

## Research Article

# Changing Nonmainstream American English Use and Early Reading Achievement From Kindergarten to First Grade

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**Purpose:** This study had 2 principal aims: (a) to examine whether children who spoke Nonmainstream American English (NMAE) frequently in school at the end of kindergarten increased their production of Mainstream American English (MAE) forms by the end of first grade, and (b) to examine concurrent and predictive relations between children's NMAE use and reading skills.

**Method:** A longitudinal design was implemented with 49 children who varied in their spoken NMAE production in kindergarten. Word reading, phonological awareness, and receptive vocabulary skills were measured at both time points.

**Results:** Analyses indicated that most children significantly increased their production of MAE forms between the 2 time points; however, this change was not associated with change

in letter-word reading and phonological awareness skills. Regression analyses showed that NMAE use in kindergarten contributed significantly and independently to the variance in word reading in first grade, even after accounting for phonological awareness (although word reading in kindergarten was the best predictor of word reading in first grade).

**Conclusions:** The findings extend previous reports of a significant relation between NMAE use and reading among young children. Theoretical, research, and educational implications of the findings are discussed.

**Key Words:** Nonmainstream American English, reading, dialect

Empirical investigations of the relationship between children's spoken Nonmainstream American English (NMAE) use and their literacy achievement are becoming more prevalent in the literature. Here, we use the term NMAE to refer to dialects of American English that have features which differ in type, frequency, and contextual use from more Mainstream American English (MAE) dialects. While MAE and NMAE dialects share many features, NMAE features generally do not align well with standard English orthography. Recent investigations of child NMAE use have focused on multiple language varieties, including Southern

American English (Oetting & Garrity, 2006; Oetting & McDonald, 2001), Creole English (Oetting & Garrity, 2006), Appalachian English (Garn-Nunn & Perkins, 1999), Latino English (Gutiérrez-Clellen & Simon-Cerejido, 2007), and African American English (Craig & Washington, 2006; Horton-Ikard & Miller, 2004; Oetting & Pruitt, 2005; Pearson, Velleman, Bryant, & Charko, 2009). In this study, children produced NMAE features in speech to some degree, and we questioned whether frequent and changing production of NMAE forms is related to reading achievement.

## *Dialect Variation and Early Reading Achievement*

The role that NMAE production might play in the acquisition of reading and writing skills was the focus of many investigations nearly 40 years ago and is being reexamined by researchers now for three primary reasons. First, national- and state-level data continue to indicate that race and language minority children continue to perform significantly below their peers on reading achievement tests (National Assessment of Educational Progress, 2007), despite federal mandates to close academic achievement gaps (No Child Left Behind Act, 2002). Importantly, literacy achievement gaps cannot be attributed solely to factors like race and socioeconomic status (SES), and are also accounted for by differences in children's oral language, emergent, and conventional

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literacy skills, as well as family, schooling, and instructional variables (Connor, Morrison, Fishman, Schatschneider, & Underwood, 2007; Connor, Son, Hindman, & Morrison, 2005; National Early Literacy Panel, 2009; National Reading Panel, 2000; Snow, Burns, & Griffin, 1998; Spira, Bracken, & Fischel, 2005). Discussions of achievement gaps rarely center on dialect differences. However, poor academic achievement is often observed among children who are living in poverty and children from racial minority backgrounds (National Assessment of Educational Progress, 2007). Meanwhile, children in these groups have also been observed to produce NMAE forms frequently in speech (Horton-Ikard & Miller, 2004; Jackson, Renn, Van Hofwegen, & Wolfram, 2009; Washington & Craig, 1998). Thus, spoken dialect differences may be a significant factor to consider in attempts to understand and alleviate achievement gaps.

Second, there is converging evidence of the importance of oral language skills to literacy learning, especially among young children who are just learning how to read and write. Both linguistic skills (e.g., using language to communicate well, both expressively and receptively) and metalinguistic skills (e.g., thinking about and consciously manipulating language) are critical concurrent and predictive factors for children's literacy performance (McCardle, Scarborough, & Catts, 2001; National Early Literacy Panel, 2009; National Reading Panel, 2000; Scarborough, 2001; Snow et al., 1998; Storch & Whitehurst, 2002). Moreover, researchers across multiple recent studies have reported significant (although varied) relationships between young children's NMAE production and performance on multiple oral language and literacy measures (e.g., Charity, Scarborough, & Griffin, 2004; Connor & Craig, 2006; Terry & Connor, 2010; Terry, Connor, Thomas-Tate, & Love, 2010). Thus, understanding how spoken dialect differences might interact with these variables is essential.

Finally, renewed interest in the relationship between spoken NMAE production and early reading achievement stems from questions about the theoretical and practical implications of children's NMAE use. Emerging evidence seems to suggest that current theoretical perspectives on the relationship between children's NMAE use and literacy skills do not adequately account for what is really happening for children who enter schools speaking NMAE dialects that differ significantly from MAE and print. As the prevailing hypothesis, proponents of the linguistic interference/mismatch hypothesis (Labov, 1995) suggest that the difficulty many children who speak NMAE dialects appear to encounter while learning how to read may be related to differences between speech and print. Emphasizing the phonological, morphosyntactic, and semantic differences between NMAE, MAE, and standard English orthography, this perspective suggests that an NMAE speaker who often reduces final consonant clusters (e.g., *bes* for *best*) or omits inflections or forms of the verb to be (e.g., *Yesterday he walk to the store* or *He running fast*) in speech may be confused by seeing a consonant cluster, past tense marker, or additional verb in print, and thus have more difficulty learning how to read.

There is some empirical evidence to support this hypothesis, including significant, negative correlations that have been observed between children's NMAE production and

reading achievement (e.g., Charity et al., 2004; Craig & Washington, 2004; Terry, 2010). For instance, among a large cross-sectional sample of children in kindergarten through second grade, Charity et al. (2004) found significant correlations between production of NMAE forms on a sentence imitation task and word reading, passage comprehension, and nonword reading skills.

However, new evidence seems to implicate children's linguistic and metalinguistic knowledge as contributing to their literacy skill, perhaps above and beyond their spoken NMAE production. In particular, findings of U-shaped, non-linear relations between measures of NMAE production, language, and reading skills (e.g., Connor & Craig, 2006; Terry et al., 2010), more complex language use among children who produce NMAE features frequently in speech (Craig & Washington, 1994; Ross, Oetting, & Stapleton, 2004), and oral reading errors that are not due to differences between spoken NMAE features and standard orthographic features (Labov & Baker, 2010) indicate that the relationship is not always a negative one. That is, frequent NMAE production is not always associated with poor reading achievement. For example, Terry et al. (2010) found significant relationships between first graders' NMAE use and their word reading, phonological awareness, and vocabulary skills; however, these relationships were not always negative. A distinct U-shaped relationship surfaced between NMAE production and word reading and expressive vocabulary that depended on the percentage of children who qualified for free and reduced lunch programs. Meanwhile, a negative linear relationship surfaced for phonological awareness that was independent of school poverty levels.

Such complex findings have led some researchers to propose more nuanced hypotheses on the relationship between dialect variation and reading achievement, including the linguistic awareness/flexibility hypothesis (Terry, Connor, Petscher, & Conlin, in press; Terry et al., 2010; Terry & Scarborough, 2011) and the dialect-shifting hypothesis (Craig, Zhang, Hensel, & Quinn, 2009). Proponents of both hypotheses have implicated change in NMAE use as an important variable to consider in these relationships. Proponents of the linguistic awareness/flexibility hypothesis have expanded on this notion, suggesting that (a) changes in children's dialect use (a pragmatic phenomenon referred to as code switching or style shifting) is a metalinguistic skill, (b) this metalinguistic skill is related to those known to support reading acquisition (e.g., phonological awareness), and (c) the relationship between children's NMAE use and reading skills is sensitive to developmental changes in both variables over time. Empirical support for this hypothesis may be evidenced by findings that change in NMAE production during first and second grades was related to change in reading achievement (Conlin, 2009; Terry et al., in press), that school-age children change their NMAE production between oral and written tasks (Craig et al., 2009), and that children's NMAE production in preschool through third grade is correlated with their phonological and morphosyntactic awareness (Connor & Craig, 2006; Terry, 2006; Terry et al., 2010; Terry & Scarborough, 2011). It is plausible that changes in children's dialect use (by oral or written context) are indicative of sensitivity to language in general, with weaker sensitivity

interfering with reading achievement because children who have stronger linguistic and metalinguistic skills tend to have less difficulty acquiring reading skills (National Early Literacy Panel, 2009; National Reading Panel, 2000; Scarborough, 2001; Snow et al., 1998).

### ***Changes in Dialect Variation and Early Reading Achievement***

Longitudinal designs are particularly helpful in understanding how change in NMAE production is related to reading achievement. To our knowledge, only two longitudinal studies have been reported in the literature that have examined specifically the predictive relationships between children's NMAE use and early reading achievement. In the first study, Conlin (2009) found that children who began first grade producing NMAE forms more frequently in speech had poorer word reading and passage comprehension outcomes at the end of the school year, compared to children who began the year producing NMAE forms less frequently, even controlling for fall reading skills. Conlin (2009) also found that children generally decreased their spoken production of NMAE forms significantly over the first-grade year. In a second, follow-up study with only children who began first grade speaking with some or strong variation from MAE (according to the Diagnostic Evaluation of Language Variation—Screening Test [DELV-S]; Seymour, Roepers, & de Villiers, 2003), Terry et al. (in press) found that most children decreased their spoken production of NMAE forms during first grade but not second grade. Moreover, change in children's spoken NMAE production predicted word reading and passage comprehension outcomes at the end of second grade. In other words, the more their NMAE use decreased, the greater their gains in reading skills.

Taken together, findings from these studies bring two important trends to the forefront. First, NMAE use changes rapidly among many children at the same time that they are gaining knowledge of English orthography and the oral language skills necessary to access it to read and write proficiently. Interestingly, first grade appears to be a critical point of shift from less NMAE to more MAE use among young children. Conlin (2009), Craig and Washington (2004), and Terry et al. (in press) have all reported significant differences in children's NMAE production between kindergarten and first grade or during the first-grade year. Perhaps through formal literacy instruction, children begin to notice and compare differences between their speech and print as they become more acquainted with the linguistic and orthographic information needed for successful word and sentence reading.

Second, children who begin formal reading instruction using substantial amounts of NMAE in school may be at risk for experiencing reading failure later in school. This trend is supported by multiple studies, irrespective of the racial and socioeconomic diversity of the sample, the methodology applied (e.g., correlational or longitudinal), the reading skill under investigation (e.g., phonological awareness, word reading, or passage comprehension), or the measure of dialect variation used (e.g., dialect density calculated from language samples or sentence imitation tasks), and appears to be most critical for children living in poverty or who attend

high-poverty schools (Charity et al., 2004; Conlin, 2009; Craig et al., 2009; Terry, 2010; Terry et al., 2010, in press). However, rather than conceptualizing NMAE use as a risk factor in early reading achievement, perhaps the malleability of young children's NMAE use is more important to consider. That is, perhaps reading outcomes may be improved for school-age children who, for whatever reason, significantly increase their MAE use in school during the early elementary years.

It is not clear why or under what circumstances children change their dialect use. Wolfram and Schilling-Estes (2006) have argued that a speaker's increase, decrease, or modification of native dialect use requires some degree of metalinguistic awareness, because one must be cognizant of the communicative context in which he or she is engaged to augment his or her dialect use (e.g., various styles available for use or social norms associated with the styles). Thus, a measure of children's dialect use in specific contexts (e.g., school vs. home) or a measure of changes in children's dialect use over time may be a marker of their metalinguistic skill. Additionally, it may be that children with stronger language skills, irrespective of dialect use, have better reading outcomes. As noted previously, researchers have found that young children who produce many NMAE features in speech also exhibit quite complex language use (Craig & Washington, 1994; Ross et al., 2004). Because language skills also have significant concurrent and predictive relationships with reading skills, exploring these variables simultaneously would be helpful in understanding how and whether dialect variation truly interferes with the acquisition of reading skills.

### ***Purpose of the Study***

It is important not to underestimate how change in these variables over time may change the relationships observed between them. In a review of the literature on predicting later reading achievement, Scarborough (2001) drew our attention to the often overlooked but critically important notion that timing matters when interpreting observed associations between various language and literacy measures, noting that within longitudinal samples different oral language variables are better predictors of reading outcomes at different points in time. Timing is just as important to consider when conceptualizing how and why children's changing NMAE use is related to early reading outcomes. For instance, using a correlational design in a preschool sample, Terry (2010) found that NMAE production was correlated significantly with several emergent literacy skills (e.g., rhyme awareness, print concepts, and alphabet knowledge) but did not remain a significant independent predictor of performance when entered into regression models with related emergent literacy skills as predictor variables. Conversely, using a longitudinal design with first graders, both Conlin (2009) and Terry et al. (in press) found that NMAE use remained a significant independent predictor of reading outcomes across the first-grade year. Differences in these findings may be due to the age of the participants, the design of the studies, or both. Teasing apart these possibilities is best achieved through longitudinal designs.

Thus, the purpose of this study was to extend the research literature by examining the relationship between dialect variation and early reading achievement longitudinally among children in kindergarten. We chose to focus on younger children in this study for three reasons. First, as kindergartners, the children in this study had received relatively less formal word reading instruction; therefore, the relationship between NMAE use and reading acquisition could be explored relatively free of instructional effects. Second, while a significant relationship has been observed between NMAE use and specific reading skills across the elementary years, the nature of that relationship does appear to differ as children grow older, become more skilled readers, and change their NMAE use (Washington & Thomas-Tate, 2009). Thus, it is necessary to consider whether the relationships would remain the same for children who are younger novice readers and who may not change their NMAE use significantly. Third, if children's NMAE use contributes significantly and independently to critical early reading skills that are related to later reading achievement (e.g., phonological awareness and word reading), then it may be important to consider dialect variation in educational practice and reading research. Specifically, we proposed the following research questions:

1. Do children decrease their spoken production of NMAE forms (i.e., increase their MAE production) in school between kindergarten and first grade?
2. Is change in NMAE production associated with change in letter-word reading and phonological awareness between these time points?
3. Does NMAE production in kindergarten predict letter-word reading skill in first grade above and beyond phonological awareness?

## Method

### Participants

The sample included 49 children. Although similar to the participants in our previous work, this sample of children is unique. Students were participating in a larger longitudinal study that followed children who did or did not attend Early Reading First classrooms in prekindergarten into kindergarten and first grade. This larger longitudinal study included 100 children, and 77.5% of the children had attended an Early Reading First classroom in prekindergarten. Early Reading First is a federally funded program that provides funding for the development of model preschool programs that implement instruction based on research findings. A fundamental expectation of the program is that the existing classrooms are generally of high quality while serving children who are generally considered at risk for academic underachievement, typically related to family SES.

In this larger investigation, children were assessed at the end of kindergarten and at the end of first grade. Only children who were given the DELV-S (Seymour et al., 2003) at both time points and who produced at least one NMAE form on this measure in either kindergarten or first grade were included in this study. We included only children who produced at least one NMAE feature while completing the

DELV-S because we required assurance that all participants used NMAE in speech (whether frequently or infrequently). No other selection criteria were applied, including children's race or ethnicity. Of the 49 remaining children in the sample, 29 (59%) were girls, and 44 (89.8%) were African American (the remaining five children were from White, Hispanic, or mixed race groups). None of the children had any known speech, hearing, learning, or developmental difficulties. Individual student SES was unknown. Children attended nine different public schools from four urban school districts in a large metropolitan area in the southeastern region of the United States. The schools served substantial numbers of children from low-income households, as indicated by the percentage of children attending the schools who participated in federal free and reduced price lunch programs (each greater than 30%).

### Measures

**Dialect variation.** Children's spoken dialect use was measured using Part I of the DELV-S, which determines whether children are speaking with strong, some, or no variation from MAE. On this part of the DELV-S, children were presented with pictures of actions and asked to repeat verbatim statements (e.g., *I see her brushing her teeth*), complete cloze statements (e.g., *I see little kites. I see a big kite. The boys have little kites, but the girl \_\_\_\_*), or answer questions (e.g., *Why did their mother give them medicine yesterday?*). Their responses were recorded and scored for the production of MAE or NMAE forms (e.g., *teeth* or *teef*; *The girl has* or *have a kite*; or *They was* or *were sick*). This part of the DELV-S is 15 items. Studying children's responses to these 15 items allows their language use to be categorized as speaking with strong, some, or no variation from MAE, according to criterion scores set by the DELV-S. In this sample, the percentage of children who were classified as speaking with some or strong variation from MAE was 77.6% in kindergarten and 65.3% in first grade.

Although the DELV-S classified some children as speaking generally with no variation from MAE, all children produced at least one NMAE feature while responding to these items on the DELV-S in kindergarten, which was the established inclusionary criteria for participation in this study. To clarify, at the end of kindergarten, responses to Column A (i.e., NMAE responses) on Part I of the DELV-S ranged from 1 to 15, with the majority of children providing an NMAE response on eight or more items (32 children, 65.3% of the sample). Only three children provided only one NMAE response. Responses to Column B (i.e., MAE responses) ranged from 0 to 14, with the majority of children providing an MAE response on six or fewer items (36 children, 73.4% of the sample). This distinction is important to note, as we were interested in using the DELV-S to quantify children's spoken production of NMAE forms so that we could examine the relationship between changes in rate of NMAE production and children's language and literacy performance.

To use the DELV-S in this manner, we computed a percentage of dialect variation (DVAR) score. DVAR is a continuous variable that represents the percentage of DELV-S items on which the child produced an NMAE form in lieu of



an MAE form (Terry et al., 2010). DVAR was computed using Part I of the DELV-S, where the number of items that varied from MAE (i.e., NMAE, Column A) was divided by the total number of scoreable items (i.e., NMAE + MAE, Column A + Column B), and multiplied by 100. Items that could not be judged to be one or the other (Column C) were not included. Thus, DVAR represents the percentage of scoreable items that varied from MAE. See Terry et al. (2010) for a more comprehensive discussion of the DVAR. Mean DVARs are provided in Table 1.

**Reading and phonological awareness skills.** Children's letter identification, word recognition, and phonological awareness skills were measured with three subtests of the Woodcock-Johnson III Tests of Achievement (WJ III; Woodcock, McGrew, & Mather, 2001). On the Letter Word Identification subtest, children are presented with individual letters to name and increasingly more difficult words to read. On the Sound Awareness subtest, children are presented with multiple phonological awareness tasks with increasing difficulty, including rhyming (e.g., *What rhymes with feet*), deletion (e.g., *Say snap without /n/*), reversal (e.g., *Say corn-pop backwards*), and substitution (e.g., *Change the /s/ in sun to /f/*). Student performance on these subtests is represented both as standard scores and W scores. Standard scores on the WJ III have a mean of 100 and a standard deviation of 15. The W score is an equal-interval scaled score, where 500 represents the average achievement of a typically developing 10-year-old, and the standard deviation is 15. W scores are a more accurate representation of change in performance over time, as compared to raw and standard scores, because any given interval represents the same difference in change in the skill measured, irrespective of where the interval is on the scale. For instance, a difference of 15 points on a W score is the same irrespective of whether the difference is between 315 and 330 or 515 and 530. Alternatively, a raw score

difference of 15 points can be very different between Test Items 1 and 15 compared to Test Items 30 and 45, as the items may vary in difficulty level. In this manner, the W score represents actual change in the skill and allows for a more exact analysis of change in relation to other skills and DVAR scores. Mean standard scores and W scores are provided in Table 1.

**Receptive vocabulary.** Children's oral receptive vocabulary was measured with the Peabody Picture Vocabulary Test—Fourth Edition (PPVT-4; Dunn & Dunn, 2007). On this task, children are presented with pictures of common objects and actions, and asked to point to a target word out of a field of four choices (e.g., *Point to the ball*). Student performance on the PPVT-4 is represented as standard scores. Standard scores on the PPVT-4 have a mean of 100 and a standard deviation of 15. Mean standard scores are provided in Table 1.

## Procedure

Approval for this study was granted by the university's institutional review board prior to obtaining informed consent from the participants' parents. Children were assessed at the end of the school year in kindergarten and first grade by trained research staff in a quiet location at their current school or the school they attended during prekindergarten. All measures were given at both time points, and administered and scored in standardized format according to test manuals. Scoring reliability was computed for all measures. Two independent examiners scored 20% of the sample's performance. Interrater reliability was greater than 90% for all measures. When discrepancies were found, the first author rescored the measure for accuracy.

## Results

To answer the research questions, changes in language and reading skills and changes in spoken NMAE production were examined using *t* tests. Then, correlation and regression analyses were used to examine the relationship between change in spoken NMAE production and language and reading skills, as well as predictive relationships between these variables. Student performance on all measures is provided in Table 1. Correlations between these measures are provided in Table 2.

## Change in Dialect Use and Reading Skills

Children's oral language and reading performance varied considerably at both time points (standard deviations for the sample were similar to those for the tests' norming samples). However, mean standard scores for the present sample indicated that many children in the sample had average or above average oral language and reading skills. Analyses of W scores indicated that children exhibited significantly increasing letter-word reading,  $\eta^2 = .77$ ,  $t(48) = -12.54$ ,  $p < .001$ , and phonological awareness,  $\eta^2 = .45$ ,  $t(48) = -6.37$ ,  $p < .001$ , skills from kindergarten to first grade. Children's DVAR scores also decreased significantly,  $\eta^2 = .16$ ,  $t(48) = 3.0$ ,  $p < .01$ . However, correlation analyses with the gain scores for each variable revealed no significant

**TABLE 1. Mean student age, dialect variation (DVAR), and performance on language and reading measures at the end of kindergarten and the end of first grade (N = 49; standard deviations in parentheses).**

Variable	Kindergarten	First grade
Age (months)	75 (4.4)	86.1 (4.5)
DVAR (%)**	65 (29.2)	55.8 (28.1)
PPVT-4 (standard score)	96.2 (9.8)	97.4 (11.4)
WJ III Letter Word ID (standard score)	115.8 (14)	109.9 (11.9)
WJ III Letter Word ID (W score)***	420.2 (31.9)	453.3 (25.6)
WJ III Sound Awareness (standard score)	107.4 (13.9)	110.7 (13.8)
WJ III Sound Awareness (W score)***	474.2 (12.9)	483.5 (9.5)

*Note.* PPVT-4 = Peabody Picture Vocabulary Test—Fourth Edition; WJ III = Woodcock-Johnson III Tests of Achievement; Letter Word ID = Letter Word Identification, the subtest on the WJ III that measures children's letter recognition and single word reading skills. Sound Awareness is the subtest on the WJ III that measures children's phonological awareness skills. Significant differences in mean scores between two time points are denoted as follows:

\*\* $p < .01$ . \*\*\* $p < .001$ .

**TABLE 2. Correlations between DVAR and language and literacy measures in kindergarten and first grade.**

Measure	1	2	3	4	5	6	7	8	9	10	11	12
1. PPVT-4_K	—											
2. Letter Word ID-SS_K	.40**	—										
3. Letter Word ID-W_K	.30*	.86***	—									
4. Sound Awareness-SS_K	.43**	.53***	.36*	—								
5. Sound Awareness-W_K	.39**	.43**	.50***	.90***	—							
6. DVAR_K	-.26	-.38**	-.54***	-.31*	-.46**	—						
7. PPVT-4_1	.75***	.40**	.28*	.43**	.36*	-.19	—					
8. Letter Word ID-SS_1	.42**	.82***	.67***	.55***	.44**	-.45**	.42**	—				
9. Letter Word ID-W_1	.32*	.72***	.82***	.39**	.47**	-.55***	.28	.87***	—			
10. Sound Awareness-SS_1	.46***	.59***	.59***	.56***	.60***	-.45**	.57***	.64***	.63***	—		
11. Sound Awareness-W_1	.34*	.46**	.61**	.45**	.61***	-.46**	.44**	.47**	.60***	.93***	—	
12. DVAR_1	-.28	-.35*	-.47**	-.36*	-.49***	.72***	-.29*	-.43**	-.48***	-.44**	-.43**	—

Note. K = kindergarten; SS = standard score; W = W score; 1 = first grade.

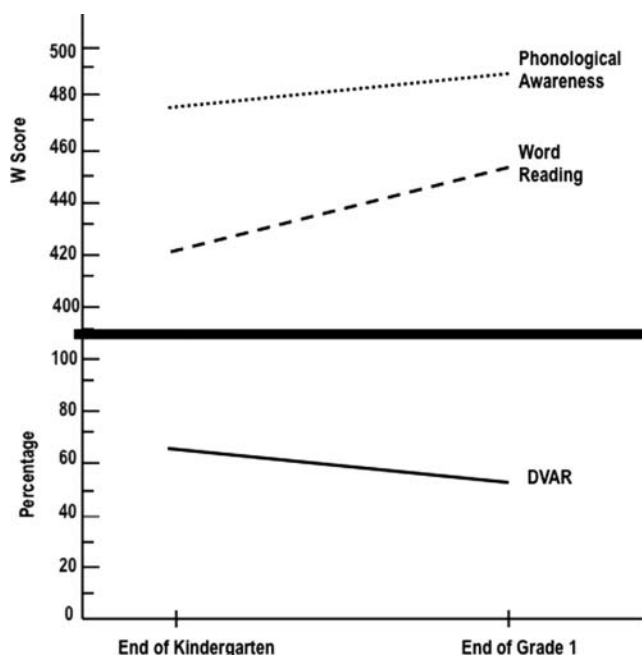
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

associations between change in children's DVAR scores and change in their letter-word recognition ( $r = -.04$ ) and phonological awareness ( $r = .08$ ) scores. Overall, these findings suggest that children decreased their production of NMAE forms from kindergarten to first grade, but this change was unrelated to their growing letter-word reading and phonological awareness skills (see Figure 1).

### Relationship Between Dialect Use, Language, and Reading Skills

Pearson correlations revealed expected significant associations between measures of NMAE use, language, and

**FIGURE 1. Student performance on word reading and phonological awareness measures in kindergarten and first grade. DVAR = dialect variation.**



reading. Correlations between DVAR and letter-word reading and phonological awareness were negative, significant, and generally moderate ( $r = -.38$  to  $-.54$ ). Interestingly, DVAR was not significantly correlated with receptive vocabulary in kindergarten ( $r = -.26$ ) and only marginally so in first grade ( $r = -.29$ ).

Regression analyses were conducted to examine predictive associations between DVAR and letter-word reading in first grade (see Table 3). First, models with both DVAR and phonological awareness in kindergarten as the input variables were significant, accounting for 30% to 36% of the variance. Models with both DVAR and phonological awareness in first grade as the input variables were also significant, accounting for 23% to 43% of the variance. However, when children's letter-word reading skill in kindergarten was entered into both models, neither DVAR nor phonological awareness remained significant variables.

**TABLE 3. Summary of regression analyses for variables predicting word reading at the end of first grade.**

Variable	$\Delta R^2$	$B$	$SE\ B$	$\beta$
Model 1	.30***			
DVAR_K		-.48	.11	-.55***
Model 2	.36***			
DVAR_K		-.37	.12	-.42**
Sound Awareness_K		.56	.27	.28*
Model 3	.68***			
DVAR_K		-.12	.09	-.14
Sound Awareness_K		.11	.20	.05
Letter Word ID_K		.57	.09	.71***
Model 4	.23***			
DVAR_1		-.44	.12	-.48***
Model 5	.43***			
DVAR_1		-.25	.11	-.27*
Sound Awareness_1		1.32	.33	.49***
Model 6	.67***			
DVAR_1		-.09	.09	-.10
Sound Awareness_1		.40	.29	.15
Letter Word ID_K		.55	.09	.68***

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

## Discussion

This longitudinal study had two primary goals: to examine whether children changed their spoken production of NMAE forms in school between kindergarten and first grade, and to examine the relationships between children's NMAE use, phonological awareness, and letter-word reading skills during this time period. While these variables have been studied descriptively in prior investigations, our intent was to extend the literature by questioning whether dialect variation contributed independently to variation in children's early reading performance over time. The findings from the analyses detailed above indicate that the answer is yes, but not without some complexity.

First, children generally decreased their NMAE production between kindergarten and first grade. This finding is similar to the results of Craig and Washington (2004), who found a significant difference in the production of African American English forms among children in kindergarten and first grade, but not preschool and kindergarten or first grade through fifth grade. It is also aligned with the findings of two longitudinal studies, where significant differences were found from the beginning to the end of the first-grade year (Conlin, 2009; Terry et al., in press).

In both studies, the authors suggested that the decrease in NMAE production is associated with the growing linguistic and orthographic knowledge that comes with learning how to read. The children in this study probably encountered formal literacy instruction during their first-grade year, as is typical practice in American schools. In fact, because the children also attended Early Reading First classrooms during their prekindergarten year, it is likely that they were exposed to intentional language and literacy instruction for at least one additional academic year. Group means reported in Table 1 certainly suggest that many of the children in the sample were performing at or above age level expectations in critical language and literacy skills in both kindergarten and first grade. Thus, it is plausible that the shift observed among children in this study was associated, at least in part, with the strong linguistic skills they had at both time points. Whether it was also associated with the language and literacy instruction they had in prekindergarten, kindergarten, or first grade cannot be answered with this data; rather, an experimental study with comparison groups is necessary to begin to answer that question. However, instructional effects are certainly plausible both theoretically and experimentally and worthy of further exploration.

Second, although correlation and regression analyses revealed significant relationships between children's NMAE use, phonological awareness, and letter-word reading skills, change in their NMAE use was not associated significantly with change in their reading skills from kindergarten to first grade. These findings contrast with those of Terry et al. (in press), who found that change in children's word reading skills from first to second grade was significantly related to change in their NMAE use. Perhaps for younger, more novice readers (as opposed to first and second graders), changes in reading skills are not dependent upon changes in dialect use. Alternatively, because the children in the sample had relatively strong language and literacy skills, perhaps

changes in dialect use were no longer important to their reading achievement. Meanwhile, DVAR maintained a significant, independent contributor to the variance in children's letter-word reading skills in first grade, above and beyond their phonological awareness skills (which are often found to be one of the strongest predictor of reading skills). Moreover, children's DVAR in kindergarten predicted their letter-word reading in first grade. It was only when children's previous letter-word reading skill (arguably the strongest predictor of future reading skill) was entered into the models that neither DVAR nor phonological awareness remained significant predictors. These findings are similar to those reported across the first grade year by Conlin (2009) and across the first and second grade years by Terry et al. (in press).

In sum, the results of this study add two new, significant findings to the literature. First, children's spoken NMAE production between kindergarten and first grade decreased significantly, but this shift in NMAE use was not associated with a change in reading and phonological awareness skills. Second, children's spoken NMAE production in kindergarten predicted their reading achievement in first grade above and beyond children's phonological awareness skills. Theoretically, these findings can be interpreted as support for two central tenets of the linguistic awareness/flexibility hypothesis. First, significant correlations were found between DVAR and metalinguistic skills (i.e., phonological awareness). Second, the relationship between these variables was sensitive to developmental changes in these variables over time. If style shifting can be captured when measuring children's dialect use over time or across specific contexts that differ in their presupposition for MAE (e.g., at school with an unfamiliar adult researcher vs. a known classroom teacher vs. a peer), then measures like DVAR may be direct or indirect measures of metalinguistic skill.

## Limitations and Future Directions

There are limitations of this study that should be considered when interpreting the findings. First, the sample size is quite small; thus, caution should be used in generalizing the findings. The small sample size also prevented multilevel analyses that could account for other factors in the observed relationships between change in NMAE production and reading achievement, including variation in classroom and school contexts. Moreover, the participants may have changed if a different language sampling technique was used. The DELV-S provides a brief and reliable snapshot of children's spoken dialect use and allows for the NMAE production of all children in the sample to be represented by their responses to the same stimuli. Nevertheless, children may respond differently to a more naturalistic task, and this may result in different characterizations of their dialect use. It is also unclear whether these results would extend to children who used NMAE dialects that were not represented in this sample. In addition, the achievement data suggest that the sample included many high-achieving students, despite risk factors like attending schools with large numbers of children who qualify for free and reduced lunch programs. The results may differ for children who are struggling to acquire the reading skills considered in this study. Moreover, the

results may differ within a sample of older children. The relationship between spoken NMAE production and reading may be very different for children who have or would have been expected to master basic word reading and comprehension skills.

Finally, the inclusionary criteria may limit the generalizability of the results. Although all children produced at least one NMAE feature on the DELV-S at the beginning of the study, the results may have differed if the sample included only children who produced NMAE features very frequently in speech. In this study, NMAE production was operationalized as a continuous variable through the DVAR score. While two or three groups of NMAE speakers could have been created in the sample (perhaps categorized by DELV-S criterion scores), we suggest that this approach is not sufficient to answer the research questions (which focus specifically on change) or to respond to larger questions within this area of inquiry (which at their core are aimed at understanding whether frequent production of NMAE forms interferes with the healthy acquisition of these skills). The primary question of whether children who speak NMAE frequently have great difficulty learning to read is a developmental question. Therefore, answers to this question must account for not only how the acquisition of reading and reading-related skills changes over time but also how NMAE production changes over time. This change may not be best captured by converting a naturally occurring continuous variable (e.g., NMAE production) into a dichotomous variable (e.g., high and low NMAE speakers) using cut points that might vary by the sample or the language sampling technique. Thus, rather than focusing on whether an individual is or is not an NMAE speaker, this study focused on how much NMAE production an individual uses and how this relates to how much language and reading achievement he or she exhibits. Thus, to answer our research questions, production of one NMAE feature was sufficient because children could either increase or decrease their production during the study. Nevertheless, more robust effects may have been found if the sample included more children who produced NMAE features more frequently in speech.

## Conclusion

In conclusion, the results of this study suggest that children decrease their NMAE use significantly from kindergarten to first grade, and that this change occurs at the same time as does increasing reading achievement. Moreover, dialect variation during this time is related to and predictive of reading outcomes in first grade. Because skills like phonological awareness are central components of developmental models for reading and because children's NMAE production was found to contribute to reading outcomes above and beyond these critical skills, the findings of this study suggest that spoken NMAE production is a variable worthy of further consideration. As reading researchers continue to investigate sources of variation in children's oral language use and performance as indicators of reading success (or failure), it seems important to consider how dialect differences might affect the design and interpretation of studies. Moreover, because these variables and models of

reading are developmental, it is important to explore these relationships among older skilled and poor readers over time. Additional longitudinal studies with large samples and experimental investigations of instructional outcomes are a necessary next step in understanding the theoretical and educational implications of dialect variation for reading development and achievement.

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