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The clinical utility of MLU and IPSyn for AAE-speaking children

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THE CLINICAL UTILITY OF MLU AND IPSYN FOR AAE-SPEAKING CHILDREN

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ABSTRACT

The purpose of this study was to examine the clinical utility of two assessment measures for one group of nonstandard English dialect speakers, that of African-American English- (AAE) speaking children. The measures were mean length of utterance (MLU) and Index of Productive Syntax (IPSyn). The clinical utility of these measures was examined by comparing MLU and IPSyn values of three different groups of AAE speakers to determine if these measures are influenced by a child's socio-economic status, dialect status, and/or clinical language status. An item analysis was also completed for IPSyn to determine if the items on this tool are appropriate language targets within AAE.

Fifteen AAE-speaking children participated. They ranged in age from 66 to 79 months. Five were typically developing and solicited from middle-income families, five were typically developing and solicited from low-income families, and five were classified as specifically language impaired and solicited from caseloads of speech language clinicians. The latter group of children was drawn from both middle-income and low-income families.

The findings indicated that the children's MLU and IPSyn scores did not significantly differ as a function of their SES levels or dialect status. Unfortunately, the children's MLU and IPSyn scores also did not differ as a function of their clinical language status. This finding suggests that these two tools, while unaffected by a child's SES and use of a nonstandard dialect, are not sensitive to childhood language impairment when children reach the age of six years. Results from the item analysis, however, showed that 83% of the items on IPSyn received a score of 1 or 2 by at least one child in each group, and only 1 item (i.e. use of tag questions) earned a score of zero by all participants in the study. This finding indicates that items on the

IPSyn are appropriate targets for speakers of AAE and suggests that this tool may be useful for younger AAE speakers.

CHAPTER 1: INTRODUCTION

One of the most critical problems facing speech and language clinicians is the lack of assessment tools for evaluation of language in nonstandard English speakers (Craig & Washington, 2000; Vaughn- Cooke, 1986). Given this, children who speak nonstandard English dialects continue to be at risk for misdiagnosis of language impairment (Craig & Washington, 2000). As a result, researchers have developed alternative assessment methods (Laing & Kamhi, 2003; Craig & Washington, 2000, 2003; Oetting & McDonald, 2001; Vaughn-Cooke, 1986; Holland & Forbes, 1986), but consensus on the most appropriate method to evaluate the language skills of linguistically diverse children has not been reached. Research in this area has progressed slowly and has been complicated by a number of factors. One of these factors relates to a lack of information about the nature and characteristics of different types of nonstandard dialects (Washington, 2000). Another factor relates to a lack of understanding about the effects of poverty on both a speaker's use of a nonstandard dialect and on children's acquisition of language (Pruitt, 2006).

The purpose of this study was to examine the clinical utility of two assessment measures for one group of nonstandard English dialect speakers, that of African-American English- (AAE) speaking children. The measures were mean length of utterance (MLU) and Index of Productive Syntax (IPSyn). Both of these measures are generated from language samples and both are viewed as indexing children's development of grammar. The clinical utility of these measures was examined by comparing MLU and IPSyn values of three different groups of AAE speakers to determine if these measures are influenced by a child's socio-economic status, dialect status, and/or clinical language status. The data from the three groups came from an existing database of language samples. The first group included children six years of age who were typically

developing and from middle-class homes. The second group included children six years of age who were typically developing and from low-income homes. The third group included children six years of age who presented with specific language impairment. This latter group of children was drawn from both middle-income and low-income homes.

The literature review for this study is organized into three sections. Section one includes research that documents the relation between a family's socioeconomic status (SES) and early childhood language development. Within this section, I focus on studies that have defined SES as either level of maternal education or occupation. Section two examines research on the relationship between SES and AAE. Within this section, data are presented that show an inverse relation between these two variables. Section three reviews research on the use of language sample analysis with linguistically diverse populations. Within this section, research on the measures of MLU and IPSyn are presented. As will be shown, a number of studies have examined the clinical utility of MLU and IPSyn, but this work has not included an examination of these tools as a function of a child's SES level, along with their nonstandard dialect use, and clinical language status.

Socioeconomic Status

Socioeconomic factors such as maternal education and family income are related to the early language experiences of children. Numerous studies have been conducted to measure the effects of SES on childhood language development. Two of the most common indicators used to estimate SES are family income and parental education. Several studies document a correlation between SES levels and the amount and type of experience a child has with language (Hart & Risely, 1995; Schachter, 1979). Studies have also documented a link between SES levels and children's expressive and receptive language skills (Elardo, Bradley, & Caldwell, 1977; Hammer

& Weiss, 1999; Hart & Risely, 1995; Hoff-Ginsberg, 1991; Wallace, Roberts, & Lodder, 1998). This section reviews some of the literature that has documented these links.

Schachter (1979) examined the quantity of speech and the type of speech acts produced during everyday activities of 30 mothers with their two-year old children over a two-year period. The mother-child dyads were classified by maternal education level and placed into three groups: African American advantaged, African American disadvantaged and white advantaged. The mean education levels were 17.05 years, 11.75 years, and 17.70 years, respectively. Over a two-year period, examiners visited the homes of the participants and manually recorded mother and child utterances. Results of the study revealed significant differences in the frequency and type of speech between the advantaged and disadvantaged groups, but no significant differences between the two advantaged groups. Differences between the advantaged mothers' speech and the disadvantaged mothers' speech were as follows. The advantaged mothers' total talk scores were twice as high as the total talk scores of the disadvantaged mothers. Additionally, Schachter found that more of the speech produced by the mothers in the advantaged groups was directed towards responding to their children's desires and reports. Furthermore, the advantaged mothers' speech focused on enhancing or affirming their children, whereas the disadvantaged mothers' speech focused on directing and controlling their children.

Hart and Risely (1995) also investigated the language experiences of children from different socioeconomic backgrounds. In this study, 42 families were examined over a three-year period. Based on occupation, the 42 families were classified as: professional, working class, and low-income. The data were collected from caregiver-child language samples collected in the home. Like Schatcher's work, Hart and Risely's results revealed significant differences between the socioeconomic groups' use of language. For example, during the time the children

were between the ages of 11 and 18 months, the professional families produced more utterances and addressed more utterances to their children than the other groups: professional (produced = 642, addressed = 482), working class (produced = 535, addressed = 321), and low-income (produced = 394, addressed = 197). From these data, Hart and Risely estimated that children from the professional and working class families heard 2,150 and 1,250 words per hour, respectively, whereas children from low-income homes heard only 620 words. By age three, Hart and Risely further estimated that children from professional families were exposed to 30 million words, children from working class families were exposed to 20 million words, and children from low-income families were exposed 10 million words.

Hart and Risely also documented the speech characteristics of each socioeconomic group. The results were as follows. Families in the professional group used many different words, nouns, modifiers, and past-tense verbs. Additionally, they asked questions and used affirmatives to encourage listening. Finally, they discussed relations between words. The speech of families in the low-income group consisted of parent-initiated topics, imperatives, and prohibitions. The speech of working class families contained a combination of features that was observed in the professional and low-income groups. Specifically, their speech included imperatives and prohibitions as well as words that named objects, prompted responses, and tested knowledge.

Finally, Hammer and Weiss (1999) investigated the interaction skills of African-American mothers and their infants during play. Their study included 12 mother-child dyads classified as either low socioeconomic status (LSES) or middle socioeconomic status (MSES) based upon maternal education and income. Mothers from the LSES group averaged 11.8 years of education and had an annual income of $15,000 or less; mothers from the MSES group averaged 14.7 years of education and had an annual income of $19,000 or more. The data were

collected during mother-child play. Some of the variables evaluated were the number and duration of play episodes, whether the play supported the child's interests, the goals of the play, and the communicative behaviors of the mother and child. The results indicated that mothers from the MSES group used a wider variety of words when playing when compared to the mothers in the LSES group. Additionally, the mothers in the MSES group commented, labeled, and imitated vocalizations more frequently.

Dollaghan et al., (1999) conducted a fourth study that examined families from different socioeconomic levels. Unlike the preceding studies, this one didn't focus on the mothers' behaviors. Instead the focus was on differences between the language skills of the children as a function of maternal education. The participants were 240 children. These children were classified into three groups: less than high school graduate, high school graduate, and college graduate. The *Peabody Picture Vocabulary Test-Revised* (*PPVT-R* Dunn & Dunn, 1981) was administered to assess receptive language. Expressive language was measured from 15-minute language samples collected during play between the caregiver and child. Four measures were utilized to assess expressive language: percent of consonants correct (PCC), mean length of utterance in morphemes (MLUm), number of different words (NDW), and total number of words (TNW).

Significant differences as a function of the mothers' education levels were present for MLUm, NDW, TNW, and on the scores obtained on the *PPVT-R*. Children of mothers who completed college produced more total words (TNW = 533) and more different words (NDW = 143) than children of mothers with less than a high school education (TNW = 454, NDW = 118). PCC was the only measure that did not show group difference: (PCC: less than high school graduate = 78%; high school graduate = 80%; college = 81%).

Socioeconomic Status and African-American English

A number of studies have been conducted to examine the factors that contribute to differences in the frequency at which speakers produce nonstandard AAE patterns. The factors examined have included gender, SES, age, and social context (Labov, 1994; Labov, 2001; Rickford, 1999; Washington & Craig, 1998; Washington, Craig, & Kushmal, 1998). All of these studies have shown a speaker's use of nonstandard AAE patterns to vary as a function of these variables. To illustrate the magnitude and scope of these findings for child AAE speakers, it is useful to review Washington and Craig (1998) in detail.

Washington and Craig (1998) evaluated children's use of nonstandard AAE patterns as a function of their gender and SES. The study included 66 typically developing 5- and 6-year olds. Thirty were boys and 36 were girls. The children ranged in age from 63 to 76 months and were all speakers of AAE. The data were collected during free-play between the child and an African-American female examiner. The first 50 complete and intelligible communication units (C-Units) were transcribed and coded for nonstandard AAE patterns. Results were that boys produced a higher frequency of the nonstandard AAE patterns than girls (M = 11.76 vs. M = 9.05), and children in the LSES group produced a higher frequency of AAE patterns than children in the MSES group (M = 11.76 vs. M = 8.03). What was not examined in this study were the potential effects of a child's gender and SES level on the frequency at which individual AAE pattern types are produced and the impact of these patterns on the clinical utility of different language assessment tools.

Language Sample Analysis

Numerous researchers have suggested alternatives to standardized tools for children from linguistically diverse populations (Laing & Kamhi, 2003; Craig & Washington, 2000, 2003;

Vaughn-Cooke, 1986; Holland & Forbes, 1986). A reoccurring alternative makes use of language sample analysis. While language samples have some disadvantages (Stockman, 1996), Oetting (2005) argues that language sampling is an excellent way to observe how a child uses his or her language. Language sample analysis holds promise as an assessment tool for culturally and linguistically diverse populations because a number of measures that can be calculated from them have been shown to have adequate diagnostic accuracy. This section reviews literature that supports language sample analysis as an assessment tool for linguistically and culturally diverse populations.

Craig and Washington (2000) evaluated the effectiveness of language sample analysis in a study that included 72 AAE-speaking children. Twenty-four of the children were classified as language impaired (LI) and they ranged in age from 4 to 11 years. The other 48 were classified as typically developing and served as either age-matched (CA) or language-matched (LM) controls (LM). Using data from only the first two groups, the study assessed the sensitivity (percent of LI group that score below the normal range) and specificity (percent of normals that score within the normal range) for different language sample measures. The language measures included mean length of C-unit in words (MLCUw), mean length of C-units in morphemes (MLCUm), frequency of complex syntax (CSyn), and total number of different words (NDW). The language samples were collected during interactions with an unfamiliar African-American examiner who also spoke AAE.

When all of the measures were considered together, they resulted in high levels of diagnostic accuracy: sensitivity (1.00) and specificity (.86). Each of the measures in isolation also led to differences between the LI and CA groups. Both mean length of utterance measures were significantly lower for the LI group (MLCUw: M=2.89, SD=.75; MLCUm: M=3.15,

SD=.84) than the CA group (MLCUw: M=3.60, SD=.87; MLCUm: M=3.97, SD=1.00). The CA group also produced more complex syntax than the LI group (CSyn tokens CA: M=6.8, SD=4.1, LI: M=3.3, SD=3.4; CSyn types CA: M=4.0, SD=2.0, LI: M=2.4, SD=2.1). Finally, the average number of different words produced in the samples were lower for the LI group (M=68.9, SD=15.6) than for the CA group (M=83.7, SD=19.9).

Oetting, Cantrell, and Horohov (1999) also studied the appropriateness of language sample measures for children who spoke a nonstandard dialect of English. The study included 31 children; 9 kindergarteners diagnosed as language-impaired (SLI), 11 normal controls of the same age, and 11 normal controls matched to the SLI children by mean length of utterance (MLU). The participants in this study were not AAE speakers, but they produced a rural variety of Southern White English, and this dialect contains a number of nonstandard features that are also found in AAE. The language measures analyzed included MLU, Developmental Sentence Score (DSS), and Index of Productive Syntax (IPSyn). To evaluate the effect of the children's use of the nonstandard patterns, MLU, DSS, and IPSyn were calculated twice; once with and once without utterances that contained the nonstandard patterns. For MLU, the difference between the two calculations was less than 0.24 for all but one child. For all but two children, the difference between the two calculations of DSS was less than 0.36 points. Finally, IPSyn scores were unchanged between the two calculations for all children.

The second analysis within this study compared the DSS and IPSyn scores of the children with SLI to those of the two control groups. For this analysis, MLU was not examined because it was used to classify some of the children as SLI. Results were that those with SLI scored below both the age-matched controls and MLU-matched controls on DSS (age-matched = 8.19, SLI = 6.59, MLU-matched = 6.76). IPSyn scores for the SLI group (M = 86.22, SD = 8.03) were also

lower than the age-matched group (M = 89.63, SD = 5.23) but higher than the MLU-matched group (M = 84.00, SD = 5.67).

Next, Oetting (2005) examined the effectiveness of MLU, DSS, and IPSyn to classify the language status of children who spoke of a Southern rural variety of AAE. The study included 40 children; 16 specifically language impaired (SLI) 6-year-olds, 12 normally developing age-matched (CA) controls, and 12 normally developing language-matched (LM) controls. For the 6-year-olds, diagnostic accuracy rates for two of the language sample measures were a bit low: MLU (72%) and DSS (63%). Specificity and sensitivity results for MLU and DSS were as follows: sensitivity: DSS = 94%, MLU = 37%; specificity: DSS = 42%, MLU = 94%. What these indices show is that DSS had good sensitivity and MLU had good specificity. For the 6-year-olds, sensitivity and specificity measures for IPSyn could not be calculated due to the lack of normative data; however, Oetting reported that scores of the SLI group were lower than the CA group. Moreover, of the IPSyn scores that were calculated for the LM group, 92% fell within normal range.

Finally, Horton-Ikard, Weismer, and Edwards (2005) investigated the effectiveness of MLU and IPSyn for toddlers from AAE-speaking backgrounds. The study included 22 children divided into two equal groups based on chronological age (2 ½ and 3 ½). On both of the measures, the 2 ½ year old participants (MLU: 2.70 and IPSyn: 51.27) scored lower than the 3 ½ year old participants (MLU: 3.08 and IPSyn: 70.19). Secondly, Horton-Ikard et al. compared their children's scores to scores from two previous studies that were generated for children who spoke Standard American English (SAE). They found that the MLUs produced by the AAE speakers were lower than that of SAE speakers. However, IPSyn scores for the AAE speakers and for the previously studied SAE speakers were similar. Table 1 presents data from this study.

Table 1: Mean performances of toddlers on MLU and IPSyn.

	2 ½-year-old toddlers	3 ½-year-old toddlers
	Horton-Ikard	
MLU-M[b]	2.70 (0.34)	3.08 (0.48)
IPSyn[c]	51.27 (5.16)	70.19 (8.52)
IPSyn Score Range	46 – 61 points	60 – 91 points
	Previous Studies	
Predicted MLU[d]	2.54 (0.571)	3.78 (0.817)
Predicted MLU Range[d]	1.97 – 3.11	2.96 – 4.60
IPSyn Scores[e]	52.73 (10.13)	72.20 (7.23)
Predicted IPSyn Range for 100 utterances	50 – 62 points	68 – 85 points

[a] Standard deviations are reported in parentheses
[b] Mean length of utterance in morphemes
[c] Index of Productive Syntax Scores for a 75-utterance corpora
[d] Miller & Chapman (1981).
[e]Scarborough (1990).

Summary

In summary, socioeconomic factors such as maternal education and family income are related to the early language experiences of children. Children from low socioeconomic backgrounds are at risk for demonstrating lower expressive language skills. They are also at risk for presenting high rates of nonstandard AAE patterns, which in turn could further increase their risk of earning a low score on any measure of language that was based on Standard American English. Language sample analysis holds promise as an assessment tool for culturally and linguistically diverse populations because a number of measures that can be calculated from them (i.e., MLU and IPSyn) have been shown to have adequate diagnostic accuracy (although rates have varied across studies). In three studies, MLU and IPSyn have also been shown to be unaffected by a child's use of a nonmainstream dialect. Unfortunately, missing from the literature is an examination of the clinical utility of these language sample measures for AAE

speakers when SES varies. The goal of this study was to fill this gap in the literature by further studying the clinical utility of MLU and IPSyn.

MLU and variations of this measure have been around since Roger Brown completed his seminal study with Adam, Eve, and Sarah (Brown, 1973). Since then, measures of average utterance length have been used to measure the linguistic skills of children who speak a wide range of languages (Levy, 1994). Over the past thirty years, however, the clinical utility of MLU has also been questioned. One of the concerns relates to the variability that exists across children of the same age who are typically developing and another concern relates to fluctuations in a child's score that are dependent upon the sampling context used by the examiner (for support for these statements and other studies that have examined MLU, see Dethorne, Johnson, & Loeb, 2005; Eisenberg, Fersko, & Lundgren, 2001; Johnston, 2001; Klee, Stokes, Wong, Fletcher, & Gavin, 2004). Nevertheless, this measure was examined in the current study because of previous studies that have supported its use with AAE-speaking children.

Originally IPSyn was designed for children who were between the ages of two and four years. Nevertheless, there are at least two good reasons to extend the study of this measure to AAE-child speakers of the age ranged studied here. First, as reviewed in the introduction chapter of this thesis, there is some evidence to suggest that this scale may be relevant for children who speak a variety of nonstandard dialects of English. Second, there is also some evidence in the literature to suggest that this scale can be used to help distinguish children with and without impairments at ages older than four years. In addition, Scarborough notes within her original study of the IPSyn, that additional items could be added to the scale if this is needed for older children.

Therefore, the purpose of this study was to examine the clinical utility of MLU and IPSyn by examining the score distributions of three groups of AAE-speaking six-year-olds. The data for this project came from an existing dataset. Two groups in the dataset were typically developing but varied in their SES levels, while the third group was classified as presenting SLI. The following questions guided the research:

1. Do children's MLU and IPSyn scores vary as a function of maternal education (low vs. middle)?
2. Do children's MLU and IPSyn scores vary as a function of nonstandard pattern use (lower vs. higher)?
3. Do children's MLU and IPSyn vary as a function of language status (SLI vs. typically developing)?

Predictions

For question one, it was predicted the children from the middle maternal education group would have a higher MLU than children from low maternal education group. This prediction was based on Dollaghan (1999) and Horton-Ikard (2005). Due to a lack of previous studies, no prediction was made regarding IPSyn varying as a function of maternal education. For questions two and three, it was predicted that MLU and IPSyn would not vary as a function of the children's nonstandard AAE pattern use. This prediction was based on Horton-Ikard (2005). Finally, it was predicted that the MLU and IPSyn scores of children with SLI would be lower than those of children who were developing language typically. This prediction was based on Craig and Washington (2000), Oetting, Cantrell, and Horohov (1999), and Oetting (2005).

CHAPTER 2: METHODS

Participants

Fifteen African American children provided data for this study. The participants were recruited as part of two other studies examining the language skills of children in Louisiana (Garrity, 2007; Pruitt, 2006). The participants resided in East Baton Rouge, Ascension, or St. Tammany Parishes. The participants were selected based on their SES levels and clinical language status, so that they could be classified into three groups of five each: (a) AAE-speaking kindergarteners from low-income backgrounds (LSES), (b) AAE-speaking kindergarteners from middle-income backgrounds (MSES) (c) AAE-speaking children diagnosed as SLI. The ten in the typically developing groups did not have a history of speech/language services, the five in the SLI group did. Table 2 lists the participants' individual and group scores on the eligibility criteria. Also, included in these tables are measures that were collected for descriptive purposes.

Measures Used to Determine Eligibility

SES was measured by the highest level of education completed by each participant's mother. The children in the LSES group had mothers who did not complete high school (mean maternal education level = 10.40 years, *SD* = 0.54). Children from the MSES group had mothers who had at least two years of college education (mean maternal education level = 15.80, *SD* = 0.44). All of the children in the LSES group were also enrolled in a public school where more than 90% of the students received free and/or reduced lunch and the school's average standardized test scores were below the state average. All but two of the children in the MSES group were enrolled in private or magnet schools where less than 10% of the students received free/or reduced lunch and the school's standardized test scores were above the state average. The participants who were exceptions to the school criteria are identified in Table 2 with

superscripts. Although one child with SLI did not provide a level of maternal education, for the other children in this group, maternal education level ranged from 11 to 16 years education (mean maternal education level = 12.50, SD = 2.38). No economic or test score criterion was applied to these schools.

The *Peabody Picture Vocabulary Test- III* (*PPVT-III;* Dunn & Dunn, 1997), a standardized test of receptive vocabulary, was used to document the child's vocabulary skill level. The test requires that the participant to select a target word spoken by the examiner from four illustrations. The items presented are arranged developmentally. The examiner begins with the question identified as the beginning point for the child's age and ensures that both a basal and ceiling are established. To be included in the LSES group, the children were required to earn standard scores at or below 90, a score typical of a low-income African-American child (Washington & Craig, 1999). To be included in the MSES group, the children were required to earn standard scores above 90. The PPVT-III was not used as a selection criterion for the SLI group, but all of their standard scores were below one standard deviation of the normative mean (85). Average scores for the MSES, LSES, and SLI groups were 102.20 (SD = 7.16), 82.00 (SD = 3.54), 76.00 (SD = 4.95), respectively.

Subtests IV-VI of the *Test of Language Development-Primary: Third Edition* (*TOLD-3*; Hammill & Newcomer, 1997) were used to generate a syntax quotient score for each of the participants. Subtest IV, Grammatic Understanding, assesses the child's ability to identify pictures that match the phrase given by the examiner (i.e., Point to the picture that matches "There are many dogs."). Subtest V, Sentence Imitation, requires that the child repeat a given phrase exactly as the examiner said it (i.e., "He runs fast."). Subtest VI, Grammatic Completion, assesses the child's ability to complete sentences started by the examiner (i.e., "Bill is a boy and

John is a boy. They are both ___."). For these subtests, the examiner begins by administering the first item and continues until the child misses five items in succession, the ceiling. The raw scores were transformed into standard scores. For each of the subtests, the mean score is 10 and the standard deviation is fixed at 3. The three subtests, given the purposes of this study, were combined and converted into a syntax quotient, having a mean of 100 and a standard deviation of 15. Average scores for the MSES, LSES, and SLI groups were 95.20 (SD = 5.63), 81.00 (SD = 6.44), 65.20 (SD = 7.86). Scores for the children in the MSES group ranged from 89 to 102. One of the children in the LSES group scored within the normal range while the others scored one standard deviation or more below the mean. The scores for the children in the SLI group ranged from 57 to 76. In other words, all of the children in the SLI group scored below one standard deviation of the normative mean on the syntax quotient of the TOLD.

Measures Used to Describe Participants

Table 2 also includes four measures that were collected to further describe the language profiles of the participants. All of the children, except one in the low maternal education group (Participant 3), earned nonverbal cognitive scores that were within one standard deviation of the normal range as measured by the *Figure Ground* and *Form Completion* subtests of the *Leiter International Performance Scale-Revised (Leiter-R;* Roid & Miller, 1998).This test requires the participant to move response cards into slots on the easel tray and arrange manipulatives (foam rubber shapes). Starting points in the sub-tests are determined by the child's age. Raw scores are obtained by summing correct responses. Testing ends when the child reaches ceiling. The raw scores on the subtests and rating scales were converted to scaled scores (with a mean of 10 and a standard deviation of 3), using a table provided in the manual. For the purposes of this study, the scaled scores for the two subtests were averaged, and an average score of seven or higher was

considered within one standard deviation of the mean. Average Leiter-R scores were: MSES = 10.00 (SD = .35), LSES = 9.60 (SD = 2.21), SLI = 9.90 (SD = 1.19).

A spontaneous language sample was also collected from each child. The sample was elicited through a 20-minute play session that included the child and an examiner. The following toys were used as prompts: gas station, cars, people, picnic/park set, legos, baby doll, baby care items, and three Apricot pictures (Arwood, 1985). The samples averaged 156.13 (SD = 47.77) complete intelligible utterances samples, ranging from 79 to 232. The number of complete and intelligible utterances for each group was as follows (MSES: M = 126.00, SD = 43.89; LSES: M = 175.20, SD = 51.64; SLI: M = 167.20, SD = 40.65).

Holistic ratings of the children's dialect status were determined using Oetting and McDonald's (2002) listener judgment rating system. Three graduate students trained by a PhD student independently listened to short excerpts from each child's language sample and completed a dialect rating sheet (see Appendix A). The excerpts were approximately one minute in length and randomly selected. The rating sheet asked each listener to determine the speaker's type of dialect (Southern African American or Southern White English) and rate of nonmainstream pattern use using a seven-point scale. A score of one on the scale indicates no use of nonmainstream patterns and a score of seven indicates heavy use. All of the excerpts were identified by all three listeners as reflecting a southern variety of AAE. The ratings for the excerpts averaged 5.13 (SD = 1.04) and ranged from 3.33 to 7.00. The average rating for each group was: MSES: M = 4.60, SD = 1.19; LSES: M = 6.00, SD = 0.82; SLI: M = 4.80, SD = 0.51.

A dialect density measure (DDM) of a child's use of vernacular patterns was also calculated from the children's language sample. During the transcriptions of the language samples, each utterance that contained a pattern of AAE was tagged. Thirty-six different

nonstandard patterns of English were considered. This list came from studies by Oetting and McDonald (2001) and Oetting and Pruitt (2005). A list of these patterns is provided in Appendix B. DDM was calculated by dividing the number of utterances that contain a nonstandard pattern by the number of utterances in the language sample. Overall, 28% (SD = 8.60) of the utterances within the samples contained a nonstandard AAE form. The range was from 11% to 42%. The average DDM score for each group was: MSES: M = 25%; LSES: M = 27%; SLI: M = 31%.

Dependent Measures

Spontaneous language samples were used to examine the dependent measures of interest. As described previously, a 20-minute spontaneous language sample was collected while the child and examiner played. The children's utterances were orthographically transcribed by the author and trained undergraduate and graduate students in communication disorders. Each sample was reviewed three times. Transcription and morphological coding followed the guidelines outlined by Miller and Chapman (1996) and Oetting (2000). *Systematic Analysis of Language Transcripts* (SALT, Miller & Chapman, 1996) was utilized to facilitate and check coding.

For the current project, SALT was used to calculate each child's MLU. MLU was calculated by dividing the number of morphemes produced by the child by the number of utterances produced by the child. Scoring for IPSyn was based on Scarborough's (1990) study. IPSyn contains 60 items, of which 56 are typically scored within published research projects. The 56 items are divided into four categories: noun phrases (N), verb phrases (V), questions and negation (Q), and sentence structures (S). An example of an item within the N section is Noun + Modifier (*the ball*); an example of an item within the V section is Verb + Adverb (*walk quickly*); an example of an item within the Q section is Inverted Copula (*Are* you *happy?*); and an example

Table 2. Participant Profiles

Participant Number	Age (in months)	Gender	Maternal Ed Level	Leiter-R	PPVT-III Standard	TOLD	Listener Judgment of Dialect	DDM
MSES								
1	74	Female	16	10	93	94	6.00	.34
2	69	Female	16	10	103	89	3.67	.11
3	75	Male	16	10	113	102	4.33	.21
4[a]	73	Male	15	9.5	101	100	3.33	.24
5[a]	70	Female	16	10.5	101	91	5.67	.37
Mean	72.20		15.80	10.00	102.20	95.20	4.60	.25
	(2.58)		(0.44)	(0.35)	(7.15)	(5.63)	(1.18)	(.10)
LSES								
6	67	Female	10	9	84	85	6.33	.36
7	70	Male	11	11.5	77	87	6.33	.32
8	77	Male	10	6	80	85	5.33	.23
9	73	Female	10	10.5	86	74	5.00	.21
10	69	Male	11	11	83	74	7.00	.23
Mean	71.20		10.40	9.60	82.00	81.00	5.99	.27
	(3.89)		(0.48)	(2.21)	(3.53)	(6.44)	(0.81)	(.06)
SLI								
11	78	Female	11	9	72	64	4.67	.42
12	66	Male	NR[b]	9.5	72	59	5.00	.29
13	75	Male	16	12	84	70	5.00	.39
14	79	Female	11	9.5	75	76	5.33	.28
15	77	Female	12	9.5	77	57	4.00	.20
Mean	75.00		12.50	9.90	76.00	65.20	4.80	.31
	(5.24)		(2.38)	(1.19)	(4.95)	(7.85)	(0.50)	(.09)

a= Children enrolled in schools where less than 10% of the students receive free/reduced lunch and the school's standardized test scores were above the state average, b= Not Reported

of an item within the S section is Conjunction (I walk *and* she sings). Computerized Profiling Software (CP, Long, 1986) was used to facilitate and check coding of the child's IPSyn scores, (see also Appendix C for the IPSyn score form). Calculating a child's IPSyn score involved searching for two instances of each of the 56 items, within each sample. Using the 56 scoreable items, the maximum score a child could earn on IPSyn was 112.

Reliability

In the original studies by Pruitt (2006) and Garrity (2007), the reliability of language sample transcripts and morphological coding was examined and found to be above 90%. The procedures involved having a second set of students independently transcribe and code 20% of the samples (data from 6 participants; two randomly selected from each group). Interrater agreement was calculated by dividing the total number of agreements by the total number of agreements + disagreements of the two sets of samples.

Approximately 20% of the data (data from 3 participants, one randomly selected from each group) was also used to measure the interrater reliability of the children's IPSyn scores. A PhD student in communication disorders independently calculated IPSyn scores for these samples and then these scores were compared to those of the originals. Interrater agreement was measured by dividing the total number of agreements by the total number of agreements + disagreements. Percent of agreement for this measure was 89% (149 agreements / 168 opportunities).

CHAPTER 3: RESULTS

The results of this study are addressed in four sections. The first section includes an analysis of MLU and IPSyn as a function of maternal education. The second section includes analysis of MLU and IPSyn as a function of nonstandard dialect pattern use. The third section includes analysis of MLU and IPSyn as a function of language status. The fourth section includes an item analysis of IPSyn for each group. The first two analyses excluded the participants from the SLI group, so that the variables of maternal education and dialect use could be examined without the children's clinical language status affecting the results.

Maternal Education

Table 3 presents means and standard deviations for MLU in morphemes and words, IPSyn category totals, and IPSyn total. Visual inspection of Table 3 indicates that MLU and IPSyn did not vary as a function of maternal education. In fact, the participants in the LSES group obtained slightly higher scores than the MSES group on IPSyn. IPSyn total scores for the LSES ranged from 86 to 96 and the average was 90.60 (SD = 3.85). For the MSES group, IPSyn ranged from 71 to 93 and the average was 81.60 (SD = 8.79).

Table 3: MLU and IPSyn as a function of Maternal Education

Measure	LSES	MSES	Total
MLUm	5.92 (SD = 1.26)	6.21 (SD = 1.10)	6.06 (SD = 1.12)
MLUw	5.40 (SD = 1.20)	5.78 (SD = 1.12)	5.64 (SD = 1.10)
Noun Phrases	21.00 (SD = 1.23)	19.80 (SD = 1.10)	20.40 (SD = 1.27)
Verb Phrases	28.20 (SD = 1.64)	25.80 (SD = 1.64)	27.00 (SD = 2.00)
Questions/Negation	13.20 (SD = 3.19)	9.60 (SD = 4.93)	11.40 (SD = 4.35)
Sentence Structure	28.20 (SD = 2.17)	26.40 (SD = 3.13)	27.30 (SD = 2.71)
IPSyn Total	90.60 (SD = 3.21)	81.60 (SD = 8.79)	86.10 (SD = 7.84)

AAE Vernacular Pattern Use

As discussed in the methods, the children's use of AAE vernacular patterns was measured with listener judgments and through an analysis of the language samples. To examine the effects of the children's AAE use on the dependent measures of interest, the children were divided into two groups following the procedures of Washington and Craig (1994). Within this system, Washington and Craig classified speakers as low, middle, or high dialect users based on the percentage of AAE patterns in their samples. Percentages for low, middle, and high dialect users were less than 11%, between 11% and 22%, and greater than 22%, respectively. Using Washington and Craig's criteria, none of the participants in the current study could be considered low dialect users. In the LSES group, there was one middle dialect user and four high dialect users; in the MSES group, there were two middle dialect users versus three high dialect users. Table 4 presents info on MLU and IPSyn in relation to the children's AAE classification. The lower dialect group reflects scores from the children who produced an AAE pattern in 11-22% of their utterances and the higher group reflects scores from the children who produced an AAE in more than 22% of their utterances.

Table 4: MLU and IPSyn as a function of Dialect Use

Measure	Lower	Higher
DDM	17.78 (SD = 5.87)	29.88 (SD = 6.19)
MLUm	5.84 (SD = 1.23)	6.16 (SD = 1.17)
MLUw	5.40 (SD = 1.25)	5.74 (SD = 1.13)
Noun Phrases	21.00 (SD = 1.00)	20.14 (SD = 1.35)
Verb Phrases	27.33 (SD = 3.06)	26.86 (SD = 1.68)
Questions/Negation	10.67 (SD= 4.51)	11.71 (SD= 4.61)
Sentence Structure	27.00 (SD = 5.29)	27.43 (SD = 1.27)
IPSyn Total	86.00 (SD = 13.00)	86.14 (SD = 5.98)

Visual inspection of Table 4 reveals that MLU and IPSyn did not vary as a function of the children's dialect classification. Pearson correlations were also run to examine the relation between the children's rates of AAE pattern use and their MLU and IPSyn scores. No significant correlation was found between DDM and MLUm ($r = .269$, $p = .453$), MLUw ($r = .291$, $p = .415$), and IPSyn ($r = .291$, $p = .415$). A significant correlation was found between MLUm and MLUw, $r = .999$, $p < .01$. From this, it can be concluded that the frequency of the children's nonstandard AAE use did not negatively affect their language sample measures. It should be noted; however, that 70% of the participants analyzed were considered high dialect users, so different results may be found if the sample reflected a greater range of AAE speakers.

Language Status

Table 5 presents means and standard deviations for MLUm and MLUw, IPSyn category total, and IPSyn total. For this analysis, the LSES and MSES group scores were combined and compared to the SLI group.

Table 5: MLU and IPSyn as a function of Language Status

Measure	LSES	MSES	SLI
MLUm	5.92 (SD = 1.26)	6.21 (SD = 1.10)	5.36 (SD = 1.17)
MLUw	5.40 (SD = 1.20)	5.78 (SD = 1.12)	5.03 (SD = 1.09)
Noun Phrases	21.00 (SD = 1.23)	19.80 (SD = 1.10)	21.20 (SD = 0.84)
Verb Phrases	28.20 (SD = 1.64)	25.80 (SD = 1.64)	27.80 (SD = 3.96)
Questions/Negation	13.20 (SD = 3.19)	9.60 (SD = 4.93)	12.80 (SD = 2.68)
Sentence Structure	28.20 (SD = 2.17)	26.40 (SD = 3.13)	28.00 (SD = 3.39)
IPSyn Total	90.60 (SD = 3.21)	81.60 (SD = 8.79)	93.80 (SD = 9.31)

Visual inspection of Table 5 suggests that MLUm and MLUw varied in relation to the children's language status. However, t-test were run on MLUm and MLUw for the typically developing and

language impaired groups, and the differences were not statistically significant ($p > .05$). The children's IPSyn scores were also found to not vary as a function of the children's clinical language status. As can be seen in the table, IPSyn scores for the children classified as SLI were slightly higher than those of some of the control groups.

Item Analysis

Recall that each item on the IPSyn was scored a 0, 1, or 2. A 0 indicated that the target pattern was not produced in the sample, a 1 indicated that the target pattern was produced one time, and a 2 indicated that the target pattern was produced two times. Appendix C lists the percentage of children in each group who scored a 0, 1, or 2 on each item of the IPSyn. Table 6 summarizes this information by listing the number of 0, 1, and 2 scores for each group. Given that there were 5 children in each group, there were 280 scoreable items (56 x 5 = 280).

Table 6: Item Score Variations among Groups

	MSES	LSES	SLI	Combined
# of items with 2	191 (68%)	209 (75%)	214 (76%)	614 (73.1%)
# of items with 1	26 (9%)	33 (12%)	20 (7%)	79 (9.4%)
# of items with 0	63 (23%)	38 (13%)	46 (17%)	147 (17.5%)

Visual inspection of Table 6 reveals that the MSES group had the highest percent of items with a score of 0. The LSES group had the lowest percent of items with a score of 0 and the highest percent of items with a score of 1. The SLI group had highest percent of items with a score of 2. Across groups, 82.5% (73.1% + 9.4%) of the scoreable opportunities on IPSyn received a score of 1or 2, and only 17.5% of the items (147) earned a score of 0.

Twenty-five (45%) of the items on IPSyn earned a score of 2 by all participants. This left 31 items (55%) which showed score variations across the children. Of the 31 items, 21 of them earned a score of 2 by at least one participant in each group. This left only 10 items where the

participant's responses received scores of either 0 or 1. Table 7 lists the percent of participants in each group who earned a score of 0 or 1. Recall that IPSyn had four subsections: nouns, verbs, questions/negation, and sentence structure. As can be seen, the sentence structure subsection contained the highest number of items (n = 5) with scores of 0 or 1. The other items were from the questions/negation subsection (n = 3) and the verb subsection (n = 2). All of the items in the noun subsection earned a score of two by at least one person in each group. In fact, 9 of the 11 items in the noun subsection earned a score of two by all participants. Only one item (Q10: Tag questions) earned a score of zero by all participants.

Table 7: Items with Scores of 0 or 1

Item	0	1
V10 Third person singular	LSES (20%)	LSES (80%)
V11 Past tense modal	MSES (40%	MSES (60%)
Q6 Wh- question with inverted modal, copula, auxiliary	MSES (80%)	MSES (20%)
Q9 Why, when, which, whose	MSES (80%)	MSES (20%)
	LSES (60%)	LSES (40%)
	SLI (80%)	SLI (20%)
Q10 Tag questions	MSES (100%)	
	LSES (100%)	
	SLI (100%)	
S9 Let, make, help, watch introducer	SLI (80%)	SLI (20%)
	MSES (100%)	
S11 Propositional complement	LSES (80%)	LSES (20%)
	SLI (80%)	SLI (20%)
S14 Bitransitive predicate	MSES (60%)	MSES (40%)
	LSES (80%)	LSES (20%)
S17 Infinitive clause: new subject	MSES (100%)	
	LSES (100%)	
S18 Gerund	LSES (80%)	LSES (20%)
	MSES (100%)	
	SLI (100%)	

What the item analysis shows is that most items targeted on IPSyn are present in the AAE-speaking children's language samples. While these findings do not support the use of IPSyn for distinguishing typically developing AAE speakers from those who are language impaired, they do show the appropriateness of the items for AAE speakers. In other words items on IPSyn are appropriate targets for AAE speaking-children.

CHAPTER 4: DISCUSSION

The purpose of this study was to examine the clinical utility of two language sample measures for a group of AAE-speaking children. These measures were MLU and IPSyn. The results showed that MLU and IPSyn did not vary as a function of the children's socioeconomic level, as measured by maternal education. The results also showed that the children's use of nonstandard AAE patterns did not affect their MLU and IPSyn scores. This result was found regardless of whether MLU was calculated in words (MLUw) or morphemes (MLUm). Unfortunately, the MLU and IPSyn scores of children with SLI were also not statistically different from those of typically developing controls. This finding suggests that these two tools, while unaffected by the variables of SES and nonstandard dialect use, are not sensitive to language impairments when children reach the age of six years. Results for the item analysis, however, showed that 83% of the items on IPSyn received a score of 1 or 2 by at least one child in each group, and only one item (i.e. use of tag questions) earned a score of 0 by all participants in the study. This finding indicates that items on the IPSyn are appropriate targets for speakers of AAE and suggests that this tool may be useful for younger AAE speakers.

Findings as Related to Previous Studies

One of the findings from the current study is consistent with the literature review because at least three other studies have shown MLU and IPSyn scores not to vary as a function of a child's use of a nonstandard English dialect. Findings that were inconsistent with the literature review included the lack of differences between the children's scores as a function of their socioeconomic level and their clinical language status. Recall that a previous study by Dollaghan et al. (1999) showed children's MLU to vary by their socio-economic level, and at least two studies have shown children's MLU and IPSyn scores to vary as a function of clinical

language status (Oetting et al., 1999; Oetting, 2005). Possible differences across these studies may relate to the ages of the children studied and/or the size of the language sample examined.

Table 8 presents data from the current study in relation to data from previous studies. Superscripts are used to connect the data to the study from which they came, and only data from children who were classified as typically developing are included. The age group that is indicated by superscript *a* came from Horton-Ikard et al. (2005), the age group that is indicated by superscript *b* came from Dollaghan et al. (1999), the age group that is indicated by superscript *c* came from Oetting (2005), and the age group that is indicated by superscript *d* came from the current study. Visual inspection of this table suggests that MLU continues to grow through age six, but by six years it no longer shows separation between the groups as a function of the children's socio-economic status and/or clinical language status. Between the ages of 2 ½ and four years, IPSyn scores appear to dramatically increase, but this score increase appears to plateau after the age of four. For example, between 2 ½ and 3 ½ years, IPSyn scores increase 19 points (51.27 to 70.19), and a 15-point increase (70.19 to 85.92) also occurs between the ages 3 ½ and four. In contrast, between ages four and six years, little changes are evident in the children's IPSyn scores. In fact, for these ages, differences across subtests ranged from -4.32 to 5.83.

Table 8: Measures from previous studies and the current study

Age	MLU	IPSyn Total
2 ½ [a]	2.70 (.34)	51.27 (5.16)
3 [b]	3.01 (.8)	--
3 ½ [a]	3.08(.48)	70.19 (8.52)
4 [c]	4.98 (.60)	85.92 (9.49)
6 [c]	5.90 (1.60)	91.75 (11.69)
6 LSES [d]	5.92 (1.26)	91.40 (3.85)
6 MSES [d]	6.21 (1.10)	81.60 (8.79)

Limitations of the Study and Suggestions for Future Research

One limitation of the current study was the number of participants who contributed data to the analyses. A much stronger design would have included data from more children. Also, the language samples were collected at the end of kindergarten so all of the children within the SLI group had received services by a speech language clinician for at least one year. Variations that may have been present before the initiation of formal education and language therapy could not be examined. Finally 70% of children in the current study were considered high users of AAE, because one or more nonstandard AAE pattern was found in over 22% of their utterances. To fully examine the effect of nonstandard English dialects on MLU and IPSyn, a greater range of AAE-speakers is needed.

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APPENDIX A

LISTENER JUDGMENT RATING SHEET

1 = no use of SWE or SAAE
3 = little use of SWE or SAAE (present in less than 25% of utterances)
5 = occasional use of SWE or SAAE (present in 25% to 40% of utterances)
7 = heavy use of SWE or SAAE (present in 40% or more of utterances)

_1_____2_____3_____4_____5_____6_____7_
No Use of SWE Heavy Use of SWE

_1_____2_____3_____4_____5_____6_____7_
No Use of SAAE Heavy Use of SAAE

Rate the confidence at which you made your decision, with 1 indicating not confident, 2 indicating somewhat confident, and 3 indicating very confident.

1_____2_____3

Check the language features on the sample you used to make your estimate.

paralinguistic behaviors including stress and intonation
phonology
syntax and morphology
vocabulary

If you feel the dialect variety of this sample cannot be determined because the sample was too short, check here_____

If you feel the dialect variety of this sample cannot be determined because of tape quality, check here_____

If you feel the dialect variety of this sample cannot be determined because of the child's intelligibility, check here_____

If you feel the dialect variety of this sample reflects a different English dialect not represented above, check here_____. In the space below, please write additional comments about the dialect patterns you perceive.

APPENDIX B

DESCRIPTION OF NONMAINSTREAM DIALECT PATTERNS IN LOUISIANA ADAPTED FROM OETTING AND MCDONALD, 2001 AND OETTING AND PRUITT, 2005.

The criteria used to code 36 different nonmainstream patterns are listed. The first 35 patterns were identified and coded in Oetting and McDonald (2001); an additional pattern (i.e., the go copula) was identified and coded in Oetting and Pruitt (2005). Unless noted, all patterns are described in the literature as possible in SWE and SAAE; however, most of the data on these forms come from studies of AAE varieties.

Zero be: Zero-marking of copula and auxiliary structures regardless of contractibility, person or number was counted (e.g., Oscar in the can). Although zero-marking of be is rare or infrequent in some contexts (e.g., with first person pronouns, in finite contexts, clause final positions, and in contexts with emphatic stress), and there is thought to be differences in SAAE and SWE regarding the effect of these contexts on be marking, all contexts were coded here to examine the effects of the independent variables of interest.

Be_2: Instances where be was produced to signify an event or activity distributed intermittently over time or space, including auxiliary and copula contexts that refer to durative or habitual meaning (e.g., It be on the outside). Utterances with omitted will and other standard English uses (e.g., I'm going to be a dalmation) were not included.

Go copula: Instances were go was produced instead of the standard English copula be form (e.g., there go a duck). This form is described as an AAE feature.

I'ma: Instances where i'ma was produced instead of the standard English, i'm going to (e.g., I'ma go peek and see if my class gone out that way). This pattern is mentioned in discussions of reduced gonna forms and is thought to occur in AAE varieties.

Subject-verb agreement with be forms: Instances where the person and number of the be form differed from its subject (e.g., When we was about to go to church).

Omission of auxiliary do: Instances where auxiliary do was not produced but in standard English, its presence is obligatory. Many of these instances involved question inversion (e.g., How you get up here? And What you did?). Questions with an omitted do in the initial position of the utterance (e.g., You know what? and You got a baby?) were not counted.

Omission of auxiliary have: Instances where auxiliary have, has, and had was not produced but in standard English, its presence is obligatory (e.g., I only been there a few times). As demonstrated by the example, many of these utterances involved the verb been.

Zero regular third present: Instances where regular third person marking on the verb was zero-marked (e.g., But when she poo on herself I don't change her). Decisions as to whether present or past tense was implied by the child was based on context.

Zero irregular third present: Instances where the subject of the verbs say, have, and do required says has and does in standard English but the child produced the unmarked form (e.g., She just do it herself). Utterances involving don't were not included since they were counted elsewhere. For the verb, say, all zero-marked forms were coded as third present irregular. For some of these utterances, the child's meaning may have been past rather than present. The decision to include all of the say examples as present was based on the children's frequent use of historical present with the verbs say (e.g., So she says stop it!) . Within the sociolinguistic literature, a distinction between regular vs. irregular verb forms is not always made, although some like Myhill and Harris (1986) excluded the verb say in analyses because it is irregular and typically zero-marked.

Subject-verb agreement with don't: Instances where the subject of the verb required doesn't in standard English, but the child produced don't (e.g., And he don't go to school).

Zero regular past: Instances where unmarked verbs were produced and in standard English, simple past marking is obligatory (e.g., I dress them before). Adjectival readings also were included because they are included in sociolinguistic research (e.g., It's finish).

Zero irregular past: Instances where an irregular verb was zero-marked for past tense (e.g., fall for fell), or a different past tense form was used instead of a standard English form (e.g., Course I brung him up real fast). In some cases, the different verb form was the participle (e.g. I seen it).

Had + past: Instances where had + a past tensed verb was produced and the standard English gloss would be the simple past or the past participle (e.g., One day I had went on the back of the levee to the beach). This pattern has been reported for AAE.

Overregularization: Instances where regular past tense marking was used with an irregular verb form (e.g., She drinked it all).

Past as participle: Instances where the simple past tense form was produced and in standard English a participle form is required (e.g., But her whole head got broke).

BIN and been: Stressed BIN and unstressed been contexts were included. BIN contexts were those where the event was thought to be on-going or the completive activity is in the remote past (e.g., Because I BIN having them for a bunch of times. And I BIN had shots). Seven of the utterances reflect clear examples of BIN as confirmed by Green (personal communication). The other 8 are less clear; two may reflect BIN, at least four can be glossed with was, one may be a past tense form of be_2, and two may reflect omission of have. Been uses involving clear cases of zero-marked have were not included in this category but were included as instances of zero have (see above). BIN is thought to be an AAE feature.

Ain't: Instances where ain't was used and in standard English, negative forms involving be, do, or have are obligatory (e.g., We ain't got none).

Multiple negation: Instances where negation was marked more than once in the utterance (e.g., Cause she don't want no people on the rocks). This pattern often occurs with don't and ain't.

Indefinite article: Instances where indefinite article a was used and the following context involves a vowel (e.g., It's a animal story). This pattern is thought to occur in AAE.

Zero present progressive: Instances where present progressive inflection was zero-marked and in standard English, overt marking was obligatory (e.g., Yep I'm build one of those).

Zero plural: Instances where the regular plural inflection was zero-marked and in standard English, overt marking is obligatory (e.g., Six dollar and fifty-five). This pattern is thought to occur most frequently with nouns of weights and measures or with nouns preceded by quantification.

Zero possessive: Instances where the possessive inflection was zero-marked and in standard English, overt marking is obligatory (e.g., We'll probably need everybody plates).

Omission of infinitive to: Instances where infinitive to was omitted. Omission of to as a preposition was not included (e.g., "My sister asked me if I wanted her bake some cookies with the sugar").

For to/to: Instances where for to was produced and in standard English infinitive to is produced. Only two instances of this pattern were found in the data and both may be considered questionable (e.g., I mean for to take a walk. For to go to store and pay).

Zero of: Instances where the preposition of was omitted (e.g., I can't tell too much the story yet).

What for that or zero that: Instances where the relative pronoun what was produced (e.g., Anything what my momma brings) or the relative pronoun was omitted (e.g., and they had that thing you gotta shift your money in). Relative pronouns in the subject and object position were included even though absence of that occurs in some standard English object clauses.

Done + verb: Instances where done + verb indicated a completive action or event (e.g. He's looking for his cat but it done went down the garbage can).

Fixing + verb: Instances where fixing and fitna were used as a main verb and followed by an infinitive (e.g., he was fixing to go off of the roof like that). One instance of might gotta (e.g., I might gotta take you somewhere) also was included in this category.

Undifferentiated pronoun: Instances where the unmarked pronoun form was used instead of standard English nominative (e.g., Me and him do it sometimes), use of nominative marking instead of genative (e.g., they cat), and use of masculine forms for feminine (e.g., he do it).

Reflexive: Instances where a different reflexive pronoun form was produced instead of a standard English form (e.g, My daddy once went by hisself because he didn't want to be worried about us).

Demonstrative: Instances where the objective pronoun form was produced instead of the demonstrative (e.g., He wrecked them back tires).

Dative: Instances where a personal dative was produced (e.g., I take me a shot).

Y'all varieties: Instances where a variant of a second person plural form was produced instead of a standard English pronoun (e.g., y'all take turns).

Appositive: Instances where both a pronoun and noun were used to refer to the same person(s) or object (s) (e.g., But my friend, he have a gate). This pattern occurs in standard English but is thought to be more frequent in AAE and SWE varieties.
Existential it and they: Instances where it or they was used instead of there (e.g., My dad grabs it with a paddle whenever it's only men).

Wh- noninversion: Instances where a Wh- question form began the utterance or clause, but the auxiliary was not inverted (e.g., Why this one won't sit).

Table for Calculating Nonmainstream Dialect Use

AAE Form	Example
Zero be	Oscar in the can.
Be_2	It be on the outside
Go copula	There go a duck
I'ma for I'm going to	I'ma go peek and see if my class gone.
SV agreement with be	When we was about to go to church.
Omission of auxiliary do	How you get up here?
Omission of auxiliary have	I only been there a few times.
Zero regular third	But when she poo on herself I don't change her.
Zero irregular third	She just do it herself.
SV agreement with don't	And he don't go to school.
Zero regular past	I dress them before.
Zero irregular past	I seen it.
Had + past	One day I had went to the levee.
Overregularization	She drinked it all.
Participle as past	But her whole head got broke.
Ain't	We ain't got none.
Multiple negation	Cause she don't want no people on the rocks.
Indefinite article	It's a animal story.
Zero present progressive	Yep I'm build one of those.
Zero plural	Six dollar and fifty-five.
Zero possessive	We'll probably need everybody plates.

Zero infinitive to	My sister asked me if I wanted her bake some cookies with the sugar.
For to/to	For to go to store and plan.
Zero of	I can't tell too much the story yet.
What/that of zero that	And they had that thing you gotta shift your numbers in.
Been and BIN	And I BIN had shots.
Done + verb	He's looking for his cat but it done went down the garbage can.
Fixing + verb	He was fixing to go off the roof like that.
Undifferentiated pronoun	He do it.
Reflexive	My daddy once went by hisself because he didn't want to be worried about us.
Demonstrative	He wrecked them back tires.
Dative	I take me a shot.
Y'all varieties	Y'all take turns.
Appositive	But my friend, he gave a gate.
Existential it and they	My dad grabs it with a paddle whenever it's only men.
Wh- noninversion	Why this one won't sit.

Table for Calculating Nonmainstream Dialect Use

Pattern	Line Number	Total
Zero be		
Be_2		
Copula go		
I'ma for I'm going to		
SV agreement with be		
Omission of auxiliary do		
Omission of auxiliary have		
Zero regular third		
Zero irregular third		
SV agreement with don't		
Zero regular past		
Zero irregular past		
Had + past		
Overregularization		
Participle as past		
Ain't		
Multiple negation		
Indefinite article		
Zero present progressive		
Zero plural		
Zero possessive		
Zero infinitive to		
For to/to		
Zero of		
What/that of zero that		
Been and BIN		
Done + verb		
Fixing + verb		
Undifferentiated pronoun		
Reflexive		
Demonstrative		
Dative		
Y'all varieties		
Appositive		
Existential it and they		
Wh- noninversion		

APPENDIX C

INDEX OF PRODUCTIVE SYNTAX SCORE SHEET

Child: _____ Date: _____

Item	Cr	Exemplar 1	Exemplar 2	Points
N1 noun				
N2 pronoun				
N3 modifier				
N4 2wd NP				
N5 article	N4			
N6 Verb + 2wd NP	N4			
N7 Plural				
N8 Pre-Verb NP	N4			
N9 3wd NP	N4			
N10 NP adverb.	N8			
N11 bound				
NOUN PHRASES TOTAL				
V1 verb				
V2 part/prep				
V3 prep phrase	V2			
V4 copula	V1			
V5 catenative				
V6 present aux	V5			
V7 –ing				
V8 adverb				
V9 present modal				
V10 present -s	Not Scoreable			
V11 past modal	V9			
V12 past –ed				

V13 past aux	V6			
V14 medial adverb	V8			
V15 ellipsis/emphasis				
V16 past copula	V4			
VERB PHRASES TOTAL				
Q1 intonation				
Q2 routine				
Q3 simple negation				
Q4 Wh + V				
Q5 Sub + Neg + V	Q3			
Q6 Wh-aux	Q4			
Q7 neg aux	Q5			
Q8 y/n aux				
Q9 why, etc.				
Q10 tag Q				
QUESTIONS/NEGATION TOTAL				
S1 2 words				
S2 S-V				
S3 V-D.O.	S1			
S4 S-V-O	S1			
S5 any conjunction				
S6 any 2-VP				
S7 conj phrase	S5			
S8 infin	V5, S6			
S9 Let's, etc.				
S10 adv conjunction	S5			
S11 prop complement	S6			
S12 S-conj-S	S6			
S13 Wh-cl	S6			
S14 bitrans predicate				

S15 3 VPs	S6			
S16 relative clause	S6			
S17 infin-2	S8			
S18 gerund	V7,S6			
S19 move	S6			
SENTENCE STRUCTURE TOTAL				
IPSyn TOTAL				

APPENDIX D

IPSYN FREQUENCY

IPSyn Frequency (MSES)

Item	0	1	2
N1 noun	0	0	100
N2 pronoun	0	0	100
N3 modifier	0	0	100
N4 2wd NP	0	0	100
N5 article	0	0	100
N6 Verb + 2wd NP	0	0	100
N7 Plural	0	0	100
N8 Pre-Verb NP	0	0	100
N9 3wd NP	0	0	100
N10 NP adverb.	40	20	40
N11 bound	60	0	40
V1 verb	0	0	100
V2 part/prep	0	0	100
V3 prep phrase	0	0	100
V4 copula	0	0	100
V5 catenative	20	40	40
V6 present aux	0	0	100
V7 –ing	0	0	100
V8 adverb	0	0	100
V9 present modal	20	20	60
V10 present -s	60	20	20
V11 past modal	40	60	0
V12 past –ed	0	0	100
V13 past aux	0	0	100
V14 medial adverb	0	60	40
V15 ellipsis/emphasis	40	0	60

V16 past copula	0	60	40
Q1 intonation	60	0	40
Q2 routine	60	0	40
Q3 simple negation	0	0	100
Q4 Wh + V	60	0	40
Q5 Sub + Neg + V	0	0	100
Q6 Wh-aux	80	20	0
Q7 neg aux	0	0	100
Q8 y/n aux	60	0	40
Q9 why, etc.	80	20	0
Q10 tag Q	100	0	0
S1 2 words	0	0	100
S2 S-V	0	0	100
S3 V-D.O.	0	0	100
S4 S-V-O	0	0	100
S5 any conjunction	0	0	100
S6 any 2-VP	0	0	100
S7 conj phrase	0	0	100
S8 infin	0	20	80
S9 Let's, etc.	100	0	0
S10 adv conjunction	0	40	60
S11 prop complement	60	20	20
S12 S-conj-S	0	0	100
S13 Wh-cl	20	20	60
S14 bitrans predicate	60	40	0
S15 3 VPs	0	20	80
S16 relative clause	20	20	60
S17 infin-2	100	0	0
S18 gerund	100	0	0
S19 move	20	20	60

IPSyn Frequency (LSES)

Item	0	1	2
N1 noun	0	0	100
N2 pronoun	0	0	100
N3 modifier	0	0	100
N4 2wd NP	0	0	100
N5 article	0	0	100
N6 Verb + 2wd NP	0	0	100
N7 Plural	0	0	100
N8 Pre-Verb NP	0	0	100
N9 3wd NP	0	0	100
N10 NP adverb.	0	20	80
N11 bound	20	40	40
V1 verb	0	0	100
V2 part/prep	0	0	100
V3 prep phrase	0	0	100
V4 copula	0	0	100
V5 catenative	0	40	60
V6 present aux	0	0	100
V7 –ing	0	0	100
V8 adverb	0	0	100
V9 present modal	0	0	100
V10 present -s	0	20	80
V11 past modal	20	20	60
V12 past –ed	0	0	100
V13 past aux	0	0	100
V14 medial adverb	20	40	40
V15 ellipsis/emphasis	0	20	80
V16 past copula	0	60	40
Q1 intonation	0	0	100
Q2 routine	0	40	60

Q3 simple negation	0	0	100
Q4 Wh + V	0	40	60
Q5 Sub + Neg + V	0	20	80
Q6 Wh-aux	40	40	20
Q7 neg aux	0	0	100
Q8 y/n aux	40	20	40
Q9 why, etc.	60	40	0
Q10 tag Q	100	0	0
S1 2 words	0	0	100
S2 S-V	0	0	100
S3 V-D.O.	0	0	100
S4 S-V-O	0	0	100
S5 any conjunction	0	0	100
S6 any 2-VP	0	0	100
S7 conj phrase	0	0	100
S8 infin	0	20	80
S9 Let's, etc.	60	0	40
S10 adv conjunction	0	0	100
S11 prop complement	80	20	0
S12 S-conj-S	0	0	100
S13 Wh-cl	0	0	100
S14 bitrans predicate	80	20	0
S15 3 VPs	20	20	60
S16 relative clause	0	20	80
S17 infin-2	80	20	0
S18 gerund	80	20	0
S19 move	20	20	60

IPSyn Frequency (SLI)

Item	0	1	2
N1 noun	0	0	100
N2 pronoun	0	0	100
N3 modifier	0	0	100
N4 2wd NP	0	0	100
N5 article	0	0	100
N6 Verb + 2wd NP	0	0	100
N7 Plural	0	0	100
N8 Pre-Verb NP	0	0	100
N9 3wd NP	0	0	100
N10 NP adverb.	0	0	100
N11 bound	20	40	40
V1 verb	0	0	100
V2 part/prep	0	0	100
V3 prep phrase	0	0	100
V4 copula	0	0	100
V5 catenative	0	20	80
V6 present aux	0	0	100
V7 –ing	0	0	100
V8 adverb	0	0	100
V9 present modal	0	20	80
V10 present -s	0	60	40
V11 past modal	60	0	40
V12 past –ed	40	0	60
V13 past aux	0	20	80
V14 medial adverb	20	20	60
V15 ellipsis/emphasis	0	0	100
V16 past copula	20	0	80
Q1 intonation	0	0	100
Q2 routine	0	20	80

Q3 simple negation	0	0	100
Q4 Wh + V	20	20	60
Q5 Sub + Neg + V	0	0	100
Q6 Wh-aux	40	20	40
Q7 neg aux	0	0	100
Q8 y/n aux	80	0	20
Q9 why, etc.	80	20	0
Q10 tag Q	100	0	0
S1 2 words	0	0	100
S2 S-V	0	0	100
S3 V-D.O.	0	0	100
S4 S-V-O	0	0	100
S5 any conjunction	0	20	80
S6 any 2-VP	0	0	100
S7 conj phrase	0	0	100
S8 infin	0	0	100
S9 Let's, etc.	80	20	0
S10 adv conjunction	0	20	80
S11 prop complement	80	20	0
S12 S-conj-S	0	0	100
S13 Wh-cl	0	0	100
S14 bitrans predicate	20	0	80
S15 3 VPs	20	0	80
S16 relative clause	40	40	20
S17 infin-2	40	20	40
S18 gerund	100	0	0
S19 move	60	0	40

VITA

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