occurred less than .569 times per child prior to intervention and comprised less than 2.20 percent of the total sample feature count.

Table 4. Mean of the total frequency occurrences across the sample for each dialect pattern pre-intervention

Feature	Mean of Frequency Occurrences
Double copula/auxiliary/modal	0
Completive done	.015
Existential it	.030
Multiple marking	.030
Regularized reflexive pronoun	.030
Fitna/Sposta/Bouta	.046
Demonstrative	.123
Stressed been	.123
Preterite had	.169
Indefinite article	.184
SV agreement with don't	.215
Ain't	.292
Zero of	.040
Zero -ing	.446
Zero irregular third present	.569
Zero preposition	.569

Analysis immediately post intervention yielded an overall decrease in total features produced grammatically. Total production of all features across samples decreased from 25.87 occurrences per child prior to intervention to 22.35 occurrences. There was also a decrease in the mean frequency of occurrences per child for the most frequently occurring dialect patterns. Mean values ranged between 1.3 and 3.6 (zero article, zero regular, past, zero irregular past, zero regular third present, zero be). The five dialect patterns with a mean frequency of 1.3 or greater were responsible for 5.78 to 15.83 percent of the overall sample

feature production. The eight features produced with a mean frequency less than 1.3 (zero modal auxiliary, zero to, multiple negation, zero possessive, appositive pronoun case, stressed been, undifferentiated pronoun case, zero plural) generated 4.82 to 3.58 percent of the total sample feature usage. The remaining seventeen patterns (see Table 5) accounted 2.75 percent or less of the frequency total for the sample.

Table 5. Mean of the total frequency occurrences across the sample for each dialect pattern post-intervention

Feature	Mean of Frequency Occurrences
Double copula/auxiliary/modal	0
Completive done	.015
Existential it	.015
Fitna/Sposta/Bouta	.031
SV agreement with don't	.031
Preterite had	.047
Regularized reflexive pronoun	.079
Multiple marking	.095
Demonstrative	.174
Zero of	.206
Ain't	.317
Zero -ing	.317
Indefinite article	.349
Zero preposition	.412
SV agreement with be	.507
Aspectual be	.539
Zero irregular third present	.634

The sum total six months following intervention was 25.16 feature occurrences per child. Six features (zero plural, stressed *been*, zero regular past, zero irregular past, zero *be*, zero regular third present) had a mean frequency of occurrence range of 1.31 to 4.57 per child and comprised 5.13 to 17.91 percent of the sample frequency total during the six month follow-up analysis. Five features (aspectual be, undifferentiated pronoun case, multiple negation, zero article, appositive pronoun case) yielded a smaller percent range (3.12-4.34%). Three percent or less of the total feature production was generated by the additional nineteen dialect patterns (see Table 6).

Table 6. Mean of total frequency occurrences across the sample for each dialect pattern 6 months post-intervention

Feature	Mean of Frequency Occurrences
Double copula/auxiliary/modal	0
Existential it	0
Completive done	.015
Demonstrative	.015
SV agreement with don't	.015
Multiple marking	.062
Preterite had	.109
Regularized reflexive pronoun	.109
Indefinite article	.125
Fitna/Sposta/Bouta	.140
Ain't	.265

Zero of	.265
Zero -ing	.281
Zero irregular third present	.328
Zero preposition	.406
Zero modal/auxiliary	.515
SV agreement with be	.703
Zero to	.734
Zero possessive	.765

Patterns similar to AAE features within the coding sample were also observed during contextual analysis. Many of these patterns involved identical structural components of the dialect feature; however, these morphological and syntactical patterns differed in that they did not adhere to the grammatical rules of the dialect. During the pre-intervention stage, sixty-three percent of children produced ungrammatical patterns. A minimum of 0 and a maximum of 15 ungrammatical features were produced by participants across groups, with a mean of 1.64 features per child. Fewer ungrammatical constructions were produced immediately following language therapy. The total number of ungrammatical productions per sample decreased from 107 prior to therapy to 58 immediately post-intervention. Sample frequencies ranged from 0 to 6 with a mean of .89. Less than half of children (44.6%) generated language samples with inaccuracies immediately after intervention. Sixth month follow-up analysis yielded scores for non-rule-governed features that ranged from 0 to10 with a mean of 1.58 for the sample. Sixty-two percent of the children produced ungrammatical forms. The pattern observed to be inaccurate most frequently for

each time period was omission of the *be* verb form. The ungrammatical omission of the *be* verb was responsible for 63%, 37% and 63% of the total ungrammatical frequencies for the sample at the three observation points (see Table 7).

Table 7. Number of ungrammatical feature frequencies for the entire sample across all features over time (pre-, post- and six months post intervention)

	N	Minimum	Maximum	Mean	Std. Deviation
Total Features Pre-intervention	65	.00	15.00	1.6462	2.50893
Total Features Post-intervention	65	.00	6.00	.8923	1.42657
Total Features 6 months post-intervention	65	.00	10.00	1.5846	2.04552

Ungrammatical production of AAE patterns were observed regardless of the point in time of the language assessment or experimental group. However, few dialect forms showed a consistent pattern of misuse. Only two dialect patterns, undifferentiated pronoun case and zero *be*, were observed to have systematic errors across participants. Study participants who did not adhere to AAE rules when differentiating between pronoun cases struggled with gender and number requirements as well. Children often used pronouns for male and female gender interchangeably. For instance, productions such as "*Her hit me*" which alternates one female pronoun for another female pronoun can be

expected by speakers of AAE. However, it is not grammatically acceptable to interchange a male pronoun for a female pronoun as in the following utterances:

1. *"My sister is a bad little girl.*
2. *My sister use his teeth to bite me".*

The sentences above show clearly that the referent is female; however, a male pronoun was used.

Secondly, singular pronouns were used in instances where a plural pronoun was required. For example, utterances such as "*Aaron and Austin, he twins*" might be produced where the singular pronoun *he* is used instead of *they*.

Errors with Zero *be* demonstrated an omission of the copula in environments that are not characteristic of AAE. The most common error involved the exclusion of the copula following the pronouns *that* and *I* which is not expected within the vernacular. Contracted forms such as *that's* and *I'm* are traditionally thought of as a single morpheme; however, this sample of children seem to consider the forms two independent morphemes and omitted the contracted form of *be* indiscriminately. For example, constructions such as "*He hot"* and *'That my book"* were often produced.

GRAMMATICAL FEATURE COUNT

Contextual analysis allowed for the identification of dialect production within the language of each child as well as the quantification of grammatical production of features. Quantifying the occurrence of dialect patterns also allowed for comparisons across participants and with other dialect ratios (Craig, Washington, Thompson-Porter, 1998; Oetting & McDonald, 2001). It was also

necessary to create a quantitative value that excluded linguistic productions that were similar to AAE forms but did not adhere to the rules of the dialect.

The sum of all grammatically correct dialect patterns produced by each child was divided by the total number of words in each language sample to provide a grammatical feature count (GFC). The GFC yielded a ratio of grammatical dialect patterns per word and, in essence, provided a percentage of dialect use. For example, a child who produced 38 total dialect patterns and a total of 660 words within a spontaneous language sample would have a GFC of .05. A GFC ratio of .05 means that 5 % of the words in the language sample were characterized by dialect features. The GFC for study participants prior to intervention ranged from .01 to .09 per child with a mean of .03. Post-intervention assessment and the six month follow-up both yielded ranges of .01 to .07 with means of .028 and .029 respectively (see Table 8).

The ratio changes did not reflect the sharp shift in dialect use seen in other empirical studies when children receive prolonged and explicit instruction in Mainstream English (Isaacs, 1996, Craig & Washington, 2004). However, it must be noted that the Mainstream English exposure received by the children in these studies were evaluated after a significantly longer period of time than the children in the current study, who received six weeks of intensive intervention. The previous studies investigated dialectal shift that was grade related rather than changes that were a function of intervention. In addition, the children in the previous studies did not present with language impairment, which can and does affect language use and change. As a result of the differences in experiences (intervention vs. academic exposure) and the language status (impaired vs.

nonimpaired) between the children in the current study and those previously mentioned, we make our comparison loosely.

Table 8. Means, standard deviation and ranges for the grammatically correct feature count (GFC) over time (pre-, post- and six months post-intervention) for the entire sample

	N	Range	Minimum	Maximum	Mean	Std. Deviation
GFC pre-intervention	65	.08	.01	.09	.0324	.01713
GFC post-intervention	65	.07	.00	.07	.0275	.01501
GFC 6 months post-intervention	65	.07	.00	.07	.0290	.01626

Three separate repeated measures ANCOVAs were computed with Group (ILI, FFW-L, CALI, and AE) as the between-subjects variable and Time (pre-test, immediate post-intervention, six months post-intervention) as the within-subjects variable. The dependent variables were the grammatical feature count (GFC), morphological dialect density measure (MorDDM), and the core composite score on the Comprehensive Assessment of Spoken Language (CASL). A preliminary ANOVA yielded significant group differences on pre-randomization scores on the Test of Language Development-primary (TOLD), the assessment tool used to assess language ability in the identification phase. Therefore, the statistical model included TOLD spoken-language quotients as a covariate. All statistical tests were set at an alpha level of .05. Probability values were adjusted by

applying the Geisser-Greenhouse conservative F test to control for potential violations of sphericity assumptions. The Eta squared coefficient was used as the metric to measure effect size for the analysis of variance procedures. The partial Eta squared value (η^2) is reported by SPSS.

DIALECT CHANGE ACROSS TIME AND INTERVENTION GROUP

A mixed ANCOVA with repeated measures investigated change in grammatical feature frequency over time as a function of language intervention. The Group and Time main effects and the Group x Time interaction were all insignificant. This lack of significance fails to support expectations that study participants would decrease dialect use in an effort to make rapid attempts to adapt to the morphological and syntactical structures presented during intervention. Although the estimated marginal means appear to reflect an interaction, any attempts to match form to function were too minimal to detect due to high variability and small sample size.

Dialect change was measured by means of dialect density. Analysis revealed that the Time main effect was not significant [$F(2, 59) = 1.05$, $p > .05$] for a grammatical feature count that contextually analyzed the rule-governed use of each dialect pattern. Analysis also revealed a non-significant relationship between GFC values and the interaction between time and treatment group [$F(6, 118) = .47$, $p > .05$]. The Group main effect was also not significant [$F(3, 61) = .549$, $p > .05$] showing that there was no effect of treatment. Additional measures of dialectal density for morphosyntactical features (MorDDM; Craig, Washington & Thompson-Potter, 1998) and an utterance based dialect density measure (u-

DDM; Oetting & McDonald, 2001) were also calculated and compared across time. Like the grammatical quantitative ratio (GFC), MorDDM showed no significant main effects for time [$F(2, 58) = .165$, $p > .05$] or for treatment [$F(3, 60) = .603$, $p > .615$]. The interactions for time and group were not significant as well [$F(6, 116) = .368$, $p > .05$].

Previous research that investigated nonmainstream dialect and language impairment in children who spoke AAE quantified dialect density by dividing the total frequency of occurrences for dialect patterns by the total number of complete and intelligible utterances (Oetting & McDonald, 2001). The GFC and the DDM statistic yield a measure of dialect density by word rather than by utterance. However, we thought it important to compare our population of children with SLI to one of the only other studies where this population (SLI-AAE) is investigated and a dialect density measure is calculated. Though the utterance based dialect density measure (u-DDM) was calculated differently and provides less control for utterance length than a word based measure, the results of analyses were the same. Repeated measures analysis for time showed no significant relationship between the frequency of grammatical feature production, as measured by the u-DDM and time [$F(2, 59) = 1.10$, $p > .05$] or by treatment [$F(3, 60) = .695$, $p > .05$]. Likewise, there was no significant interaction between time and group [$F(6, 118) = .403$, $p > .05$].

Failure to find significant relationships for any of the measures of dialect density over time indicate that the frequency of dialect production for the features investigated does not change over time as a function of language intervention. Significant differences between groups were not evident immediately after

treatment or six months post-intervention. The competence-based model of intervention, individual language intervention (ILI), did produce the theorized decrease in dialect use due to its emphasis on grammatical rule knowledge and implicit instruction solely in ME. Tables 9 and 10 show compared means, ranges and standard deviations for the DDM and u-DDM density measures.

Table 9. Means, standard deviation and ranges for the dialect density measure (DDM) over time (pre-, post- and six months post-intervention) for the entire sample

	N	Range	Minimum	Maximum	Mean	Std. Deviation
DDM pre-intervention	65	.10	.01	.11	.0344	.01868
DDM post-intervention	64	.09	.00	.09	.0377	.02171
DDM 6 months post-intervention	65	.08	.00	.08	.0308	.01729

Table 10. Means, standard deviation and ranges for the utterance based dialect density measure (u-DDM) over time (pre-, post- and six months post-intervention) for the entire sample

	N	Range	Minimum	Maximum	Mean	Std. Deviation
u-DDM pre-intervention	65	.34	.05	.39	.1599	.08942
u-DDM post-intervention	65	.38	.00	.38	.1324	.07799
u-DDM 6 months post-intervention	65	.43	.00	.43	.1574	.09366

DIALECT CHANGE AND STANDARDIZED TEST PERFORMANCE

The final analysis investigated changes in standardized test performance as a function of changes in the dialect features and frequency of use. The Comprehensive Assessment of Spoken Language (CASL) was used to assess language ability. No significant effects for dialect frequency as measure by GFC, MorDDM and u-DDM were found immediately following intervention or six months following intervention. Performance on the CASL did not evidence differences related to dialect use. Time was observed to be significantly correlated with CASL performance [$F(2, 57) = 35.25$, $p < 001$, $\eta^2 = .553$] (see Figure 1). However, the significance seen was not a time by treatment interaction [$F(6, 114) = .673$, $p > .05$]. Unfortunately, significance of time for performance on the CASL failed to emerge when the Test of Language Development (TOLD) was added to the statistical model as a covariate [$F(2, 56) = 2.22$, $p > .05$] (see Figure

2). The time by treatment interaction continued to be non-significant [F(6, 112) = .673, p > .05].

Figure 1. Performance by treatment group for each period in time on the CASL standardize test *without* TOLD covariate

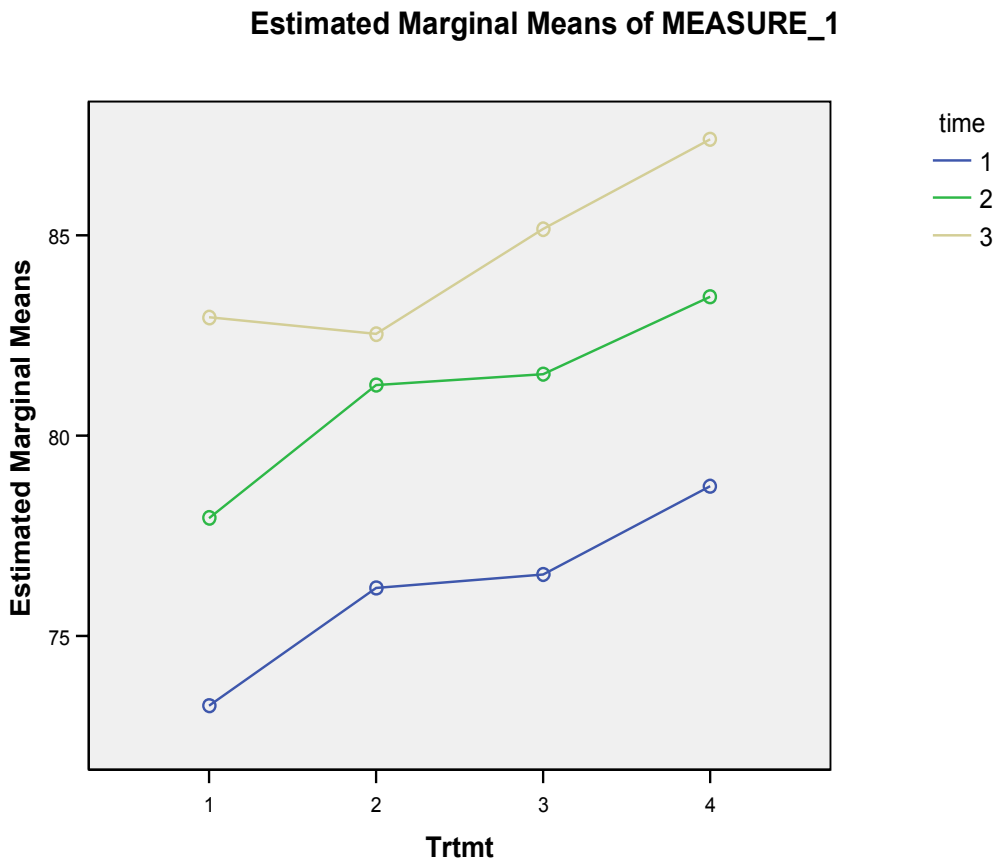
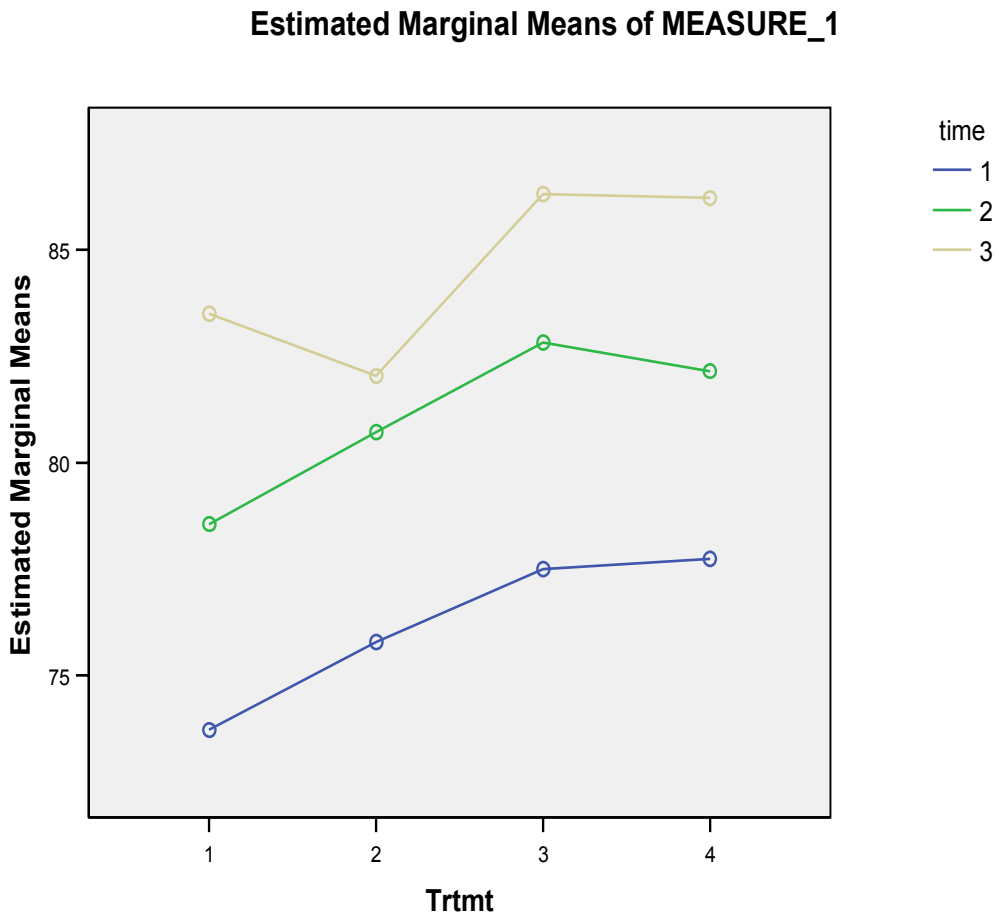


Figure 2. Performance by treatment group for each period in time on the CASL standardize test *with* TOLD covariate



These results indicate that the variability in dialect feature use is not related to performance on the CASL assessment by participants. However, the results might suggest maturation as a possible explanation for growth on standardized assessment measures that is not accounted for by intervention or decreased dialect use.

In summary, the study participants were speakers of African American English and demonstrated a varied repertoire of dialect feature types. Frequency

of AAE use within this sample approximated recent studies that investigated nonmainstream dialects and language impairment. Statistical analyses of language change as a function of intervention failed to produce significant results. Differences in dialectal density measures of frequency (GFC, DDM, u-DDM) were not significantly different for any of the four experimental groups (ILI, FFW-I, CALI, AE) or over time (pre, post and six months post-intervention). Estimated marginal means demonstrated intriguing patterns that appear to be different but actual significance may have been stifled by high variability and a lack of power.

Chapter Five: Discussion

The children with SLI in this study were speakers of AAE. Each child produced a minimum of nine morphosyntactical dialect patterns, which surpassed the three feature minimum adapted from Seymour et al (1998). Feature production was judged to be grammatical according to the contextual analysis which examined each dialect pattern for appropriate construction and meaning in the context of its production. Each language transcript was coded for thirty features, each of which appeared at least once within the population sample with the exception of double copula/auxiliary/modal. Study participants produced both grammatical and ungrammatical dialect patterns which indicated that although AAE speakers with SLI can adhere to some dialect rules, adjustment to those rules can be expected as a result of language impairment.

The zero *be* dialect pattern was the most frequently occurring grammatical feature for all of the children regardless of group. The second most frequent grammatically-correct feature was zero regular third present. The frequency of the patterns are equivalent to previous investigations involving speakers of AAE who are also language impaired (Oetting & McDonald, 2001). Also in keeping with the 2001 study, the most highly characteristic patterns of dialect such as stressed *been*, preterite *had* and existential *it* were produced in small number. However, it should be noted that developmental studies that clearly define the use of these features in the language of children with language impairment are not available. It may be argued then that the hallmark features, although primary in adolescent and adult speech, are not characteristic in the language samples of children who are typically developing or language impaired.

It may also be argued that a refined group of features is warranted for the investigation of dialect use in children. Ten of the features examined within this sample generated less than 1% of total grammatical feature production. Although we acknowledge that language sampling only accounts for one moment in time, the same was found to be true across time (pre, post, 6 months post). The infrequent observation of such features rendered them uninformative for this sample of children. It is also time consuming to evaluate dialect patterns that may not be expected to appear in the population of interest.

The most frequently produced grammatical features (zero *be*, zero regular third present) were also the forms that were most often produced in error. Rules of the dialect were violated most often regarding these forms; however, systematic adjustments were also seen with undifferentiated pronoun case. The most common error observed with the zero *be* construction was the omission of the copula when it follows the pronouns *I* or *that*. This ungrammatical pattern provides insight into how children with SLI, at least within this sample, view contracted forms. The exclusion of the contracted verb *be* is not expected according to the rules of AAE. The previously mentioned contractions along with *it's* are always observed with the contract *be* form attached. The inclusion of the verb form is considered obligatory and the once separate morphemes are viewed as one morpheme. If the children in this study viewed the morphemes as separate rather than a single unit, it would explain why so many of the children applied the same rules to pronouns *that* and *I* as they did to constructions that contained pronouns like *he* and *they*.

The impact of language impairment on AAE as well as the mainstream variety would explain the failure to consistently use the construction in either dialect. It is expected that the presence of language impairment would cause deviation from the norms of what is expected in both Mainstream and African American English.

Another possible effect of language impairment within this group of dialectal speakers is the large amount of errors regarding the marking of the regular third present tense. It is quite possible that the numerous departures from the AAE production of zero regular third present are related to difficulties witnessed with tense marking in children with SLI who speak Mainstream English (ME) (Rice & Wexler, 1993; Rice, et al, 2000; Leonard, et al, 2003) as well as in other languages (Bedore & Leonard, 2001; Paradis & Crago, 2003). AAE speakers who variably include the regular third person present marking do so because the marking is not required to express the intended meaning being conveyed. AAE speakers do not however have difficulty understanding or using the regular third present tense. The opposite is believed to be true for Mainstream English speakers with SLI. Typically developing dialect speakers can distinguish between finite and nonfinite verbs and continue to utilize the flexibility associated with the inclusion of this form long after demonstrating a mastery of tense marking.

Children with SLI who have not mastered the marking of verb tense would be expected to produce many errors in attempts to achieve the grammatically acceptable form. Instead of marking the regular third present verb on the surface as is required in ME or omitting the marking which is common in AAE, study

participants often chose to use an irregular verb or a past tense forms. For, example, a participant might produce the following utterance, "*It spinded around"* in response to the question *"What does the spinning top do when you push the button?"* Contextual analysis of the environment surrounding the afore mentioned utterance tell us that the tense of the discussion is present tense and that the AAE speaker has the option of including the regular third present marking or omitting it. However, the rules of AAE do not permit uses of other tenses such as the regular past tense *–ed* that is over-regularized by this child. The child's intent to use the regular third present was verified via contextual analysis. This verification rules out the appropriateness of the alternate forms used by the children and supports the idea that verb tense is problematic for these children.

Variation seen in features such as undifferentiated pronoun case also points to the language impairment of this group. The interchangeable use of pronouns is acceptable with reference to the same gender in the language of AAE speakers; however, it is not standard to alternately use pronouns of different gender and/or number. In order to convey the intended message, any alteration in pronoun use would not replace female forms with male or singular structures with plural. However, this was the case for many ungrammatical pronoun constructions. These results were indicative of difficulty with pronoun use and not the expected variability of a diverse linguistic system.

Other features such as omission of articles, the infinitive to, and prepositions raise questions as to whether or not the rules for including features as dialect patterns are stringent enough to avoid the classification of features that may be the result of an immature language system. Although some mature

speech contains omitted prepositions, and indefinite article *a* is often substituted for *an,* it is uncommon for children who are developing language normally to consistently exclude all articles. Further research is needed to determine the range of use for potentially developmental dialect patterns.

Another major finding of this investigation showed that dialect production did not change as a function of intervention. Any attempts by children to match their language to the language of instruction were not significant enough for detection within this sample. Dialectal density measures as well as measures of feature type did not show a shift in dialect use as a result of overt exposure to the grammatical rules of Mainstream English. It would be premature to conclude that these or other dialect features are resistant to language intervention. However, it could be argued that intervention which is designed to target the specific ungrammatical constructions uncovered via contextual would more effective and result in a significant change.

It was expected that dialect patterns that were not unique to AAE and that shared the same function in both dialects (i.e. zero copula, zero plural, zero possessive) would show a greater decrease than patterns that were unique to AAE. This expectation was based on the absence of dialect sensitive instruction during language therapy. Yet no significant difference between feature types emerged during the contextual analysis of each feature. Group means for both type and frequency showed no effect of intervention type and did not yield any long-term alterations in use.

The lack of effects for intervention may be due to the short duration of the therapy program as well as the absence of language intervention at the

program's completion. Each child participated in the program for a maximum of six weeks and experienced a hiatus of 3- 5 weeks after the program before the start of the academic school year when they might encounter consistent exposure to Mainstream English. It is rare for substantial gains to be made and maintained under the abbreviated circumstances.

The frequency of different types of grammatical dialect patterns dropped slightly after language intervention and increased to pre-intervention levels of production at the end of the six month period. However, these changes were not statistically reliable. This resurgence of feature use may be explained by the truncated therapy program described earlier. Additionally it may also be accounted for by community experience. It can be expected that the dialect use of study participants is reinforced by their speech community. The very environment that facilitated the initial emergence of dialect in these AAE speakers could continue to encourage its use and place high value on its production. Children who are language impaired might lack the linguistic flexibility to successfully switch between both varieties and could be expected to rely on the language system most closely associated with their identity and cultural affiliation.

Lastly, performance on a standardized test of language ability showed improvement but did not prove to be significant for any measure of dialectal density, feature type, intervention group or period in time. One logical account for the change in test score is the natural course of language maturation supplemented by an entire semester (from August to January) of academic

instruction and enrichment[1]. This development could explain improved standardized test scores that are not the result of dialectal shifting or intervention group assignment. However, readers should remember that the dependent variables were standard scores. Standard scores control for general maturation because they compare each child's functioning at a particular point in time to the functioning of a large corpus of same-age children.

IMPLICATIONS AND FURTHER DIRECTION

Theoretically, the results of this study do little to further the understanding of dialect change in AAE speakers as a function of intervention. Theories such as models pragmatic language acquisition (Craig, 1995; Ninio & Snow, 1999) suggest that children who use nonmainstream language quickly attempt to match form to function when exposed to Mainstream English. An effort to balance the mismatch that occurs when dialectal speakers are instructed in Mainstream English was not found within this sample, thus not providing support for pragmatic models of language acquisition (Craig, 1995; Ninio & Snow, 1999) as had hoped.

Also, the results did not support any particular theory of language impairment. Performance based theories of auditory processing would have predicted a decrease in dialect feature use in dialect speakers with SLI who received language intervention with acoustically modified speech (Fast ForWord Language: FFW-L). Auditory temporal processing and the perception of morphological features that are not highly salient are believed to improve with

[1] The therapy program and post-intervention tested concluded in the month of July. Six month follow-up testing was carried out in January of the following year.

acoustically modified speech. Therefore, the use of dialect features that are characterized by low salient forms such as morphological inflection (i.e., possessive *s*: "*They over my grandma house."*) would be expected to decrease to a greater extent than other dialect patterns. Ungrammatical production of these low salient forms is consistent with performance-based models of language impairment and support the hypothesis that low salient forms are difficult for children with SLI. Yet, children who received language intervention that targeted the improvement of information processing (FFW-L) did not demonstrate dialect feature production significantly different from their counterparts in the other experimental groups (ILI, CALI, and AE). Dialect patterns such as zero *be* remained largely in error and did not improve with training to increase auditory temporal processing.

Similarly, these results did not relate specifically to competence-based theories of language impairment. It was predicted that children who received one-on-one individual language intervention (ILI) would show a larger decrease in AAE features over time. Members of the ILI treatment group received language therapy in a naturally occurring context (literacy) that focused on increasing grammatical and morphological rule knowledge. Rules of language use were taught without allowances for alternate forms such as those produced by speakers of AAE. As a result, dialect patterns that are linguistically similar to the disordered forms that were targeted (i.e. subject-verb-agreement: "We was too busy.") were expected to evidence greater change, while dialect features that are unique to AAE and that serve a function unlike features in Mainstream (i.e., existential *it*: "It be a lot of junk in their yard.") were expected to decrease the

least as a result of not being targeted directly targeted in ILI. While grammatical constructions such as subject-verb-agreement are characteristic of competence-based approaches, intervention that emphasized the mastery of rule knowledge (ILI) did not yield significant changes in any of the dialect patterns. Children in all experimental groups performed similarly and dialect patterns such as subject-verb-agreement as well as patterns like existential *it* showed no significant decrease in frequency of occurrence.

In the case of both theories, there was no distinction between the changes seen in feature types to support either language hypothesis. Although production errors are consistent with both performance and competence-based model of language impairment, there were no changes in the use of dialect features related to bound morphemes with low salience, features that are similar to ME forms, or dialect patterns that are solely characteristic of AAE. Likewise, intervention group assignment did not play a role in dialect use.

Practically, the results of this study do indicate that contextual analysis of dialect features is a useful means for revealing systematic variation of dialect use. Observing the errors of dialect speakers adds another informative piece of information to the assessment process when determining dialect status and when separating dialect use from language impairment. Evaluation of the context of dialect feature use in addition to feature identification, reveal numerous instances of ungrammatical productions. The exposure of ungrammatical constructions may provide confidence to clinicians whose goal it is to determine true dialect use from a language disorder. The discovery of linguistic patterns that violate rules of the dialect may be an indication of difficulty with certain

components of language and provides information regarding what a child knows about language rather than simply providing a frequency count of features. In this way it may be clinically possible to utilize contextual analysis to diagnose SLI in AAE speakers. Examining variations in the use of dialect patterns will often reveal important area of language difficulty. It also allows for the assessment of language in the speakers native dialect, which is perhaps the most culturally appropriate means to do so. Once specific patterns in the dialect have been identified, appropriate intervention can be developed.

Contextual analysis also provides a valid means to characterize a child as a dialect speaker. Location of linguistic forms within a language sample and providing a frequency count of those features is not sufficient. The criteria for determining dialect status must take into account that the speaker knows the rules of the dialect being investigated and whether or not those rules are being adhered to. Calculating a density measure alone will not provide this necessary information. Although gauging frequency of occurrence is helpful in characterizing speakers along the continuum of AAE use, it does not inform us about what dialect patterns are being used or whether or not those patterns are undergoing changes in the presence of language impairment. Evaluating feature use within the context of production is the best way to be certain that speakers possess the necessary linguistic competence to use language sufficiently.

SUMMARY

Children with SLI who are also speakers of African American English provide a wonderful opportunity to investigate the relationship between

intervention and patterns of dialect use as well as dialect change. Although this sample of AAE speaker with SLI did not demonstrate changes in feature type or frequency of use as a function of intervention, further investigation is needed to explore this issue with interventions that are specifically designed to impact contrastive and noncontrastive forms.

It may also be helpful to compare the type and frequency of AAE use in children with SLI to AAE speakers who are developing language normally. This control provides the appropriate circumstances to examine the true differences in dialect use in the presence of disorder. It also provides the appropriate control group for which results can be convincingly applied.

There are many studies that address the assessment and intervention issues related to SLI; however, those results cannot be readily applied to children who speak dialects such as African American English. This lack of empirical data complicates matters for speech and language professionals faced with the responsibility of identifying possible language impairment in language of children who are dialect speakers. An unclear boundary between nonmainstream varieties such as AAE and the disordered language of Mainstream English poses the potential of misdiagnosing language abilities. To resolve this conflict, it is important that researchers and clinicians look for ways to discern what children know about the rules of the language they use. Assessment of dialect speakers must move from simply identifying and counting features, to evaluating dialect patterns contextually to understand the linguistic competence of the speaker. Contextual analysis is an effective way to determine both the dialect and disorder status of a child who demonstrates language that is linguistically diverse.

When questions regarding dialect and disorder have been answered, it is still important to identify the changes to be expected if intervention is warranted. Further research to determine the changes in the dialect patterns and the frequency of dialect use is vital to implementing best practices and providing effective and appropriate intervention. Information regarding evidence-based practices should be readily available for all children regardless of experiential language histories.

Appendices

APPENDIX A. AAE feature types and examples of feature use (based on *Oetting and McDonald, 2001; Craig & Washington, 2004; 2006*)

Feature	Example
Ain't	He ain't mad
Appositive pronoun case	I ate but the other kids they didn't
Aspectual *be*	It be too early in the morning.
Completive done	He done lost his mind
Demonstrative	She broke them bottles.
Double copula/auxiliary/modal	My momma might would say yes if I'm good
Existential *it*	It be a lot of people at her house.
Fintna/Sposta/Bouta	We fitna go. I'm spousta run fast. I'm bouta go.
Indefinite article	It's a apple.
multiple marking	That hurted me
Multiple negation	We don't need no help.
Omission of infinitive to	My dad come pick me up.
Preterite Had	She had hit him first.
Regularized reflexive pronoun	He did it to hisself.
SV agreement with be	We was too busy.
SV agreement with don't	He don't care.
Stressed been	He been working at Target.
Undifferentiated pronoun	Me and him are cousins.
Zero article	We baked cake.
Zero be	They too big.
Zero ing	It go be a fun place.

Zero irregular past	You mean you haven't ate.
Zero irregular third present	He do it all the time.
Zero modal/auxiliary	She might been in the house.
Zero of	I can do all the cooking now.
Zero plural	I wrote they name.
Zero possessive	I go with my cousin and my cousin brother.
Zero preposition	Look how many names you have.
Zero regular past	I miss one.
Zero regular third present	I got one sister that live with me.

APPENDIX B. AAE feature types and explanation of use (based on *Oetting and McDonald, 2001; Green 2002; Craig & Washington, 2004; 2006)*

Feature Description
Ain't Instances were *ain't* is used as a negative auxiliary contraction in place of *isn't, aren't, don't* and *haven't* **Appositive pronoun case** Instances where a noun and a pronoun or two pronouns are produced to signify the same referent **Aspectual be** Instances where the *be* verb was produced to signify a habitual state; an event or occurrence in the remote past that is distributed over time; should be followed by past tense verbs or verbs ending in *–ing* **Completive done** Instances where *done* is used to express a recently completed event or action **Demonstrative** Instances where objective pronouns are produced instead of the obligatory ME demonstrative pronoun **Double copula/auxiliary/modal** Instances where tow copula or auxiliary forms of the *be* verb are produced **Existential it** Instances where *it* is used to indicate the existence of a referent; existential markers must be followed by a verb form such as *be*, *have* or *got*

Fintna/Sposta/Bouta

Instances where abbreviated forms of *fixing to, suppose to* and *about to* are produced to express forthcoming events; forms precede nonfinite *be* forms, contracted *be* forms or the omitted *be* form

Indefinite article

Instances where the article "*a"* is produced in cases where the following noun begins with a vowel

Multiple marking

Instances where multiple agreement markers are used to mark number or verb tense; hypercorrection also occurs

Multiple negation

Instances where two or more negative markers are used together to create a single negative expression

Omission of infinitive to

Infinitive to is variably omitted

Preterite Had

Instances where *had* plus a past tense verb form is produced to express events or actions in the simple past

Regularized reflexive pronoun

MAE reflexive pronouns *himself* and *themselves* are replace with *hisself, theyself,* and t*heirselves*

Stressed been

A verbal marker used to refer to action that occurred in the distant, remote past; followed by past tense verbs or verbs ending in *–ing*

SV agreement with be

Instances where the person and number of the *be* verb form does not agree with its subject

SV agreement with don't

Instances where the person and number of the *don't* verb does not agree with the subject

Zero irregular third present

Instances where the nonfinite form of the verbs *say, have* and *do* are produced instead of the irregular third person

Zero irregular past

Occurs in instances where an irregular verb was not marked for past tense or a different past tense form was used instead of the MAE form

Zero of

Omission or variable inclusion of the preposition *of*

Zero regular third present

Instances where the obligatory MAE regular third-person marking on the verb was omitted

Zero regular past

Instances were the obligatory MAE simple past marking is omitted and the nonfinite form of the verb is produced

Zero plural

Instances where the obligatory MAE plural inflection is omitted

Zero possessive

Instances where the obligatory MAE possessive inflection is omitted and not

required to express ownership

Undifferentiated pronoun

Pronoun cases are used interchangeably with reference to the same gender

Zero article

Articles are omitted or variably included

Zero be

Copula and auxiliary forms of the verb *to be* are omitted with the exception of past tense constructions or those with first person or third person singular pronouns

Zero –ing

Present progressive –ing is variably included or is omitted

Zero preposition

Omission or variable inclusion of prepositions

Zero modal/auxiliary

Modal auxiliaries *will, do, can* and *have* are omitted or variably included

APPENDIX C. Description of Individual Language Intervention (ILI) and difficulty levels

ILI Treatment Targets

NARRATION	SYNTAX A MorphoSyntax	SYNTAX B Clause Structure	SEMANTICS/LEXICON (these levels are additive)	PHONOLOGICAL AWARENESS
LEVEL 1 Descriptive sequence (Setting) Abbreviated episode (IE + A; IE+ C; A + C) Initiating Event + Attempt Or Initiating Event + Consequence Or Attempt + Consequence	LEVEL 1 Copula be (sing to pl) Aux be (sing to pl.) *assuming: plural present progressive	LEVEL 1 Coordinating (and) Simple (same subject) Infinitive complements He likes to…He wants to….	LEVEL 1 Five new words new words with multimodality support concrete pictures semantic maps categorization tasks may do a level two type activity on the third day	LEVEL 1 Rhyming Sound matching (this word starts with /b/, what other words start with /b/?)

ILI Treatment Targets (continued)

NARRATION	SYNTAX A Morphosyntax	SYNTAX B Clause Structure	SEMANTICS/LEXICON (these levels are additive)	PHONOLOGICAL AWARENESS
LEVEL 2 A: Basic episode (initiating event, attempt, consequence) B: Add elements toward a complete episode + reaction + plan + internal response	LEVEL 2 Aux inversion Yes/no Past tense modals (should, could, would, might)	LEVEL 2 Coordinating: but, or, so Subordinating conjunctions (because, if, when)	LEVEL 2 8 new words Synonyms/anonyms Games Classification Associations Creating sentences	LEVEL 2 Initial/Final sound identification (Word chains) Blending/Segmenting words
LEVEL 3 Multiple episode Complex episode	LEVEL 3 Wh-questions (When, Which, Why + modal; How) Past tense modal inversions (Could I go now?)	LEVEL 3 Relative clauses Objective Subjective	LEVEL 3 12 New Words Definitions New words presented via verbal primarily Abstractions Relate vocab to other books	LEVEL 3 Blending/segmenting nonwords Making words – crossword puzzle-like word trees

APPENDIX D. Description of Computer-Assisted Language Intervention (CALI)

Earobics Modules

The publishers of Earobics state that these computerized games systematically teach phonological awareness, auditory processing and introductory phonics as well as the language processing skills that are critical for extracting meaning from spoken language and written text. In addition, they assert that this software also develops general cognitive skills that support learning, such as attention and memory.

Specific Modules:

1. Karloon's Balloons, 38 levels

Students save the clown's balloons by remembering the order of sounds they hear. The balloons don't pop if the student correctly recalls a series of one to four sound effects, words, digits or speech sounds presented against three levels of background circus crowd noise.

Primary skills: auditory attention, auditory short-term memory, sequential memory, auditory performance with competing signals.

2. C.C. Coal Car, 74 levels

Students load the C.C. Coal Car with coal by identifying long vowels, short vowels and consonant sounds. They identify sounds heard in isolation, in the context of a word and by identifying the position of a sound within a word.

Primary skills: phoneme discrimination and identification, phonological sequencing, sound-symbol correspondence.

3. Paint by Penguin, 68 levels

Students select a sponge and paint with Monsieur Pierre Penguin by counting, sequencing and manipulating sounds. They learn to count and identify the sequence of speech sounds in a series of sounds and words, then to create new words by deleting, adding, substituting and rearranging sounds.

Primary skills: auditory short-term memory, sequential memory, temporal resolution, temporal ordering, pattern recognition, phoneme sequencing, phonological segmentation, phonological manipulation.

4. Hippo Hoops, 155 levels

Students shoot hoops and score banana points with Hakeem Hippo by discriminating between different sounds in words. Students learn to recognize vowel and consonant sounds and to identify positions of speech sounds within words. Primary skills: auditory vigilance, auditory and phoneme discrimination, phoneme identification, phoneme sequencing.

5. Duck Luck, 142 levels

Students visit Lyle Kyle Crocodile at the Duck Luck arcade to build rhyming skills, learn common sound and spelling patterns, and practice blending and segmenting onsets and rimes.

Primary skills: auditory sequential memory, auditory short-term memory, phoneme identification, rhyming, auditory and phoneme discrimination, phonological blending, segmentation, manipulation, word closure.

Laureate Microcomputer Language Assessment And Development System (Micro-LADS) Module

This software uses illustrations, realistic graphics and simple animations to train the comprehension of syntactic constructs, strengthen vocabulary comprehension, and improve expressive language abilities.

Activity Targets:

Plurals and Noun-Verb Agreement

Verb Forms

Prepositions

Pronouns

Negatives

Wh-Questions, Passive, and Deictic Expressions

Laureate Following Directions: One and Two-Level Commands Modules

This program seeks to improve auditory comprehension and reinforce basic concepts by training children to understand and follow one and two-level commands. These commands are trained using spatial relations and directional terms in three types of commands: one step simple directions, sequential directions, and two step directions. Colorful graphics and animated characters are used to explain concepts and maintain interest and motivation.

Activity Targets:

Above/Below

In Front Of/In Back Of/Next To

In Front Of/Behind/Beside

In Front Of/Behind/Between

Upper/Lower/Left/Right

Through/Under

Ordinal (1st, 2nd, 3rd)

Ordinal with Behind/Beside/

APPENDIX E. Language Sampling procedure

Language Sample Protocol Revised

Important things to remember:

1. Give the child plenty of time to talk. When the child stops talking, count to 10 while looking at the child expectantly before you move on. This will prompt children to say more. Don't be afraid of silence on the tape. We'd much rather hear silence than to transcribe lots of examiner utterances.
2. The more you show that you are interested and excited about what children are telling you, the more children will be inclined to fully participate and talk.
3. Try not to interrupt the child.
4. Use "tell me" statements instead of questions.
5. Model a story at the beginning of each topic change to facilitate the child's answers. Ex: "I have a sister and she's 22. When we were little we would build forts in the living room all the time, and my mom would get upset because we moved around all the furniture...
6. The key is to keep the child talking as much as possible for 30 minutes.

Protocol Questions:

Tell me your name.
What's your phone number?
What's your address?

Birthday
Tell me when your birthday is.

If birthday was recent-
Tell me everything you did for your birthday.

If child says "Chuckie Cheese" or "Peter Piper Pizza" etc-
Wait expectantly, if the child doesn't say anything for 10 seconds say,
Ahhh! I've never been to _____ tell me about all about the things you can do there.

Tell me about the presents you got for your birthday

Family: Model a short story about something that happened to you and a family member
Then say, “Tell me about your family.
Tell about things you do with your mom/dad/brother/sister.

Pets: Model a short story about something you did with one of your pets.
Then say, “Tell me about your pets.”
Tell me how you take care of your pets.
If you could have any pet you wanted tell me what it would be.

Activities: Model a short story here what you do in your free time or about a sport you play.
Then say, “Tell me about the games you like to play at home.”
I’ve never played that game before. Tell me about the rules.
What do you have to do to win?
Tell me about games you like to play with your sister/brother.

Are there any video games you like to play?
What do you have to do to win at (name one of the games)?
What are the rules? What’s the first thing you do, second thing, etc.?

Tell me about the sports you like to play
If child plays a sport- Ahh! I’ve never done _____. Tell me all about the way you play that.
Other questions:
Tell me about your team
Tell me about your friends and the things you do together

Movies/TV
Have you seen any good movies lately?
I haven’t seen that movie. Tell me about it.
Tell me about your favorite movie.
Tell me more about that person.
Tell me about your favorite TV show
Tell me about the things that happen in that show

School: Model a story about your favorite class or subject, etc.
Tell me about your teacher.
Tell me about your friends in your class.
Tell me your favorite thing about school
Tell me about the things you do in Ms. _____ class.

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VITA

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