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Janice E. Jackson

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## Variable Use of Features Associated With African American English by Typically Developing Children, Ages 4–12 Years

#### Janice E. Jackson, PhD; Barbara Zurer Pearson, PhD

**Purpose:** The well-known decline in the use of African American English (AAE) features by groups of school-aged AAE-speaking children was reexamined for patterns of overt-, zero-, and mixed-marking for individual features and individual speakers. **Methods:** Seven hundred twenty-nine typically developing children between the ages of 4 and 12—511 AAE-speakers learning General American English (GAE) as a second dialect, and 218 GAE-speaking controls—were administered the morphosyntax subtest of the *Dialect Sensitive Language Test* (Seymour, Roeper, & de Villiers, 2000). Responses to 33 items probing 10 target features were coded for overt marking, zero marking, or neither. A feature-by-feature marking profile for each child allowed us to track how many children at each age were characterized by 100% overt, zero, or mixed marking for different combinations of features. **Results/Conclusions:** Findings suggest that no feature was overtly marked for all AAE-first children at any age, and the "mixed" pattern of usage was the most common trend across individual speakers even at age 12 years. Exclusive use of zero marking beyond age 8 years was rare and may serve as a diagnostic indicator. **Key words:** *African American English (AAE)*, *contrastive/noncontrastive features, diagnostic indicators (of language delay)*, *General American English (GAE)* as a second dialect, morphosyntax, typical language development

SOME areas of the grammar, morphosyntax, and phonology of African American English (AAE) and General American English (GAE) do not differ. That is, they are "noncontrastive" between the varieties (Seymour

Author Affiliations: Department of Special Education and Speech Language Pathology, University of West Georgia, Carrollton (Dr Jackson); University of Massachusetts Amberst (Dr Pearson).

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Corresponding Author: Janice E. Jackson, PhD, Department of Special Education and Speech Language Pathology, University of West Georgia, Education Annex 126/1601 Maple Street, Carrollton, GA 30118 (e-mail: janicej@westga.edu).

& Seymour, 1977). An example in morphosyntax of a noncontrastive construction is the past tense copula "was," as in "he was a teacher." The "was" is obligatory and cannot be omitted in either AAE or GAE. On the other hand, a number of forms that are found in both AAE and GAE are "contrastive" in rules of use. In AAE, contrastive forms may be omitted, or what is described as "zeromarked." Thus, a form that must be "marked overtly" in GAE is variable in AAE. AAE speakers may sometimes use overt marking of certain morphosyntactic elements, and at other times, use a zero-marked (denoted ø) form of the same element. Both are considered wellformed in AAE. A prominent example of a variable contrastive morphosyntax construction is the present tense copula verb "is" (as opposed to the noncontrastive past tense copula). "He ø bad" is a well-formed sentence,

alternating with "He is bad." The verb may be either zero or overtly marked (ZM or OM). Both are grammatical in AAE. In GAE, on the other hand, ZM is not part of the language model, and "he ø bad" is considered an error. Past a certain age, ZM may be mistaken as a sign of impairment for GAE first-dialect speakers (Leonard, 1998; Rice & Wexler, 1996).

At all ages, variability in use is characteristic of contrastive elements in AAE (Green, 2002; Labov, 1970). Depending on contextual factors such as individual speaker differences, the formality of the setting, or the topics being discussed (DeBose, 1992), utterances from a single AAE speaker might contain multiple instances of ZM forms (i.e., contrastive or AAEonly) or virtually no ZM forms (i.e., forms identical to GAE morphosyntax). There is also an element of development, so young speakers of GAE as a first dialect are often seen to use ZM similar to AAE on their way to full competence in GAE. Such variability in GAE firstdialect speakers largely disappears by age 6 (Jackson & Pearson, ••••), but as a defining characteristic of the AAE target variety, variability continues into adulthood in most AAEfirst speakers.

These alternations in overt and zero marking make it difficult to distinguish whether ZM is a sign of difference or of disorder (Seymour, Bland-Stewart, & Green, 1998). If a child demonstrates OM of a morphosyntactic form in one instance and then ZM of the same construction in other instances, it may create an impression of "careless" or "immature" speech from a GAE frame of reference, when in fact the child is respecting the AAE principle of variability. On the other hand, children who speak AAE as a first dialect are also moving toward greater use of OM forms in the school setting with literacy materials in GAE and are likely, over time, to use OM more frequently. Therefore, teachers and clinicians who work with AAE-speaking children need to know to what extent ZM, OM, and mixed patterns (use of both ZM and OM) are typical in AAE-background children learning GAE. This article examines those developmental trends for variable usage of contrastive

features among individuals who are typically developing AAE-speaking children in a GAE academic environment.

### DEVELOPMENT PATTERNS IN CONTRASTIVE MORPHOSYNTAX

It is a well-established finding that when considering all features together for African American AAE-speaking children as a group, the level of contrastive feature use is observed to decline across the age range from 4 to 12 years (Jackson & Pearson, ••••) with perhaps a larger drop between kindergarten and first grade (Craig & Washington, 2004). However, two very different scenarios at the individual level are equally consistent with such a change at the group level in the number of contrastive features used by a speech community: (1) OM of a few features at a time could increase dramatically for a small number of speakers or (2) OM for many features could increase in use gradually for a large numbers of speakers.

Several studies have looked at the increased use of OM for contrastive features for groups of speakers, but no one to our knowledge has investigated variability with respect to specific features and sets of features within individual speakers. Thompson, Craig, and Washington (2004), for example, showed that the same children used less OM of contrastive features in oral performance than in literacy activities (spontaneous speech vs. reading texts out loud), but the researchers' findings were framed as group comparisons with only an occasional anecdote about a single child in their experiment (p. 277). Similarly, Jackson and Pearson (••••) found in the formal setting of a language test that OM increased in use at different rates for different features, leaving a smaller number of types of ZM features among older children. However, neither group of researchers probed how consistent individual children were in zero or overt marking when there were multiple opportunities for specific features in the same discourse and even within the same sentence. A clearer

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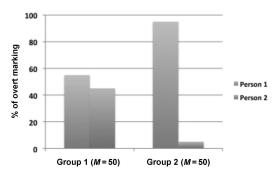


Figure 1. Hypothetical example of two groups with average level of overt marking 50%.

understanding of the nature of variable usage with particular structures (i.e., when ZM and OM are more or less likely to be observed) will further clinicians' efforts in understanding the difference versus disorder conundrum that often accompanies the variable marking of forms, where children who use ZM as a result of impaired facility with morphosyntax are indistinguishable from those using ZM as a result of AAE variability.

This study probes how the general increase of overt marking on contrastive features is reflected at the level of the individual child within the group. To illustrate the importance of examining individual as well as group trends, Figures 1 and 2 show hypothetical examples of different possibilities. Figure 1 depicts two groups with moderate levels of OM of contrastive features. In Group 1, most children use OM about half of the time. Alternately, as shown in Group 2, some children

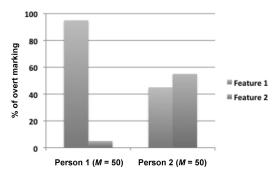


Figure 2. Hypothetical example of two individuals, with average level of overt marking 50%.

mark forms overtly all, or almost all, the time and others use ZM almost all of the time. Furthermore, as shown in Figure 2, if an individual uses ZM about half the time, she or he might always zero-mark particular features and always overtly mark other features, like the hypothetical Person 1. Person 2 in Figure 2 ends up with the same average number of features but would not overtly mark any feature 100% of the time.

To pursue these issues, we asked the following questions:

Question 1. To what extent do individual typically developing AAE-speaking children at different ages mix zero-marked (ZM) and overtly marked (OM) responses—in a formal setting with primarily European American (EurA) GAE speakers?

Hypothesis 1: All typically developing children will participate in the general rise in overt marking of contrastive morphosyntax (MS). That is, most children will use a mixed pattern, with ZM alternating with OM. A few children may adopt all OM forms (in a formal test), but most will adopt them gradually. Specifically, we predict that from age 6, when children begin learning to read, all children will give some OM responses and will no longer give *primarily* ZM responses in a formal academic setting.

Question 2. Do children adopt overt marking feature by feature? Do they tend to overt-mark some features all of the time or all features some of the time? That is, is OM distributed equally across different features or used on only a small selection of morphosyntactic features?

Hypothesis 2. Among those who use OM to about the same degree, we will observe two different groups of children. At low, medium, or high levels of OM of contrastive features, one group will mix ZM and OM equally across different features, while a second group of children will overtly mark specific features consistently and other features not at all. By age 12, there will be some features that are overtly marked all of the time by all AAE firstdialect children, and no features that are always zero-marked.

#### 4 TOPICS IN LANGUAGE DISORDERS/APRIL-JUNE 2010

Table 1. Participants by gender and age and parent education

	Age in years	4:0-4:11	5:0-5:11	6:0-6:11	7:0-8:11	9:0-10:11-	11:0-12:11	Total	%
AAE	F	50	60	74	25	39	30	278	54
	M	40	47	49	31	37	29	233	46
	All	90	107	123	56	76	59	511	
Parent education		2.9	3.1	3.0	3.1	3.1	3.1	3.0	
GAE	All	43	46	<b>5</b> 7	25	16	31	218	
Parent education		3.2	3.0	2.9	3.1	3.3	3.3	3.1	

Note. Average Parent Education Level (PED): On a 5-point scale adapted from The Psychological Corporation (DELVST Technical Manual, Seymour et al., 2003), 1 = 8th grade or less, 3 = a high school degree, and 5 = a college degree. AAE = Speaker of African American English as a first dialect, AA ethnicity; GAE = Speaker of General American English.

#### **METHODS**

#### **Participants**

Participants were 511 typically developing AA children aged 4 to 12 who took the Dialect Sensitive Language Test (DSLT; Seymour, Roeper & de Villiers, 2000) as part of the Diagnostic Evaluation of Language Variation, or DELV research project at the University of Massachusetts (H. Seymour, PI). For this preliminary field-testing, the African American (AA) children were recruited to be AAE speakers, but in fact, they represented a range of dialect density from a strong difference from GAE to little or no difference from GAE. Seventy-eight percent were from working-class families living in communities across the United States, with a slight oversampling from the South (see Table 1).

All children in this analysis scored in the passing range on items that eventually came to comprise the *DELV-Norm Referenced DELV-NR* according to the manual of the published test (Seymour, Roeper, & de Villiers, 2005), and scored within one standard deviation for their age group or higher on the noncontrastive morphosyntax items in Subtest 1 of the *DSLT*. For more information on the noncontrastive items, see below in the "Materials" section and Figure 3. (Recall that these children participated in pilot field testing and

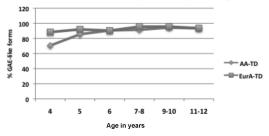
were not part of the group on which the *DELV-NR* norms are based.)

A control group of 218 typically developing GAE first-dialect speakers from the field testing sample, matched as closely as possible to the geographic and educational background of the AAE first-dialect speakers, provided benchmarks for overt marking.

#### **Materials**

The unpublished *DSLT* (Seymour et al., 2000), of which the DELV tests are a subset (Seymour, Roeper, & de Villiers, 2003, 2005), was used. It contained 350 items organized in 14 subtests, encompassing syntax, pragmatics, semantics, phonology, and morphosyntax. The current study focused on the 33

#### Noncontrastive MS by Ethnicity and Age



**Figure 3.** Noncontrastive. Significant interaction of dialect group with age: F(5, 717) = 9.37, p < .0005;  $\eta^2 = .06$ . Simple effects of dialect group from age 6 to 12 years, F < 1, ns.

contrastive morphosyntax items from Subtest 1. All 33 production items were aimed at eliciting specific responses. For example, on one item to elicit multiple negation, the examiner points in turn to a picture of a man with one, two, or no umbrellas, saying: "*This* man has an umbrella. *This* man has two umbrellas" (then shaking her head to indicate "no") "but *this* man..." (with rising intonation to elicit the child's response).

- The following 10 target structures were tracked in the study from ages 4 to 12 years. Third-person singular /-s/ (3rd -s) for lexical verbs
- past copula, invariant agreement (they was)
- 3rd -s with "do"
- 3rd -s with "have"
- · "are" auxiliary
- "is" auxiliary
- "is" copula
- multiple negation
- possessive /-s/
- past tense marker /-ed/

(Note: Following Green [2002], we do not include plural /-s/.) Most items in the *DSLT* targeted a single structure, but there were three items that elicited two targets each, multiple negation in the context of a sentence with a third-person singular verb, as in the example above. In addition, there were 10 noncontrastive MS items: seven past tense copula or auxiliary "was," for example, "he was sick," and three possessive pronouns, for example, "theirs," as in "the kite is theirs."

#### **Procedures**

Children took the *DSLT* all in the same order, with the morphosyntax items in Subtest 1 given first. A certified speech-language pathologist (SLP) administered the test individually in a quiet room at the child's school or clinic. More than 400 SLPs participated. Almost all of the SLPs had European-American background, reflecting the ethnic composition of the profession. Answers were recorded by hand on Record Forms by SLPs and were later entered into a database by the Psychological Corporation and then coded by

the *DELV* Project Team at the University of Massachusetts Amherst and Smith College. Portions of the *DSLT* sessions were audiorecorded by a subsample of examiners. The contrastive forms were coded for whether the response matched the OM (GAE-like) form or the ZM (AAE-only) form, or "other." The noncontrastive morphosyntax forms were coded for whether they were correct or not.

In addition, a child "marking profile" was created for each child by calculating how many OM responses (of 33) she or he produced for each of the 10 features and overall. Criteria for "high-overt markers," "high-zero markers," and "mixed markers" were established on the basis of the average level of OM for these stimuli among the 218 GAE controls. That is, the AAE firstdialect child would not be expected to show higher levels of OM than the children whose first dialect was GAE. Twenty-eight OM responses, the median for the GAE controls, was the criterion for "hi-overt-markers." "Hi-zeromarkers" were children who zero-marked at a higher level than 95% of the GAE controls, or on 21 or more of their responses. Those who were neither "hi-overt-markers" or "hi-zero-markers" were classed as "mixedmarkers." Another schema categorized the 10 features (above) with respect to the age at which 50% of the children responded with 100% OM for a specific feature, the percentage of children among the oldest groups in the sample who gave 100% OM for that feature, and the percentage of children of all ages who gave all OM responses to the items involved.

#### Reliability

For the most part, the research group did not have audiotapes of the children's responses for purposes of reliability, but 60 examiners made audiotapes of selected sections of the test. The tapes gave a record of the children and how examiners interpreted their performance. Fifty-five of the tapes included narrative samples and two had 410 phonology targets (for two children). Transcriptions made by the University of Massachusetts Language Laboratory (including the second

author) showed 89% for the examiners' online narrative scoring and 94% for phonology.

#### **RESULTS**

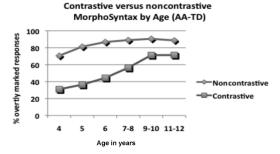
In general, these results support "mixed usage" by a large number of children for a large number of features, rather than a strong divide between one part of the group with one pattern and the other part with another pattern, and one set of primarily zero-marked features and one set of overtly marked features.

## Q1. To what extent did individual children mix ZM and OM responses?

Individuals' mixing of response types was prevalent whenever there was variability in the responses, that is, except when children used OM exclusively. There was an overall decrease in the number of children who were high zero-markers, and also in the number of features with mainly ZM responses. At the same time, there was an increase in the number of children who were high overt-markers and in the number of features to which individual children gave 100% OM responses ("100%-ers").

Note that the high levels of variability in question in this study were for contrastive morphosyntax. As shown in Figure 3, noncontrastive MS was, in fact, noncontrastive. That is, it developed at a similar rate for all typically developing children regardless of first dialect. By age 6, the noncontrastive syntax was at near-ceiling levels; that is, there were too few responses that did not match the OM targets to find variability for either group.

On the other hand, for contrastive morphosyntax, shown in Figure 4, considerable variability was found within the AAE-speaking children's response patterns, as indicated by the standard deviations around the means (SD=20) at each age). However, one cannot tell from the response patterns of the *whole* group considered together whether it includes subgroups of individuals with differing response patterns. That is, were there some children at each age who answered all items with ZM forms (AAE-like), others who



**Figure 4.** Contrastive. Main effects of age and dialect, and a significant interaction: Age, F(5, 717) = 37.13, p < .0005;  $\eta^2 = .21$ ; dialect group, F(5, 717) = 322.74, p < .0005;  $\eta^2 = .31$ ; Interaction age by dialect, F(5, 717) = 5.184, p < .0005;  $\eta^2 = .04$ 

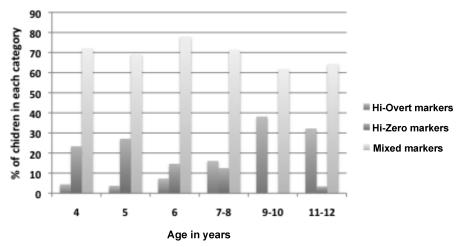
answered with all OM responses, and yet others who appeared to be "mixed markers," those who used a pattern that included some ZM and some OM responses. Two such possibilities are shown in Figures 1 and 2.

Figure 5 indicates that the rising numbers of OM responses shown in Figure 4 came from a large number of children with moderate rates of OM (i.e., the "mixed markers"), rather than from a small number of children with very high rates of OM.

The number of hi-overt-markers among the children surpassed the number of hi-zero-markers, in the 7- to 8-year-old group, but both numbers were small. Most children (70%) at those ages were mixed markers. At ages 9-12 years, where Figure 4 shows an average of 70% OM responses, Figure 5 shows that only 40% of the children were giving primarily OM responses and the other 60% were giving mixed responses. Crucially, at this age, no one gave *all* ZM answers.

Thus, the second part of our hypothesis was only partially supported. A significant minority of these typically developing (TD) children aged 6, 7, and 8 years, gave all ZM responses. It was not until the 9-year-old group that the all-zero-marking response profile all but disappeared. After age 8, if a TD AAE-speaking child gave ZM responses, she or he used overt marking as well (i.e., was to some extent a "mixed marker").

# Relative numbers of children with each profile of MS marking by age



**Figure 5.** Statistically significant differences by  $\chi^2(10, N = 511) = 95.1$ , p < .0005). Ages 9-10 and 11-12 years were not different from each other,  $\chi^2(2, N = 135) = 2.9$ , p = .23. Number of features with 100% overt marking (100%-ers) all ages: ANOVA, F(5, 505) = 53.6, p < .0005,  $\eta^2 = .35$ . Pairwise comparisons for ages 9-10 and 11-12 years, p = 0.9.

# Q2. Did children adopt OM feature by feature, or did they tend to use both ZM and OM for the same features?

Our expectation for how many features would be 100% OM at which ages was derived from an examination of the sequence of responses to these stimuli in the field-testing among the GAE controls. Indeed, only about one fourth of the GAE controls gave 100% OM responses to these 10 features. Control participants 7 yeas and older had an average of eight "100%-ers" (with all features overtly marked 100% of the time), and only three control children had fewer than two 100%-ers.

Among the AAE first-dialect children, including those who were high-overt-markers (from Figure 5), only 9 children did 100% overt marking for all 10 features, another 12 for 9 (of 10) features, and 26 for 8 of 10, and three quarters of those (47 children) were 9 years or older. Forty percent of the AAE first-dialect children had two or fewer "100%-ers," and 10% across all ages had none.

Among the children who were "mixed markers," there were almost as many differ-

ent combinations of zero, middle, or 100% overt marking for the 10 features as there were children (349 patterns for 360 children). Nonetheless, there was a fairly well-defined sequence in the age at which 50% of the AAE first-dialect TD children used 100% OM for the individual features. A loose implicational hierarchy was formed by tracking which features were 100%-ers for children with different numbers of such features. For example, every child with 3rd -s as a 100%-er had at least four other 100%-ers, and it was never a participant's first 100%-er. Children's first feature was most likely "is copula" (26 of the 67 children with only one 100%-er) or "are aux" (14 children) or GAE-like negation (12), but those "early" features were not always children's first 100%-features. GAE-like negation, for example, was not one of the 100%-ers for 21 of the 170 children with 5 or more 100%-ers.

Even looking within one sentence, in the three items that elicited both marking on the "do" auxiliary and negation structures consistent with either AAE or GAE, marking was not consistent throughout the sentence. Of

**Table 2.** Comparison of percent of children who were 100%-overt markers for given features

		Age when 50% are All overt-markers	Overall% All overt-markers (all ages)	% of 9–12-year-olds who are All overt-markers
1	<i>Is</i> Copula	5 years	53%	48%
2	Are Aux	6	54	84
3	GAE Negation <sup>a</sup>	6	54	84
4	Past /-ED/	7	41	69
5	Invariant <i>bave</i>	8	34	64
6	<i>Is</i> Auxiliary	9	42	50
7	Invariant do	9	26	54
8	Possessive /-s/	>12	30	41
9	Invariant was	>12	16	37
10	Invariant 3rd person singular verbs	>12	9	17

<sup>&</sup>lt;sup>a</sup>Although the terms ZM and OM do not distinguish AAE and GAE negation, we continue to use the terms as a shorthand and in order to be consistent.

the 675 responses that zero-marked the verb in this construction (for the three questions combined), roughly half had AAE negative structures ("he ain't got none") and just over half (56%) had GAE-like negative structures ("he has no shoes"). Thus, there were responses like "He don't have an umbrella," but mixtures in the opposite direction (with GAElike agreement), such as "He doesn't have no balloons," were very rare.

Once again the first part of our hypothesis was supported but the second part was not. As seen in Table 2, there was no feature that was 100% OM for more than 84% of the children, and most were 100%-ers for fewer than half of the children. Among the 9- to 12-yearolds, no feature was always ZM, but 3rd -s was ZM at least some of the time for over 80% of the children.

#### DISCUSSION

In summary, the older children were more likely overall to produce more overt marking than the younger children, but not all the time nor for all, or even most, of the features. To that extent, their use of contrastive features reflected the patterns of variability in the adult dialect. The turning point between more chil-

dren who were zero-markers and more children who were overt markers came well after age 6. If we were to base our expectation of levels of marking from the overall group data (as in Figure 4), we would expect approximately 25% ZM at age 9 and older. But in fact, we would not expect that three-quarters of the 9- to 12-year-olds to use no ZM. The child marking-profiles (summarized in Figure 5) demonstrate that the 25% ZM responses came from 60% of the children. If more than half of the AAE-speaking TD children are zeromarking these contrastive features variably, then the contrastive features are not in themselves signs of a disorder for them at any age. These results do suggest, however, that a *high* ZM profile is not expected after age 8. Failure to see any overt marking or exclusive ZM use after those ages might be a symptom of a language problem.

Furthermore, there was no contrastive feature of the 10 we examined that was overtly marked (in a GAE manner) by all children. Some, like AAE multiple negation and zero "are" auxiliary became increasingly rare, especially compared to the high levels of ZM for the various forms of third-person singular agreement on verbs. Subject-verb agreement is often considered together as one feature, but we saw here (in Table 2) that the agreement on auxiliary verb "have" became more general at age 8 and on "do" at age 9. The past copula "they were" and GAE-like agreement on lexical verbs (like "he sits" or "he pushes") were not used regularly even at age 12 (this is often observed in highly educated AAE-speaking adults as well). Thus, throughout elementary school, clinicians and teachers should expect variable usage from AAE first-dialect children to a higher degree than they expect GAE-like usages.

One might ask how representative these findings are of a general AAE-speaking population? This sample had by design an overrepresentation of children from working-class families where levels of ZM are thought to be highest. Comparisons of this group with a sample matched to the 2000 U.S. Census figures for a general AA population showed slightly lower levels of ZM, but similar overall trends (Jackson & Pearson, ••••, U.S. Bureau of the Census, 2000). Furthermore, these data came from a language test that took place in a school or clinic, given mostly by GAE speakers, a situation where contextual factors would likely encourage minimal zeromarking (or what some might term contextual code-switching).

Still, the sequence of features shown here cannot be taken too literally. Our elicitation materials no doubt had some limitations. After all, the GAE controls, who are by definition native GAE speakers, did not always respond to all items in a GAE manner, but they did so often enough (>90% of the time, for eight or more features at a time) to convince investigators that the items could elicit the different responses sought. Also, although no regional differences were found in these data in other studies (Jackson & Pearson, ••••; Pearson, Velleman, Bryant, & Charko, 2009), there may be some subtle regional effects that our analyses did not capture. For example, when we investigated reasons why the possessive noun was both a very early and very late 100%-feature for a number of children, it was revealed that a slightly disproportionate 8 of 14 of the "early" overt possessive markers were from the North Central region (compared with 28% in the whole sample). By contrast, 70% of the children for whom possessive -s was a late 100%-feature were from the South (compared to 59% in the total sample). The numbers are much too small for statistical confirmation, but they demonstrate that there is much more to explore in this domain, and with these data.

#### **CONCLUSIONS**

The challenge of distinguishing language difference from language disorder in the face of the variable inflection conundrum (ZM vs. OM) has been well documented. Examination of noncontrastive features to determine language disorder is one viable alternative now being used to avoid the misinterpretation of mixed marking patterns (Seymour et al., 2003, 2005). However, despite the similarities between varieties (AAE and GAE), it is the differences, that is, the contrastive features, that stand out to those familiar and unfamiliar with the variety alike. So, to the extent that judgments about children's linguistic competence are frequently made in the minds of educators and clinicians long before the first referral for formal evaluation is made, an understanding of the developmental nature of variable marking is important. These data shed some light on the developmental landscape of variable marking in AAE first-dialect users. First and foremost, they demonstrate that ZM in and of itself is not diagnostic for any child at any age. Rather, it is the degree to which ZM is manifested at certain ages that becomes relevant, and although it can be expected that AAE first dialect speakers will move toward greater use of OM the longer they are in the educational setting, few of them will be expected to match GAE speakers in their use of OM. Furthermore, the data reveal that the majority of AAE-speaking children move toward mixed marking patterns reflective of the adult variety. Therefore, the absolute absence of OM is indeed uncharacteristic for AAE speakers especially after the age of 8 years and is possibly an indicator of a language problem. In

of distinguishing language difference and language disorder in the face of mixed marking patterns, knowing what to look for, and when, increases our ability to identify clinical markers of impairment by taking note of atypical patterns as early as possible.

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Authors: Janice E. Jackson and Barbara Zurer Pearson

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