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# Effects of dialect use on the fast mapping skills of African American school-age children

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# Effects of Dialect Use on the Fast Mapping Skills of

# African American School-Age Children

by

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ABSTRACT

Previous research has shown that African American children are prone to score lower on vocabulary tests when compared to their white peers (Champion et al., 2003; Qi et al., 2006; Restrepo et al., 2006; Thomas-Tate et al., 2006; Washington & Craig, 1992). The dialect spoken by these children may be affecting their performance. However, little is known about how dialect use interacts with word learning abilities.

The current study continues a project initiated by Wyatt, Bahr, and Silliman (2007) which examined dialectal influences on the fast mapping of novel stimuli in preschool children. The participants in the current study were 19 typically developing school-age children, who were recruited from a local elementary school in West Central Florida. Prior to the experiment, the children completed a dialectal variation assessment (DELV) and a receptive vocabulary assessment (PPVT-4). The fast mapping task utilized a modified version of the blank-comparison technique (Costa, Wilkinson, McIlvane, & de Souza, 2001). For this task, twelve non-words were developed to include three AAE phonetic features: final consonant cluster reduction, backing in /str/ clusters, and final consonant devoicing. The non-words were presented in five tasks (training, recognition, comprehension, dialect, and production). Participant responses were analyzed qualitatively and described by dialect group and AAE feature.

It was anticipated that fast mapping would be influenced by dialect use; however, this was not the case. Dialect played a small role in the comprehension task -- children who spoke AAE experienced more difficulty with /skr/ non-words. Otherwise, results indicated that responses, especially during the dialect and productions tasks, were similar with numerous errors noted in both dialect groups. A notable difference was in the production of final consonant clusters, where children who spoke AAE evidenced a slight advantage. The lack of a dialect group effect was not surprising since these tasks required the participant to respond to subtle phonetic differences in the target stimuli. As a whole, dialectal influences seemed to be task and feature related. These results will be compared to the previous investigation with preschoolers (Wyatt et al., 2007) and implications for future research will be presented.

# Chapter One

## Introduction

For many years in the United States, children of African American descent were denied the right to education. Although *Brown vs. Board of Education* rectified this issue (Patterson, 2002), many African Americans were left with a sense of inferiority in relation to the dominant culture. Since then, opportunities for African American children have increased, yet their learning patterns, whether they are influenced by child rearing, school experiences, or level of income, continue to vary from those of Caucasians (Willis, 2002).

One of the outcomes of these cultural differences is the disparity between the reading levels of African American children and their Caucasian peers. A study by Brooks-Gunn, Klebanov and Duncan (1996) found that test score differences between groups were usually in the range of three-quarters to one standard deviation. In addition, according to the US Department of Education (2008), African American children compared to their white peers scored 27 points lower in reading (scale = 1-500) on the 2008 fourth grade National Assessment of Educational Progress (NAEP). Possible explanations for these ethnic differences included variations in innate abilities, poverty, and the quality of schools attended, to name a few. Studies examining the “black-white achievement gap” (e.g., Craig, Connor, & Washington, 2003; Farkas & Beron, 2004) state that this gap is noticeable at the time of school entry. Moreover, this gap gradually widens through the 12$^{th}$ grade. The reason for this difference in performance between

African American and Caucasian children may be due partially to the mismatch between African American culture, such as language socialization practices, and the methods in which standardized tests require children to demonstrate their knowledge (Restrepo et al, 2006).

Moreover, the prominent language variance between Caucasians and many African American students is the dialect they speak and bring to the task of literacy acquisition (Connor & Craig, 2006). Dialect refers to a social or geographical variety of English that is not the preferred or standard one (Adger, Wolfram, & Christian, 2007). Mainstream American English (MAE) is the primary dialect spoken by many white students and teachers and it is the dialect used in most books, including textbooks, which children encounter in school (Connor & Craig, 2006). The dialect that is common among working class African Americans is African American English (AAE). It consists of salient features such as, double negatives (i.e., I ain't got no money), final consonant devoicing (i.e. *cub* goes to *cup*), and a /d/ for /ɵ/ substitution (i.e., *dese* for *these*), to name a few (Craig, Thompson, Washington, & Potter, 2003). Some of the dialect differences that are present in AAE also occur in other dialects such as Southern American English (Adger et al., 2007); hence, there is overlap in features across dialects.

The use of AAE in children is characterized by certain systematic differences from MAE that primarily involve a set of morphosyntactic and phonological features, which are acquired at different rates based on several variables. These factors include children's: 1) age (younger children use more features than do older children; Isaacs, 1996), 2) gender (boys use more AAE than girls; Craig & Washington, 2006), and 3) socioeconomic status (SES; children from low SES families tend to use more AAE than children from middle SES families; Craig & Washington, 2006).

This study investigated the effect of dialect on word learning as an issue that may influence vocabulary development in some African American children. The literature review will cover home language experiences, vocabulary knowledge in African American children as assessed through standardized measures, and the process of word learning known as fast mapping. The statement of the problem and the study's research questions then follow in the final section.

## *Home Language Experiences*

According to Hart and Risley (1995), the most important factors for language acquisition are the economic advantages of children's homes, and the frequency and quality of oral language experiences. Three times as many black children as white children live in families whose income is below the official U.S. poverty line (Brooks-Gunn et al., 1996). Children born into these homes learn fewer words, have fewer experiences interacting with adults, and acquire vocabulary words more slowly (Washington & Craig, 1999). Additionally, poverty and home conditions affect the use and acquisition of language skills in important ways that may be evident in children's performances in class and on standardized tests.

### *Maternal Conversational Strategies*

A factor that has been frequently studied in relation to children's language acquisition is the way in which some African American mothers organize the language-learning of their children (Hammer & Weiss, 2000; Roberts, Jurgens, & Burchinal, 2005). For instance, many African American mothers rarely speak extensively or maintain a topic of conversation with their children because they tend to believe that children's language development occurs naturally. Additionally, these mothers have more limited teaching agendas and allow their children to structure their own play and many aspects of their daily routine. These practices enable the children to learn through observations, such as listening to and watching others, rather than through direct maternal teaching (Hammer & Weiss, 2000).

These early learning strategies differ from the socialization behaviors of Caucasian middle-class mothers. To name a few examples, Caucasian middle class mothers often treat their children as conversational partners and structure conversations so that children are able to take their turn at the appropriate time. In order to aid their children's comprehension and language development, these Caucasian middle-class mothers have been known to adjust their speech, and teach their children directly through play and child-oriented activities (Hammer & Weiss, 2000).

*Shared Book Reading*

Another potential factor that has been studied in relation to children's development of language and literacy skills is the impact of specific types of interactions that occur between parents and children during shared book reading. The act of shared book reading embodies components, such as predictability, structure, and scaffolding opportunities, which are potentially important to language development. The predictability of narrative books allows children to become familiar with the patterns of "book" language, including patterns of story grammar, in order to predict what will happen next. Additionally, the structure of narrative stories encourages children to provide responses that are within the context of the story read. Lastly, older individuals provide scaffolding opportunities during shared book reading tasks by fine-tuning their speech to the child's verbal abilities. As a whole, these experiences allow children to become more familiar with the patterns of language in books, as well as how stories are organized to facilitate comprehension (Anderson-Yokel & Haynes, 1994).

Researchers found noticeable differences in questioning behaviors during shared book reading (Anderson-Yokel & Haynes 1994). More often than not, Caucasian mothers posed more yes/no and WH questions to their children than did the African American mothers. These findings supported those of Hammer (2001) who found that Caucasian children produced more question-related communications and African American children produced more spontaneous verbalizations. Both patterns were related to their mothers' education, socioeconomic status, and beliefs about the significance of literacy. It should be noted that the question/answer mode utilized by many Caucasian mothers is more consistent with the mainstream school culture. Therefore, the conversational strategies used in shared book reading appear to influence a child's learning style in school.

The shared book reading style of working class African American mothers and their 18-30 month old children in the Piedmont Carolinas was the focus of another study (Brice-Heath, 1983). Results indicated that the African American mothers rarely read bedtime stories to their children at that time. If a story was read, it did not begin with the phrase "*Once upon a time…*" Instead, these mothers valued the sharing of different social experiences which required children to become proficient tellers of fictionalized, true stories (Brice-Heath, 1983). In addition, these results showed that the children were asked fewer questions during reading time and produced more spontaneous verbalizations when compared to Caucasian children whose verbalizations were in response to questions asked by their mothers. The mode of asking questions while primarily done by the middle-class white mothers in this study closely resembled the literacy styles observed in educational programs. As a result, children from mainstream families typically transition into an educational setting with relative ease. This process may be more difficult for African American children who need to learn the style of interaction used in school as well as the content and skills that are being taught through that interactional style (Hammer, 2001). These children's oral language and reading skills, including vocabulary knowledge, may be negatively influenced, at least when tested with the traditional methods utilized in schools.

### *Vocabulary Knowledge in African American Children*

African American children, particularly those who are from low income homes, have been shown to have vocabulary comprehension and production skills that are below age level at the time of entry into preschool (Hart & Risley, 1995). Strong oral vocabulary skills, including both the comprehension and production domains, have been identified as critical for both reading and general academic success (Thomas-Tate, Washington & Edwards, 2004). Without adequate reading proficiency, students are more likely not to complete schooling and to become adults who live in poverty (Qi, Kaiser, Milan & Hancock, 2006). For children to learn how to read, an extensive vocabulary is needed. In addition to a sizable vocabulary, children need a broad and deep understanding of the words they do know and acquire elaborated meanings of new words in order to become fully literate (Champion, Hyter, McCabe, & Bland-Stewart, 2003).

*Performance on Standardized Vocabulary Measures*

Some studies show that many children from low SES backgrounds from all races and ethnic groups are likely to score less well on standardized vocabulary tests (Champion et al., 2003; Qi et al., 2006; Restrepo et al., 2006; Thomas-Tate, Washington, Craig, & Packard, 2006; Washington & Craig, 1992). For instance, Washington & Craig (1992) examined the test performances of 105 low-income, urban, African American preschool and kindergarten children on the *Peabody Picture Vocabulary Test—Revised* (PPVT-R; Dunn & Dunn, 1981). Results indicated that the mean score for the participants was 79.7 with a standard deviation of 15.9, corresponding to approximately the 10$^{th}$ percentile of the normative sample. In addition, 65% of the children from their sample were more than one standard deviation below the standard score mean of 100 established for the Dunn and Dunn (1981) sample.

In attempting to explain these findings, Washington and Craig (1992) proposed that the PPVT-R was not an appropriate test to use with African American children because that population was not adequately represented in the normative sample of this test. Therefore, this test was biased against African American children and did not serve as a good measure of their vocabulary knowledge. Since that time, there have been a number of studies with newer versions of the PPVT, as well as other vocabulary measures.

In a study by Stockman (2000), the investigator examined whether the changes in the ethnic minority composition of the renormed *Peabody Picture Vocabulary Test*—Third Edition (PPVT-III; Dunn & Dunn, 1997) could be used as the sole explanation for children's better test scores when compared to the earlier edition (PPVT-R; Dunn &

Dunn, 1981). The PPVT-III was found to be an unbiased vocabulary test for African American children, but not the earlier version, the PPVT-R. On the PPVT-III, the score distribution for African American children fit the properties of the normal curve and was statistically comparable to the PPVT-III's normative sample (*M*=100), despite their mean score of 91. That is, 62% of the African American children fell within 1*SD* of the mean score of 100 as compared to 68% of the children in the normative sample, whereas in the Washington & Craig (1992) study of the PPVT-R, only 33% of the African American children scored within 1*SD* of the mean. These differences in scores between the two versions of the PPVT-III were large and statistically significant. A comparative analysis suggested that in addition to better representation of minorities, other facts may have explained improved performances in African American preschoolers on the PPVT-III, such as the number of words used, age levels sampled, and the types of words and pictures used. Thus the PPVT-III may be viewed as an easy enough test for African American children to pass, but perhaps too easy to make discriminating judgments about other children who are not African American, but are middle-class Caucasian in particular.

In another study involving preschool children from low-SES backgrounds, Qi and colleagues (2006) compared the performance of African American preschoolers to Caucasian preschoolers on the *Peabody Picture Vocabulary Test—Third Edition* (PPVT-III; Dunn & Dunn, 1997). A total of 482 African American children (227 girls, 255 boys, (mean age= 43 months, range= 36 to 54 months) and 42 Caucasian children (19 girls and 23 boys, mean age= 42.8 months, range =36 to 51 months) were participants. All of the children included in the sample were part of a Head Start program, which typically served families with annual incomes of less than $9000. Results suggested that African American children still scored slightly lower (M=77.88, *SD*=13.19) than did the Caucasian children (M=81.90, *SD*=16); however the groups did not differ significantly from one another on the PPVT-III mean scores.

It may be that the low scores for both groups on the PPVT-III are a function of poverty rather than a cultural bias in the test. The scores of children in the African American sample were approximately 1.5 *SD* below the mean of the normative sample. These scores were consistent with other studies (Campbell, Bell & Keith, 2001; Washington & Craig, 1999), indicating that, although a relatively large percentage of African American children from low-income families scored significantly lower on the PPVT-III than the national mean, the lower vocabulary scores did not necessarily indicate a problem in the children's ability to learn vocabulary because the scores were not low enough to reflect a true delay in vocabulary learning. Rather, the low scores may have reflected a lag in vocabulary learning that was due to other factors such as less access to materials and resources, and fewer experiences that could help enhance word learning abilities.

A third study compared the performance of African American and Caucasian preschool children on the PPVT-III and the *Expressive Vocabulary Test* (EVT; Williams, 1997). Restrepo et al. (2006) evaluated whether the PPVT-III and the EVT were unbiased for children regardless of ethnicity, gender, and maternal educational levels. The PPVT-III, a vocabulary measure in which children need only recognize the names of pictorial items, was used because a new standardization had included a representative sample of African American children and was presumed to be a more valid assessment tool for this population. Additionally, the EVT, an expressive vocabulary measure, was chosen to provide a broad assessment of children's one-word vocabulary production.

Using these measures, Restrepo et al. (2006) found that African American children and children whose mothers had low educational levels obtained lower scores on both vocabulary measures (PPVT-III *M*=84, *SD*=13; EVT *M*=93.83, *SD*=11.78) than did children of Caucasian backgrounds and children whose mothers had a high school or higher education level (PPVT-III M=102, *SD*=15; EVT M= 102.18, *SD*=11.49). However, the scores on the EVT tended to place African American children within the typical range and within 1*SD* of the sample mean. These researchers concluded that the EVT scores may be more representative of children's vocabulary level if children are African American or if mothers have a low educational level.

In a fourth study, investigators examined the validity of the EVT for assessing the expressive vocabulary skills of African American students (Thomas-Tate et al., 2006). The participants were 165 preschool and kindergarten children (81 boys, 84 girls). Students' ages ranged from 3;2 (years; months) to 5;11, with a mean age of 4;2. These children were recruited from several schools in two Michigan communities. Results revealed a mean EVT score of 96.42 (*SD*=11.45), which was within the range of normal variation (mean of 100, *SD*=15). Additionally, statistical analyses revealed a normal distribution of EVT scores among children. Findings again suggested that the EVT was a valid tool for assessing vocabulary skills in preschool and kindergarten aged African American children.

Finally, Champion et al. (2003) examined the recognition vocabulary skills of 49 typically developing African American preschoolers living in poverty in the southern

United States using the PPVT-III (Dunn & Dunn, 1997). These investigators found that the children from this sample obtained a mean score of 86.84 (*SD* = 10.96) on the PPVT-III, which was significantly different from the normative sample for that test (M = 100, *SD* = 15). While many of the children scored in the normal range on this test, 20 children (41%) scored more than one standard deviation below the mean demonstrating a lag in age-appropriate recognition vocabulary. To explain these lower scores, Champion et al. suggested word knowledge appeared to be influenced by cultural experiences due to the fact that children from low-SES backgrounds and culturally diverse backgrounds may not have experiences with single word meaning that preschool educators expect them to know.

According to Bradford and Harris (2003), cultural knowledge is synonymous with background knowledge, which is necessary for contextualizing information, making relevant associations, and adequate comprehension. This knowledge can also be used to influence task performance. For example, a naming task like that used in expressive vocabulary tests may be difficult for those minority children whose living experiences do not prepare them to identify objects in the way the test requires (Peña & Quinn, 1997). In addition, the African American community has been known for using words in creative, innovative ways that are constantly changing. In the Champion et al. (2003) study, it was suspected that some test items often evoked strong alternative responses from the children tested. Examples of such words were: fly and squash. In the African American community, the word *fly* means cool or stylish; and *squash* can be used to denote the end of a current activity. It is possible that cultural knowledge contributed to the poor test performances in that these young children had not yet acquired the “standard” meaning of the words presented. Therefore, they did not see a picture that matched their understanding of these words.

Hence, differences in vocabulary knowledge in African American children obviously exist. However, few studies have considered the process of new word learning, which can be used to measure children's semantic knowledge.

## *Process of New Word Learning*

One of the ways researchers have been able to assess vocabulary is through the use of fast mapping. According to Heibeck and Markman (1987), *fast mapping* can be generally defined as a process in which some type of information about a word is stored (it can be phonological, syntactic, or semantic), based on one or two exposures to a word. Specifically, fast mapping occurs when a child encounters a novel word and uses the linguistic and nonlinguistic context in which the word occurs to rapidly acquire information about its meaning. However, in order to accomplish this type of learning, children must make several assumptions about the linguistic and communicative context (Heibeck & Markman, 1987).

### *Principles of New Word Learning*

Researchers have proposed several ways to describe how children abstract meaning during early encounters with a new word. These assumptions will be described below.

*Mutual Exclusivity*. The first assumption is *Mutual Exclusivity*. This principle maintains that two events cannot occur at the same time. Therefore, if a child is presented with two objects; one familiar (ball), one unfamiliar (tofe), and he/she is asked to point to the *tofe*, the child will assume that the new word corresponds to the unfamiliar item

(Heibeck & Markman, 1987). This is because children expect new words to refer to something other than what they already know. An early study (Markman & Wachtel, 1988) has suggested that the assumption of mutual exclusivity can help children acquire not only category terms, but also enable them to reject a hypothesis about a term's meaning, and motivate them to find a potential meaning for novel terms.

*Principle of Contrast*. A second assumption is known as the *Principle of Contrast*, which states that two unique forms should be distinctive in meaning (Clark, 1987). For example, if a child is presented with two words and knows that *cat* is an animal and knows that *bear* is an animal but does not know what animal *bear* represents, the child will presume that *bear* denotes an animal other than *cat*. Therefore, the Principle of Contrast helps constrain the meaning of a new word by contrasting it with the meaning of familiar words (Heibeck & Markman, 1987).

*Novel Name Nameless Category*. The last assumption is the Novel Name-Nameless Category (N3C) principle. Here, children are no longer dependent upon other people to provide an explicit link between a new word and its referent. Instead, upon hearing a new word, the child is motivated to map the new word to the object in a basic level category to which the new word belongs (Mervis & Bertrand, 1994). For example, a child is playing with a tool set which contains four tools and has learned the names of three tools, screwdriver, hammer, and saw. His father comes and says "*Hand me the wrench*". Using this principle, the child should map this novel word to the object for which he does not yet have a name.

These three principles of word learning are used in concert with the child's other linguistic abilities and related conceptual abilities to provide considerable gains in word learning (Mervis & Bertrand, 1994). Once the underlying concept has been developed, the slow mapping phase begins (Dollaghan, 1987; Gray, 2003). In this phase, the representation of the new word can be accessed and updated by the listener in response to additional information gained in subsequent encounters with the new word.

*Fast Mapping in Typically Developing Children*

This ability to learn new words has been examined in various populations, including typically developing children as young as 13 months of age, children with Down syndrome, and those with specific language impairment (Dollaghan, 1985; Kay-Raining Bird, Chapman & Schwartz, 2004; Gray, 2005; Gershkoff-Stowe & Hahn, 2007). Of these populations, normal preschoolers appear to create fast mappings containing a large amount of linguistic and nonlinguistic information after brief, casual encounters with new words (Dollaghan, 1985). The ease with which they are able to enter information about an unfamiliar object into their memory after one brief encounter suggested that they were utilizing strategies that enabled them to participate in communication exchanges that exceeded their linguistic capabilities (Dollaghan, 1985).

One of the preliminary studies involving a novel word associated with an unfamiliar object was Carey and Bartlett's (1978) research on the limits of preschool-age children as word learners. During this pilot study, the authors presented an unfamiliar color (olive), as well as an unfamiliar word (chromium), to a group of 3 and 4 year old child who had begun mapping color words to colors. These words were presented in a natural encounter without the use of explicit teaching and the children only had one exposure to the new word. For example, in the course of setting up for snacks, the teacher would take a child aside and say "You see those two trays over there? Bring me the chromium one. Not the red one, the chromium one." By contrasting "chromium" with "red" the teacher indicated its status as a color while the situation enabled the child to identify its intended referent. A week passed before the researchers re-assessed the children in order to determine if they were able to fast map the new word. Results indicated that 50% of the children were able to fast map that "chromium" was a color word without assigning it an object after only one exposure. This is a good example of the Principle of Contrast at work (Heibeck & Markman, 1987).

In another study which modified and extended Carey and Bartlett's (1978) paradigm, Dollaghan (1985) examined the fast mapping skills of 35 typically developing preschool children ranging from 2;1 to 5;1 years of age. The preschoolers were exposed to two familiar objects (pen, fork), a nonsense word (*koob*) and its novel object referent (a white oddly shaped plastic ring). This time, the task focused on the Principle of Mutual Exclusivity (Heibeck & Markman, 1987). Five different tasks were performed using the novel word. These tasks included exposure, comprehension, production, recognition, and location. The exposure task prompted the child to hide the target object. For the comprehension task, the child was asked to feed a puppet various objects, and then they were asked to label these objects during for the production task. If a child failed to attempt to label the *koob* during the production task, a recognition task was administered. During the recognition task, the child was asked to identify the correct label from three consonant-vowel-consonant (CVC) "words" presented by the examiner. The three CVC "words" included the correct label (*koob*), a phonetically similar foil, which differed from the correct label by one single phoneme (*soob*), and a phonetically dissimilar foil (*teed*). Finally, the location task had the child identify the original location of the *koob* as presented in the exposure task. Results from this study indicated that 81% of the children accurately identified the referent on hearing its label a second time. Additionally, the results showed that children had the least amount of success with the production task, which may have been due to difficulty accessing the stored phonetic information for the purposes of production.

In a second study, Dollaghan (1987) compared the performances of typically developing children (ages 4;0-5;6 years) to those with specific language-impairment (SLI; ages 4;1-5;4 years). The same protocol was utilized as the previous study (Dollaghan, 1985). This time, findings revealed that the children with SLI and typically developing children were equally skillful in several aspects of the fast mapping process. An identical proportion of typically developing and children with SLI made the initial inference that the novel label referred to the novel object, as revealed in the exposure task. Additionally, both groups of children comprehended the novel word after one single exposure (comprehension task), and recalled some nonlinguistic information associated with the novel word as revealed in the location task. Nevertheless, the children with SLI in this investigation were significantly less skillful in their fast mapping of phonological information about the newly encountered word as tested in the recognition and production tasks. During these tasks, a significantly higher proportion of typically developing children (64%) recalled all three phonemes in the correct sequence as opposed to the performances of the children with SLI (9%). In addition, typically developing children recalled significantly more of the novel word's three phonemes ($M=2.09$) than did the language-impaired children ($M = 1.0$; Dollaghan, 1987). Possible reasons for this outcome may be that children with SLI may have difficulty entering phonological information into their short term memory, or that they may have difficulty perceiving phonemes in an unfamiliar word (Dollaghan, 1987).

While these studies have described the development of fast mapping skills using real objects with low codability, a study by Costa, Wilkinson, McIlvane, and de Souza (2001) examined the 'emergent mapping' skills of typically developing children using the "blank comparison" matching-to-sample technique. When using this technique, two pictures and a gray square (the blank comparison) are displayed on a 15-inch touch screen (as developed by Wilkinson & McIlvane, 1997). If the sample corresponded to one of the two pictures, the child selected that picture. However, if the sample corresponded to neither picture, the child was to reject the pictures and select the blank comparison (gray square). In Costa et al. (2001), data were collected from 17 Portuguese-speaking children ranging in age from 3;5 to 5;11 years. The sample stimuli were experimenter dictated digitized words, presented through a computer speaker attached to the computer (Costa et al., 2001). Results from this experiment indicated that the "blank comparison" method permitted children not only to exclude defined comparison stimuli in response to undefined samples, but also to relate novel samples and comparisons directly given the opportunity to do so. Additionally, these investigators demonstrated that the two possible ways by which children might accomplish emergent mapping are not necessarily opposed or competing alternatives. Rather, children may exhibit both methods (via exclusion or relating novel stimuli) simultaneously (Costa et al., 2001). It should be noted that none of the participants in the studies examined above were of African American descent.

*Comparison of Tasks used in Fast Mapping Experiments*

It is interesting to note that various approaches have been used in fast mapping tasks, including the multiple task approach, multiple word approach, and blank comparison technique, to name a few. These approaches will be contrasted below.

*Multiple task approach*. In a study by Dollaghan (1985), the investigator made use of the multiple task approach by exposing their participants one time to an unfamiliar word and referent in a situation designed to facilitate their use of an inference to link the two (exposure task). The subsequent tasks (comprehension, production, recognition, and location) in the study were used to determine the amount and type of information they had stored in memory following this initial encounter with the new word. When compared to Carey and Bartlett's (1978) paradigm, this study provided an extensive examination concerning the details of the fast mapping process by focusing on the nature and quantity of information that the child stored in memory following only one exposure to a novel word and its referent (Dollaghan, 1985).

Although this study provided information on the connection between memory and the fast mapping process in individuals ranging from 2;1 to 5;11 years of age, there were several weaknesses in the approach. Dollaghan (1985) neglected to present an age analysis which would have contrasted the fast mapping skills at certain points in the developmental continuum. Additionally, during the production task, Dollaghan accepted two out of three target phonemes as a correct answer rather than having the children provide them with all three phonemes used to make up the referent word. This presented an issue due to the fact the responses given by the participants lacked precision, and therefore were not accurate representations of the target word. Lastly, only one new word and referent were presented to the participants, making the task fairly explicit to the participants if the other words utilized in this study were already part of their vocabulary (Dollaghan, 1985).

*Multiple word approach*. While most studies of fast mapping have explored how children respond when presented with a single novel word, studies of multiple word learning are more likely to reveal important insights into the process by which fast mapping leads to rapid vocabulary growth (Wilkinson, Ross, & Diamond, 2003). These investigators hypothesized that children's attention to the information that is critical for quickly mapping multiple words onto their referents depends upon the alternatives available when the words are introduced. In this study, 58 preschoolers ranging in age from 26 to 57 months of age were presented with two novel words presented in two different conditions, the concurrent introduction and the successive introduction conditions. The concurrent condition contrasted each new word with photographs of well known objects (i.e., banana, cat, tree). The participants were then asked to choose the target novel word among the items presented. For the successive condition, the exposure to the first novel word was identical to that of the concurrent condition. When the second novel word was spoken, two novel targets (one being the first target novel word, and the second being a novel target word) along with a well known object were contrasted. In order to select correctly, the children had to mark and attend to the difference in the two novel stimuli. This procedure has been shown to facilitate learning outcomes in children (Wilkinson & Green, 1998). The facilitative effect likely resulted because the successive introduction procedure explicitly required participants to mark the contrast between the second novel item and the first during training, unlike the concurrent introduction procedure.

Results from the Wilkinson et al. (2003) study supported previous findings. A significant difference emerged for performances by children in the younger age group in the two exposure conditions. A larger number of younger children, however, met criterion after successive introduction (58%) than after concurrent introduction (only 11%).  However, the older children were able to accurately complete the task regardless of the exposure condition. This finding indicated that younger children who are still in the process of fast mapping for vocabulary learning would likely benefit more from the support of marking the contrast between two novel targets offered by the successive introduction procedure (Wilkinson, et al., 2003).

Several strengths of the Wilkinson et al. (2003) study were noted. First, it provided information on fast mapping as a developmental phenomenon while using multiple words under various conditions. The investigators provided an age analysis, used multiple words, and employed two introduction procedures. However, a weakness found in this study was that it only provided the participants with two tasks, which reduced the amount of exposure that each participant received with the novel non-words.

*Blank comparison matching approach*. Lastly, the study by Costa et al. (2001) used the blank comparison matching-to-sample technique. The goal of this study was to assess the generality of the findings reported by Wilkinson and McIlvane (1997) who stated that the blank comparison technique permitted children to directly relate novel samples and comparisons. Results from the Costa et al. (2001) study indicated that for most children, a single emergent mapping response between novel words and visual stimuli was not enough for them to fast map the novel words, meaning that it takes more than one exposure for a novel word to be fast mapped to a visual stimulus. Although much information was offered on a procedure that demonstrated whether or not a child was able to relate a novel word to a visual stimulus, it neglected to provide information on the number of phonemes accepted for the answer to be deemed correct during the production portion of the assessment. Additionally, no report of a possible correlation between children's age and performance was provided, so it is difficult to assess if there is an age effect associated with this task. Hence, future studies utilizing this technique should focus on addressing these weaknesses in order to provide readers with a more extensive examination of the blank comparison technique.

*Fast Mapping Experiments with African American Children*

Although the topic of fast mapping has been widely explored, few studies appear to have examined African American children's response to a fast mapping task (Horton-Ikard & Weismer, 2007; Wyatt, Bahr, & Silliman, 2007). A study by Horton-Ikard and Weismer (2007) examined 30 African American toddlers (30 to 40 months old) from both low and middle SES backgrounds (15 children from each group) in order to determine the effect of socioeconomic status (SES) on the early lexical performance of African American children. The toddlers' lexical semantic performance was examined on two norm-referenced standardized tests of vocabulary, a measure of lexical diversity from language samples, and a fast mapping task, which examined their novel word learning. Given their ages, the fast mapping task needed to keep the participants engaged for a certain period of time. Therefore, a puppet play activity that involved packing and unpacking a picnic basket was piloted for this study. Two words, *koob* and *tade* were chosen because they were composed of early developing sounds that are typically present in the phonemic repertoire of 30 month old toddlers. The testing procedures consisted of exposure, production, and comprehension phases. Productions were judged to be correct if the participants accurately produced two out of three speech sounds in the appropriate sequence.

The results of this study indicated that the toddlers from low SES backgrounds performed significantly poorer than those from a middle SES background on standardized receptive and expressive vocabulary tests and on the number of different words used during spontaneous speech (Horton-Ikard & Weismer, 2007). However, there were no significant differences noted between the two SES levels during the fast mapping task, leading the authors to conclude that the effect of SES is variable with the type of assessment used and that fast mapping may be a processing independent measure, which requires individuals to rely less on existing vocabulary knowledge and more on psycholinguistic processing abilities. However, more studies are needed to determine the utility of fast mapping in assessing word learning skills.

One such study is a pilot project by Wyatt et al. (2007). These investigators examined the influence of dialect use on the fast mapping skills of African American preschool children. The hypothesis was that dialect variations may interfere with fast mapping skills, which would indicate that this type of task may be processing dependent. The participants in the Wyatt et al. study were 21 typically developing children (9 males, 12 females), ranging between the ages of 3;9 to 5;7 years with a mean age of 5;0 years of age. The children consisted of 6 speakers (2 males, 4 females) of African American English (AAE), and 15 speakers (7 males, 8 females) of MAE. Children were determined to be speakers of AAE based on findings from the *Diagnostic Evaluation of Language Variation* (*DELV*, Seymour, Roeper, & de Villiers, 2003). Twelve non-words were created that addressed three different phonological features characteristic of AAE (four non-words for each feature): final consonant cluster reduction, backing in /str/ clusters, and final consonant devoicing. These features were chosen due to their prominence in the dialect of southern African Americans (Craig, Thompson, Washington, & Potter, 2003). The blank comparison technique was used, which consisted of exposure, recognition, comprehension, dialect, and production tasks. Production task responses were judged to be correct if the participants approximated the target non-word and did not include use of the AAE feature being tested.

Results of this study indicated that children who spoke AAE showed more variability in response accuracy across tasks than did the MAE-speaking children. Additionally, all participants had difficulty with the dialect task in that they appeared to be using a whole word strategy for word identification. In addition, about 50% of the children produced the target non-word without an AAE feature during the production task, even after the AAE production of the target had been used in an earlier task. The results of this study indicated that fast mapping seemed to be susceptible to dialectal influences. In other words, fast mapping may be processing dependent in that children who spoke AAE presented with more difficulty than children who spoke MAE in fast mapping novel non-words. In addition, the investigators suggested that African American children had more difficulty fast mapping novel non-words containing certain phonetic features (i.e., final consonant clusters), suggesting interference from their dialect. This hypothesis merits further investigation, perhaps with older children who are better able to segment words, and may experience a greater effect of phonetic variations during fast mapping.

*Statement of the Problem and Research Questions*

There is a long standing disparity between the reading levels of African American children and their Caucasian peers. This "black-white achievement gap" is present at the time of school entry, and gradually widens until high school. In addition to their reading struggles, African American children also have difficulty with expanding their vocabulary knowledge into the more elaborated semantic networks which are used in comprehension and production tasks. A possible reason for this may be that children from low SES communities are not given the same opportunities as other individuals to participate in language-based literacy activities in which they experience more literate models. According to Hart & Risley (1995), children who come from low income homes learn fewer words, have fewer experiences with adults, and acquire vocabulary words more slowly.

Poverty and home conditions of African American children affect the use and acquisition of their language skills in ways that may be apparent on their performances in the classroom and on standardized tests. Research has shown that these children are prone to score lower on standardized tests when compared to their white counterparts (Brooks-Gunn, Keblanov, & Duncan, 1996). Possible explanations for this may be due to their vocabulary limitations, or ethnic patterns of vocabulary usage that is present in the dialect spoken by these children (Champion et al., 2003). However, few studies have considered how dialect use may influence word learning abilities.

One of the ways to examine early lexical acquisition involves the use of fast mapping tasks. It assists children in rapidly increasing their vocabulary knowledge. Fast mapping tasks focus on processing skills that do not rely on existing lexical knowledge and therefore limit the opportunity for performance to be influenced by cultural and linguistic biases (Horton-Ikard & Weismer, 2007). Unfortunately, literature concerning the use of fast mapping tasks with African American children is very limited. A recent study by Horton-Ikard and Weismer (2007) revealed no significant differences between low and middle class African American children and their ability to learn novel word meanings. These investigators concluded that fast mapping may be a processing independent task. However, Wyatt et al. (2007) found that dialectal variations may interfere with the fast mapping of non-word items in preschool children. These findings are suggestive of processing dependence; however the results comparing children who speak AAE and MAE also showed many similarities. Wyatt et al. reasoned that the phonetic nature of the fast mapping task may have been too difficult for the preschoolers, and that it may be more suited for older children who are better able to segment words. Therefore, the present investigation is a continuation of this research project to determine if dialectal variations interfere with fast mapping.

The following questions were asked:

1) Does the use of dialect influence fast mapping of novel words in school-age children?
2) Are certain phonetic features more susceptible to dialectal influences than others?

3) Do the performances of children on a fast mapping task focusing on phonetic features differ between preschool and school-age children?

# Chapter Two

## Methods

### *Participants*

With the approval of the IRB, two groups of children were recruited from a local elementary school in West Central Florida. Children were not included in this study if it was reported that they were not typically developing by their parent and/or classroom teacher, if they had a permanent hearing loss, or if they were enrolled in a special classroom or receiving any speech, language, or hearing services. Informed consent was obtained from each participant's parent or guardian and from each participant prior to testing.

After meeting the inclusion criteria, 25 typically developing children (12 males, 13 females), ranging between the ages of 4;11 to 8;0 years, with a mean age of 6;6 years (SD= 1;03), were selected to undergo further assessments. The children consisted of 18 speakers of African American English (AAE), and 7 speakers of Mainstream American English (MAE). Children were determined as speakers of AAE based on findings from the administration of the *Diagnostic Evaluation of Language Variation* (*DELV*, Seymour et al., 2003). All of the participants who spoke AAE were African American children, and all of the participants who spoke MAE were Caucasian children.

### *Further Assessments*

The participants were administered a hearing screening, a language variation screening, and a recognition vocabulary measure. An audiometer calibrated to 1989

ANSI standards was used to test the children's hearing.  Testing was performed in a quiet room at the site. Hearing levels were screened at 1000, 2000, and 4000 Hz at 20dB.

*Language Variation Screening*

The *Diagnostic Evaluation of Language Variation* (DELV, Seymour et al., 2003) was administered to determine if the children were dialect speakers. The DELV is a two-part screener that measures the child's language variation status. The first portion requires the child to repeat five sentences to assess phonology. The second portion elicits utterances that contain verb tenses that could be affected by a language variation. The results indicate the degree of language variation as either little-to-no variation from Mainstream American English (MAE), some variation from MAE, or strong variation from MAE, which would indicate that the child is a speaker of AAE. Children in this study who received a rating of "some variation" or "strong variation" were included as speakers of AAE. Children were considered to be MAE speakers if their scores in column A on the DELV were more than nine, and an AAE speaker if their scores in column B were more than seven. Seven children were considered to be MAE speakers, and 18 children were considered to be AAE speakers. Three African American children were excluded from the experiment due to the fact that they were considered speakers of MAE based on their DELV scores.

*Recognition Vocabulary Assessment*

The fourth edition of the *Peabody Picture Vocabulary Test* (PPVT-4, Dunn & Dunn, 2007) was administered. The PPVT-4 is an indirect test of recognition vocabulary or children's general familiarity with lexical items as elicited through an identification task.  Participants were asked to identify a lexical item by either pointing to, or stating the number of one of four pictures. Stimuli for the PPVT-4 include full color illustrations of nouns and verbs that are clearly depicted. The samples used to norm this test were representative of varying ages, geographic locations, ethnicity, level of parent education, community size, and gender.  The mean standard score of the normative sample for the PPVT-4 is 100 (*SD* = 15). The Caucasian children's mean standard score on the PPVT-4 was 100and their scores ranged from 95 to 107. For the African American children, their mean standard score was 91.73 and their scores ranged from 85 to 100. These scores are consistent with previous research (Champion et al., 2003; Qi et al., 2006; Restrepo et al., 2006; Stockman, 2000; Washington & Craig, 1992, 1999) with African American participants scoring at the low end of the normal range; however, no significant difference was noted between their mean standard score and that of the Caucasian participants.

In brief, 25 children were assessed using a hearing screening, the PPVT-4 and DELV. Children were not included in this study if they did not pass the hearing screening, or if their scores on the PPVT-4 were not within one standard deviation from the mean. Of the 25 initial participants, only 19 met criteria to be included in the experiment. The final sample consisted of 15 AAE and 4 MAE speakers (13 females, 6 males).

## *Materials and Instrumentation*

### *Fast Mapping Experiment*

The present study design is a modified version of the blank-comparison technique modeled after the Costa et al. (2001) study. The blank-comparison method determines whether stated words and corresponding objects are related directly (word is stated and participant makes the connection to a presented object) or via rejection (word is stated and participant realizes that the stated word does not correspond to any of the presented objects). If the participants related the dictated word with one of the two pictures displayed on a computer screen, they would confirm this by clicking on the appropriate picture. However, if the dictated word did not match either of the displayed pictures, the blank (gray square) was to be selected (Wilkinson & McIlvane, 1997).

Picture stimuli included 20 objects that were chosen from a kindergarten vocabulary list. These 20 objects were to be included in the training task, and then were modified for the experimental task (See Table 1). The words were chosen from a pre-primer word list to ensure that all of the children would be familiar with them to successfully complete the training task. Real photographs of the 20 objects were then found, and 12 of the photographs were altered to no longer resemble the original pictures. These pictures were used in all of the tasks presented to the participants.

Table 1

*Pre-primer Words Selected for the Training Task*

| | |
|---|---|
| Ant | Fish |
| Apple | Flower |
| Ball | Frog |
| Boy | Girl |
| Bunny | Heart |
| Cat | Monkey |
| Cookie | Pizza |
| Crayons | Sun |
| Cup | Dog |
| Tree | Book. |

Non-word stimuli were developed to include three phonological features: (1) *final consonant devoicing*: syllable-final voiced phonemes were devoiced (e.g., *bæd → [baet]*), (2) *final consonant cluster reduction*, the second consonant in final consonant clusters was deleted (e.g., *cold → [koʊl]*), and (3) *backing in /str/ clusters*: /k/ is substituted for /t/ in initial /str/ clusters (e.g., *street → [skrit]*). These features were chosen because they were produced by adults and children who speak a Southern dialect of AAE (Craig & Washington, 2006; Craig, Thompson, Washington, & Potter, 2003).

Using these features, a list of possible non-words containing these features was invented. Non-words were then determined to be 'high phonotactic probability' or 'low phonotactic probability' words using the English dictionary of regular expressions (www.Greptionary.com, 2009). The website would determine if the combination of letters occurred often in the English language (high phonotactic probability) or if it only occurred a few times (low phonotactic probability). Four non-words from each feature (final consonant cluster reduction, backing in /str/ clusters, and final consonant devoicing) were chosen; two that were considered to have high phonotactic probability and two that were considered as having low phonotactic probability, for a total of 12 non-words. The 12 non-words were then divided into two subsequent word lists – Wordlist A (WL A) and Wordlist B (WL B). Each wordlist contained one high phonotactic probability non-word and one low- phonotactic probability non-word for each phonological feature. Each wordlist and their corresponding label of "high phonotactic probability" or "low phonotactic probability" can be found in Table 2.

Table 2

*List of 12 Non-words Used (HP) = High Phonotactic Probability Non-words; (LP) = Low Phonotactic Probability Non-words).*

| Feature | WL A | WL B |
|---|---|---|
| Final cluster reduction | [dold] → [dol] *HP*<br>[sɛft] → [sɛf] *LP* | [casp] → [cas] *HP*<br>[m^nd] → [m^n] *LP* |
| Backing in /str/ clusters | [stræt] → [skræt] *HP*<br>[struf] → [skruf] *LP* | [stral] → [skral] *HP*<br>[strub] → [skrub] *LP* |
| Final consonant devoicing | [gid] → [git] *HP*<br>[pɪv] → [pɪf] *LP* | [bæb] → [bæp]*HP*<br>[n^g] → [n^k] *LP* |

*Instrumentation*

The fast mapping experiment was developed and presented on a Dell Latitude™ C810 Model PP01X laptop computer with a 15.0-inch 1600 x 1200 active-matrix color display, two stereo speakers, and an attached mouse. The ECoS Experiment Generator and Controller, Version 2.0 (AVAAZ Innovations, Inc., 2002), was used for the development and presentations. Each visual stimulus was displayed in the center of three vertical rectangles across the 15.0-inch display (see Figure 1).

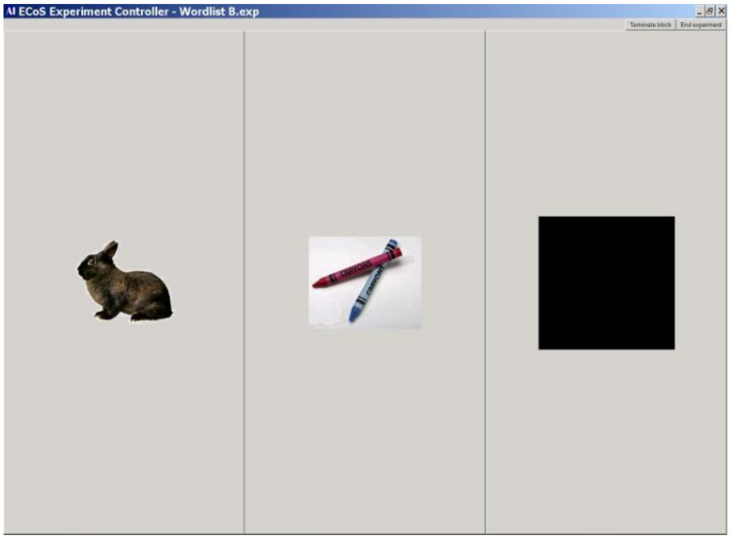


*Figure 1.* Training Task Screen Shot of Experiment.

The first and second rectangles contained the visual stimuli, which were changed for each presentation, or block, while the third rectangle always contained a black square. Costa et al. (2001) used a gray square in their blank-comparison technique experiment; however, the present authors chose to use black due to the likelihood that young children would be able to recognize it easily. Participants could click anywhere within each of the three predefined rectangles to respond to each item. Participant responses were not reinforced by the examiner or by the computer program.

An African American adult female provided the vocal stimuli used as sound files during the computer-presented tasks. Recordings were made in a quiet room using the PRAAT program at a sampling rate of 22,050 Hz. These .wav files were then uploaded into the ECoS program.

*Procedures*

All participants were tested individually. The children were tested in a quiet room at their elementary school. The examiner was an African-American, female graduate student in speech-language pathology who was trained to administer all screening assessments. The participants were seen for a total of two sessions in order to complete all testing. Each 45-50 minute session consisted of: (a) administration of the hearing screening, (b) administration of the DELV and the PPVT-4, and (c) administration of the six experimental fast-mapping tasks (described below). Both the DELV and the PPVT-4 were administered according to the published instructions outlined in the test manuals.

*Initial Instructions*

After administration of the assessments, the examiner transitioned to the laptop by telling the child that he/she was going to play a game. The experiment began by displaying a picture of a happy face on the screen while the initial instructions to the participant were played. The initial instructions were as follows:

*"We are going to look at some pictures. I want you to click on the picture that the lady says. If you don't see the right picture, then click on the black square. I might try to trick you, so be sure to listen carefully. Let's try some."*

After the completion of the recording, the child was instructed by the examiner to click the happy face to continue to the training task.

*Training Task*

The training task consisted of 10 trials using the selected nouns from the kindergarten word list to teach the child to select the matching picture when a known word was stated and the "black square" was presented. The participant had to correctly complete all 10 trials to continue to the experimental tasks.

*Exposure Task*

The novel picture of the non-word was displayed on the screen, while the taped voice stated, “This is a ________. Click the screen.” After the initial exposure, the child completed either the recognition task or the comprehension task. Both of these tasks were randomized for each experimental presentation to ensure that the child did not choose the same rectangle each time.

*Recognition Task*

The recognition task required the participants to correctly choose the novel non-word from one of the three rectangles. The novel non-word picture was displayed with one of the items from the training task, along with the black square on the far right. For example, the computerized voice stated, “Click on the _______. If you don’t see the ______, click on the black square.” The purpose of the recognition task was to determine whether the participants had successfully fast-mapped the association between the novel non-word and the novel picture.

*Comprehension Task*

The comprehension task required participants to determine whether or not the pictures displayed were related to the previously taught non-word. The computer screen again displayed three pictures – a known object from the training task, a new, undefined novel picture, and the black square. The target non-word was presented via the computerized voice, that is, “Click on the _______. If you don’t see the ______, click on the black square.” In this case, the child was supposed to select the black square since the target picture was not presented. The purpose of the comprehension task was to ensure that the child accurately correlated the non-word and its corresponding picture.

*Dialect Task*

In this task, the computer displayed three pictures – the defined novel picture, a known object from the training task, and the black square. The computer program presented the novel word presented with an AAE phonological feature. For example, if the previously dictated non-word was "dold," the production "dol" would be presented during this task. The recorded voice again stated "Click on the _____.  If you don't see the ______, click on the black square." The purpose of the dialect task was to determine whether or not the child acknowledged a change in the non-word presentation.

*Production Task*

In this task, the computer displayed only the picture of the non-word. The recorded voice stated, "What's this?" and the child was required to name the picture. The examiner phonetically transcribed the given labels, however the sessions with each child were not tape recorded for later transcription due to the fact that the purpose of the production task was simply to determine if children could recall the stimulus name and whether their productions differed in any way from the actual non-word to resemble the AAE phonological features presented. Therefore, tape recording of the sessions was not completed because the investigator was able to hear the children's responses and determine whether they were accurate or produced using the AAE feature.

*Response Scoring*

Table 3 displays a summary of the stated requests and the criteria for a correct response for each task using the non-word "dold."

Table 3

*Summary of Requests and Criteria for Correct Responses.*

| *Task* | *Computer's Request* | *Correct Response* |
|---|---|---|
| Training Task | "Click on the apple, if you don't see the apple, click on the black square." | Participant clicks on the apple, (dictated known word) if it is displayed. |
| Exposure Task | "This is a dold. Click the screen." | Click the screen. |
| Recognition Task | "Click on the dold. If you don't see the dold, click on the black square." | Participant chooses the dold (defined non-word). |
| Comprehension Task | "Click on the dold. If you don't see the dold, click on the black square." | Participant chooses the black square. (rejecting both since they do not match). |
| Dialect Task | "Click on the dol. If you don't see the dol, click on the black square." | Participant chooses the black square (undefined non-word). |
| Production Task | "What's this?" | Participant says "dold." |

### *Data Analysis*

Given the nature of the experiment and following the procedures used in other similar fast mapping experiments (Costa et al., 2001; Wilkinson & McIlvane, 1997), data analysis was largely qualitative. Raw scores from the language variation assessment, recognition vocabulary assessment, and the fast mapping experiment were placed on Microsoft Excel spreadsheets to show the number of total correct responses and the percent of correct for each participant by task.

Additionally, the Microsoft Excel spreadsheets were used to create tables that would keep an organized record of the participants' scores by Wordlist (A or B) for each task of the experiment. Responses were then organized by task and phonetic feature across participants within the MAE and AAE groups. Group totals across participants by task and phonetic feature were computed and graphed in Microsoft Excel to illustrate group differences. The raw data are presented in the Appendix.

# Chapter Three

## Results

The current study is a continuation of a previous study by Wyatt et al. (2007) which examined the influence of dialect on the fast mapping of novel stimuli in preschool children. The participants in the current study were 19 typically developing school-age children (15 AAE and 4 MAE speakers) who were recruited from a local elementary school in West Central Florida. Prior to the experiment, the children completed a dialectal variation assessment (DELV) and an assessment of recognition vocabulary (PPVT-4). The fast mapping task utilized for this experiment was a modified version of the blank-comparison technique (Costa et al., 2001). For this task, 12 non-words were developed to include three phonological processes common in Southern dialects of AAE. These processes included: final consonant cluster reduction, backing in /str/ clusters, and final consonant devoicing. The non-words were presented in five tasks (training, recognition, comprehension, dialect, and production tasks) to the participants and their responses were analyzed in order to answer the following questions:

1) Does the use of dialect influence fast mapping of novel stimuli in school-age children?
2) Are certain phonetic features more susceptible to dialectal influences than others?
3) Do the performances of children on a fast mapping task focusing on phonetic features differ between preschool and school-age children?

*Use of Dialect within a Fast Mapping Task*

In this section, the findings will be qualitatively reported for each of the tasks separately by: (1) the total number of correct responses (19 participants x 6 words =114 total responses), (2) the percentage of correct responses out of the total (total number correct/114), (3) the percentage correct for MAE-speaking participants (number correct/(6 words x 15 participants), and (4) the percentage correct for AAE-speaking participants, (number correct/6 words x 4 participants) for each task presented (see Table 4). A response was determined to be correct if the participants either chose the picture which corresponded to the spoken word, chose the black square if the picture of the spoken word was not present, or did not include a dialectal variation in their non-word productions. The performance of all participants will be discussed in more detail below.

Table 4

*Number and Percentages of Correct Responses on each Fast Mapping Task.*

| *Task* | *Total correct responses across all participants* | *% of correct responses across all participants* | *% correct from MAE-speaking children* | *% correct from AAE-speaking children* |
|---|---|---|---|---|
| Training | (114/114) | 100% | 100% | 100% |
| Recognition | (112/114) | 98% | 100% | 98% |
| Comprehension | (102/114) | 89% | 100% | 87% |
| Dialect | (5/114) | 4% | 0% | 6% |
| Production | (35/114) | 31% | 25% | 32% |

*Training Task*

The training task was used to teach the participants to select the matching picture when a known word was stated. The participants were given ten trials using photographs of known objects. They had to correctly complete all 10 trials in order to continue to the experimental tasks. As shown in Table 4, all participants accurately completed the 10 trials, which allowed them to continue participation in the experiment.

*Recognition Task*

The recognition task required the participants to correctly choose the picture of the novel non-word from one of the three choices displayed on the computer screen. This task was used to determine if an association between the novel word and novel picture had been fast-mapped. As displayed in Table 4, after a single exposure to the novel word and its referent, 98% of the photographs selected for the novel words presented were correctly chosen by the participants.

*Comprehension Task*

The comprehension task required the participants to determine whether or not the pictures displayed were related to the previously taught non-word by either choosing a picture displayed on the screen or the black square. A response was deemed correct if the participants chose the black square. Having heard the novel words two times, once during the exposure task and once during the recognition task, the participants selected the black square 89% of the time (see Table 4). This finding would suggest that the novel stimuli had been fast mapped.

*Dialect Task*

In the dialect task, the child was presented with a phonetic variation of the target (i.e., *dol* instead of *dold*) and asked to identify whether this was the target or not. A response was deemed correct if the participants selected the black square as opposed to choosing the photograph of the previously trained unknown object. As shown in Table 4, 4% of the responses were considered to be correct for the non-words presented. Since the new word was so close to the target, the children often pointed to the object representing the target word, even when they expressed that the word presented was slightly different.

*Production Task*

The production task was used to determine if the children recalled the stimulus name and whether their productions included the AAE phonological features presented in the dialect task. As displayed in Table 4, only 31% of the responses by participants matched the target and did not contain AAE features. While in previous studies, the production task only required a rough approximation of the target word to indicate that it had been fast mapped (Dollaghan 1985, 1987; Horton-Ikard & Weismer, 2007), a point of interest in this study was whether participants produced the AAE or MAE feature in their response. Since the production task occurred after the dialect task, a large number of the participants produced the dialectal variant of the target, most likely, since it was the last word presented.

When examining the results from the tasks listed above, it is apparent the children were able to fast map the items presented to them. When performances were broken down by dialect group, no dramatic differences across dialect groups were noted (see Table 4). The largest difference noted was 13% inaccuracy on the comprehension task, with the AAE group scoring lower than the MAE group. Nevertheless, 87% accuracy is still a strong performance on this task. The high scores on the recognition and comprehension tasks were particularly impressive since each of the children were asked to learn six new words during the session.

The participants' performance was significantly poorer on the dialect and production tasks. This is not surprising since these tasks required the most sophisticated phonetic processing and previous fast mapping tasks have not required such precision in participant responses. These results would suggest that dialect did not have an influence on the fast mapping of novel stimuli in school-aged children since these children did not differentiate between the target and the AAE variant consistently. It is suggested that the phonetic changes in the non-words presented during the dialect task were assimilated into the response instead of used to make a new category. In other words, it may be that fast mapping places rudimentary information into working memory; however this transient memory does not yet appear to be sensitive enough to simultaneously store and process a new word category for subtle phonetic changes in the target. This notion needs further testing with a larger sample size.

The 12 non-words presented to the participants during the fast mapping task were divided into phonotactic probabilities, high and low, and one word from each phonotactic probability category in each phonological feature was presented to each child. As displayed in Table 5, during the production task, African American children responded more accurately to words whose phonotactic probability was low on both backing in /str/ clusters and final consonant devoicing phonological features. Similarly, as displayed in Table 6, Caucasian children responded more accurately to words whose phonotactic probability was low, however one of the phonological features in which this occurred was different than that of the African American participants (final consonant clusters). These results may demonstrate that it was easier for the children to respond accurately to words which contained low phonotactic probability because these words did not sound like real words that they may have already registered in their vocabulary.

Table 5

*Accuracy on the Production Task by African American Children on High and Low Phonotactic Probability Words by Phonological Feature.*

| | *High Phonotactic Probability* | *Low Phonotactic Probability* |
|---|---|---|
| FCCR | 53% | 13% |
| /skr/ | 7% | 27% |
| FCD | 33% | 53% |

Table 6

*Accuracy on the Production Task by Caucasian Children on High and Low Phonotactic Probability Words by Phonological Feature.*

| | *High Phonotactic Probability* | *Low Phonotactic Probability* |
|---|---|---|
| FCCR | 0% | 25% |
| /skr/ | 0% | 0% |
| FCD | 50% | 50% |

### *Phonetic Influences on Fast Mapping*

For the current study, non-word stimuli were developed to include certain phonological features that are produced by adults and children who speak a Southern variety of AAE. Three frequently occurring phonological rules in AAE were selected and four non-words for each rule were developed; two that had high phonotactic probabilities and two with low phonotactic probabilities. The result was 12 non-words, which were equally divided into two wordlists. Each wordlist contained one high phonotactic probability word and one low phonotactic probability word for each phonological feature. The three AAE phonological features utilized in this study were final consonant cluster reduction, backing in /str/ clusters, and final consonant devoicing. Dialect group performances by feature will be described below.

*Recognition Task*

The recognition task was used to see if an association between the novel word and novel picture had been fast-mapped. As displayed in Table 7, children who used MAE were able to select the correct picture for all non-words and all phonetic features. The children who used AAE were able to select the correct picture for all non-words containing a final consonant cluster and /str/ clusters; however, only 93% of the responses were correct for non-words that contained voiced final consonants. In particular, the non-word [nug] proved to be difficult, in that it was not accurately fast mapped by two (out of 15) participants. These results would suggest that the children who spoke AAE were not experiencing difficulty fast mapping the novel non-word due to potential interference from their dialect. Their performances were generally like the performances of children who spoke MAE.

Table 7

*Percentages of Children Responding Correctly to the Recognition Task by Phonological Feature.*

| *Phonological feature* | *% of MAE-speaking children responding correctly (n= 8 responses per task)* | *% of AAE-speaking children responding correctly (n=30 responses per task)* |
|---|---|---|
| Final consonant cluster reduction | 100% | 100% |
| Backing in /str/ clusters | 100% | 100% |
| Final consonant devoicing | 100% | 93% |

*Comprehension Task*

The comprehension task required the participants to choose the black square in order for their responses to be deemed correct. Table 8 reveals that speakers of MAE correctly responded to all non-words presented with each phonetic feature. The AAE-speaking participants correctly responded to non-words containing final consonant clusters with 97% (29/30) accuracy, non-words containing /str/ clusters with 70% (21/30) accuracy, and non-words containing final consonants with 93% (28/30) accuracy. For the /str/ clusters, most of the errors (8/9) made by AAE-speaking participants occurred in the non-word [stræt], a high phonotactic probability word, suggesting that this particular phonetic context was quite difficult for these participants. Overall, dialect influences on this task seemed to be feature specific.

Table 8

*Percentage of Children Responding Correctly to the Comprehension Task by Phonological Feature.*

| *Phonological feature* | *% of MAE-speaking children responding correctly (n = 8 responses per task)* | *% of AAE-speaking children responding correctly (n = 30 responses per task)* |
|---|---|---|
| Final consonant cluster reduction | 100% | 97% |
| Backing in /str/ clusters | 100% | 70% |
| Final consonant devoicing | 100% | 93% |

*Dialect Task*

The dialect task presented the novel non-word with an appropriate AAE phonological feature. A response was deemed correct if the participants selected the black square as opposed to choosing the photograph of the previously trained unknown object. As shown in Table 9, 0% of participants speaking MAE were able to select the correct response for any of the phonetic features presented. In like fashion, the participants who spoke AAE were unable to select the correct response for non-words containing /str/ clusters. Nevertheless, 10% (3/30) of AAE-speaking children were able to provide an accurate response for non-words containing final consonant clusters, and 7% (2/30) were able to provide an accurate response for non-words containing voiced final consonants. These findings suggest that participants were not attending to specific phonetic features in their fast mapping. Instead, only a general representation of the target non-word was available. It was interesting to note; however, that some children verbalized that the non-words with the AAE feature were different than the original non-word target, but because it was so close to the target word, they apparently thought that the production was adequate and selected the previously taught picture and not the black square. The effect of high and low phonotactic probabilities did not appear to be a factor in performance on this task.

Table 9

*Percentage of Children Responding Correctly to the Dialect Task by Phonological Feature.*

| *Phonological feature* | *% of MAE-speaking children responding correctly (n = 8 responses per task)* | *% of AAE-speakingchildren responding correctly (n = 30 responses per task )* |
|---|---|---|
| Final consonant cluster reduction | 0% | 10% |
| Backing in /str/ clusters | 0% | 0% |
| Final consonant devoicing | 0% | 7% |

*Production Task*

The production task was used to determine if the children recalled the stimulus name and whether their productions included the AAE phonological feature presented. The results are displayed in Table 10. These findings would indicate that final consonant voicing was produced correctly in about half of the participant responses. On the other hand, production of /str/ clusters was difficult for most participants. The only feature that showed a small effect for dialect was the production of final consonant clusters. In this case, the children who spoke AAE performed slightly better. This is the only feature tested that altered the phonological skeleton of the target word, so it is possible that child speakers of AAE were better able to perceive this feature because dialect use made them more sensitive to this degree of phonetic change (Sligh & Conners, 2003).. Even so, only about 1/3 of the participants were able to note the need to produce two elements in the final cluster.

Table 10

*Percentage of Children Not Using the AAE Feature during the Production Task.*

| *Phonological feature* | *% of MAE-speaking children's responses that did not include the AAE feature (n = 8 responses per task )* | *% of AAE-speaking children's responses that did not include the AAE feature (n = 30 responses per task )* |
|---|---|---|
| Final consonant cluster reduction | 13% | 33% |
| Backing in /str/ clusters | 13% | 17% |
| Final consonant devoicing | 50% | 47% |

In summary, the scores of the children who spoke AAE were slightly lower than MAE-speaking children on some of the tasks presented; however their responses differed more on words containing /str/ clusters during the comprehension task and on words containing final consonant clusters during the production task. As shown in Table 10, both groups had difficulty with all non-words during the dialect task. Nonetheless, 10/30 responses provided by AAE-speaking participants illustrated that they were able to make some distinctions between the AAE feature and the target feature.

Possible reasons for the poor performances on the dialect and production tasks may be related to the order in which the tasks were presented. Since the production task immediately followed the dialect task, it is possible that the participants were holding on to the last production that they heard, which happened to include the AAE feature. The lack of interference from dialect overall could indicate that fast mapping involves a more general storing of phonological information and is quite tolerant of dialectal variations. Another possible reason for these results may be that some of the non-words created for this experiment (like [sɛft]), were not produced with an AAE feature by any of the participants. This finding would suggest that some non-words may not have been presented in the best phonetic environment to elicit AAE features.

When examining the results of the production task, it appeared that some of the participants who spoke AAE were able to correctly respond, demonstrating good dialect-shifting skills, especially for final consonant clusters and final consonant voicing. This performance is consistent with their accuracy levels on the comprehension task, where /str/ was the most difficult process for them to identify. In other words, they comprehended and produced more instances of final consonant clusters and final consonant voicing than they did with non-words containing skr/str.

### *Comparison to Previous Study*

The current study is a continuation of a previous study by Wyatt et al. (2007) who examined the influence of dialect on the fast mapping of novel stimuli in preschool children. Their participants consisted of 15 children who spoke MAE, and five children who spoke AAE.  In order to compare the results from both studies, the outcomes will be presented by phonetic feature.

#### *Final Consonant Cluster Reduction*

For this feature, the older participants who spoke AAE seemed to make few if any mistakes on the recognition and comprehension tasks (see Figure 2). In other words, they were able to fast map the target with ease. The preschool children who spoke AAE made some errors on these tasks. These errors may be related to immature phonological processing, inattention to the task, or to a dialectal issue resulting in an unstable phonological representation. Surprisingly, the younger children appeared to preserve more of the target in the dialect task and were more willing to say that the oral word presentation, while similar, was not the exact target that was presented at the beginning of the task sequence.

Similarly, the older participants who spoke MAE fast mapped the targets in the recognition and comprehension with ease, and the preschool children who spoke MAE made some errors on these tasks (see Figure 3). However, during the dialect task, the older participants were unable to provide an accurate response for any of the non-words presented, whereas more than 20% of the preschool children were able to produce these words. This result is consistent with the performance of the preschool children who spoke AAE, where they accurately produced more words than the older participants.

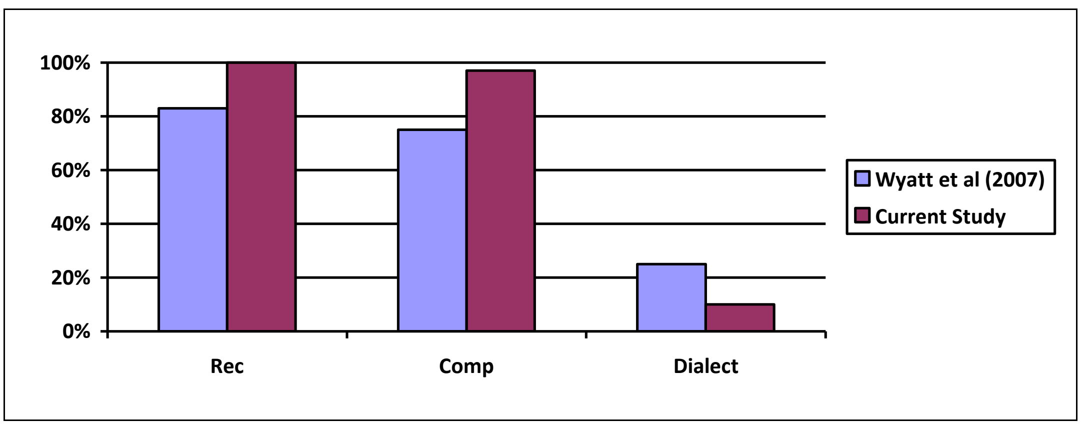


*Figure 2.* Accuracy of Final Consonant Clusters by Task by Children who Speak AAE.

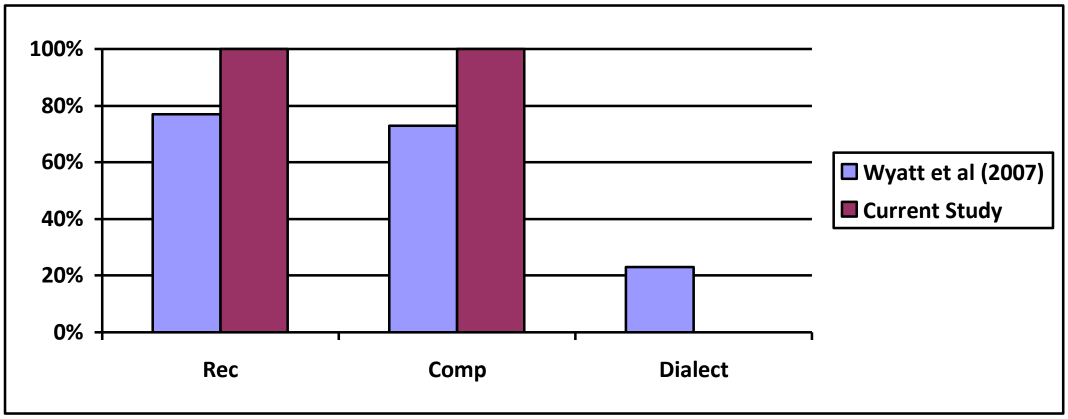


*Figure 3.* Accuracy of Final Consonant Clusters by Task by Children who Speak MAE.

*Backing in /str/ Clusters*

For this feature, the older AAE participants made more mistakes on the comprehension task than their MAE-speaking same-aged peers. Otherwise, the older children outperformed the preschool children on the recognition and comprehension tasks (see Figures 4 & 5). Interestingly, the older participants seemed to have more difficulty than the preschool children during the dialect task. The errors of the older participants in the dialect task may be related to their use of a whole word strategy as opposed to listening for specific phonemes, in that the errors frequently involved the production of the AAE feature as heard in the preceding dialect task.

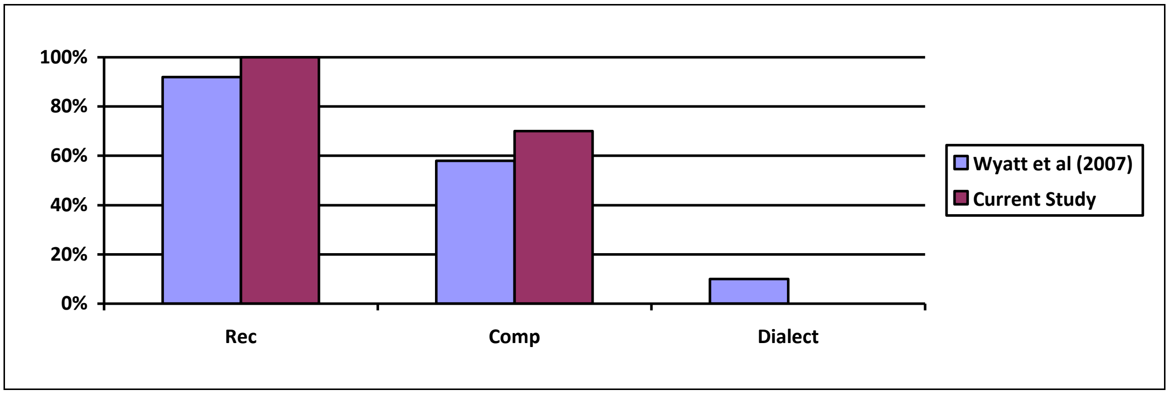


*Figure 4.* Accuracy of /str/ Clusters by Task by Children who Speak AAE.

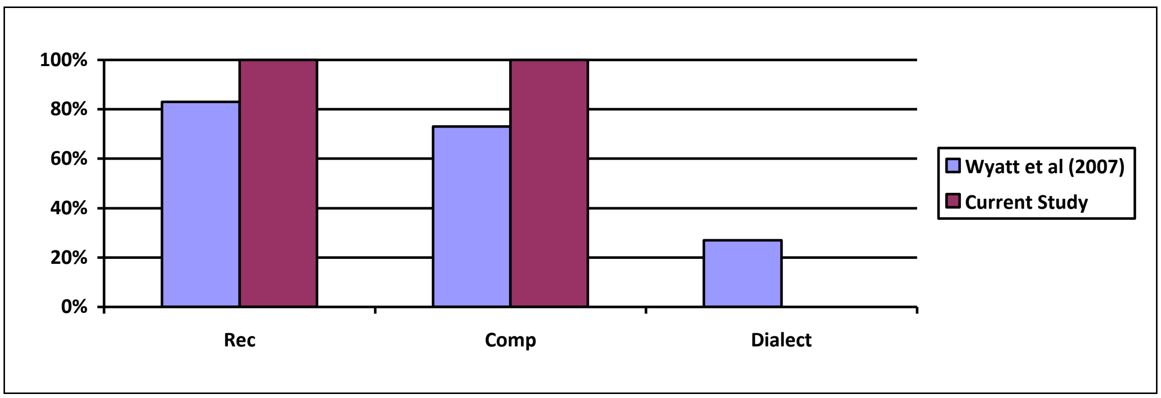


*Figure 5.* Accuracy of /str/ Clusters by Task by Children who Speak MAE.

*Final Consonant Devoicing*

For this feature, the performances of the participants did not follow the pattern previously noted for the recognition and comprehension tasks (see Figures 6 & 7). On the other two features, the older group outperformed the younger group. On this feature, that pattern only held for the group of MAE speakers. The AAE group had a reversal of performance on the recognition task, where the younger children outperformed the older children; however, the older children scored higher than the younger children during the comprehension task. For the dialect task, older AAE-speaking participants and preschool MAE-speaking participants were able to fast map some information on the non-word presented. Interestingly, the older MAE-speaking and preschool AAE participants were unable to fast map any information on the non-word presented.

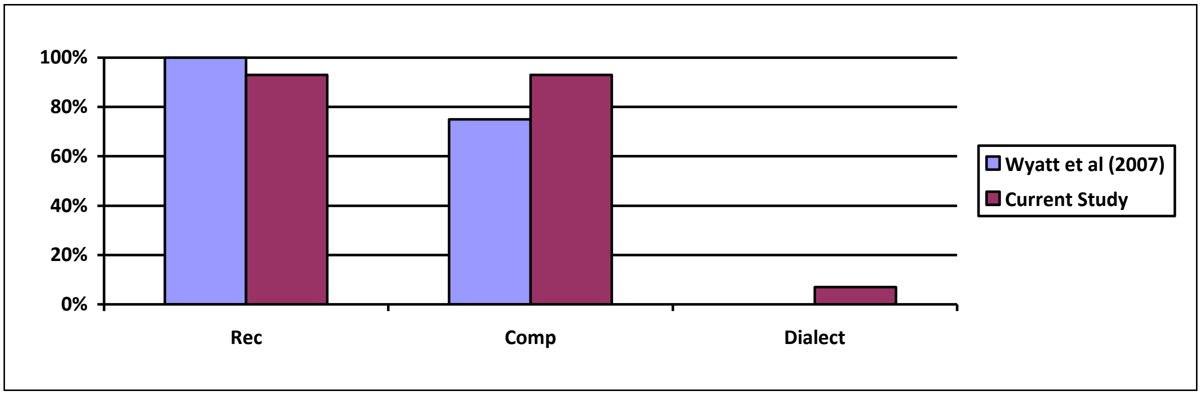


*Figure 6.* Accuracy of Final Consonant Devoicing by Children who Speak AAE.

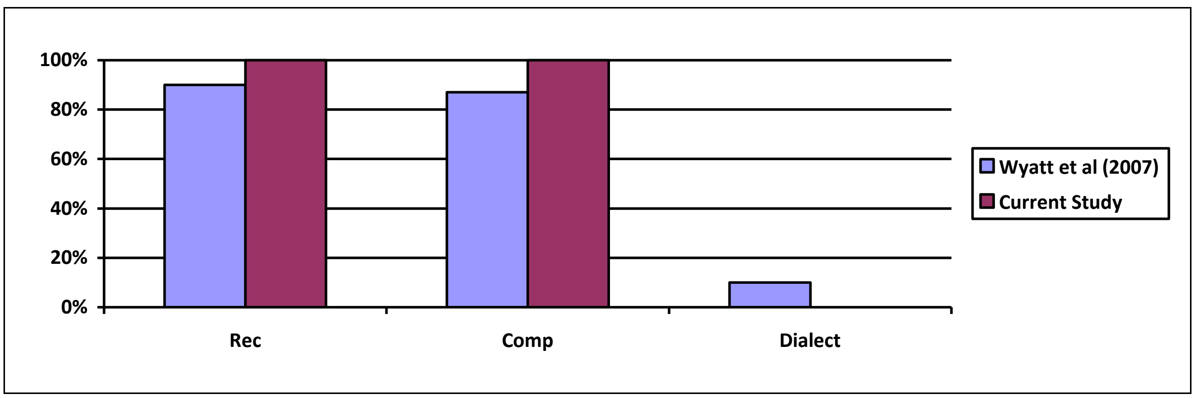


*Figure 7.* Accuracy of Final Consonant Devoicing by Children who Speak MAE.

*Production Task*

For this feature, the older participants who spoke AAE had production accuracy levels that were higher than the preschool children in final consonant clusters (FCCR); however, the AAE-speaking preschool children's accuracy was relatively higher in /str/ clusters, and relatively equal with the final consonant devoicing (FCD) phonetic feature (see Figure 8). The older participants who spoke MAE performed higher on the FCD when compared to the preschool children who spoke MAE, however, the preschool children's performance on FCCR and /str/ clusters was reasonably higher than that of the older participants who spoke MAE (see Figure 9). These results suggest that a higher number of accurate responses by older participants are feature-dependent.

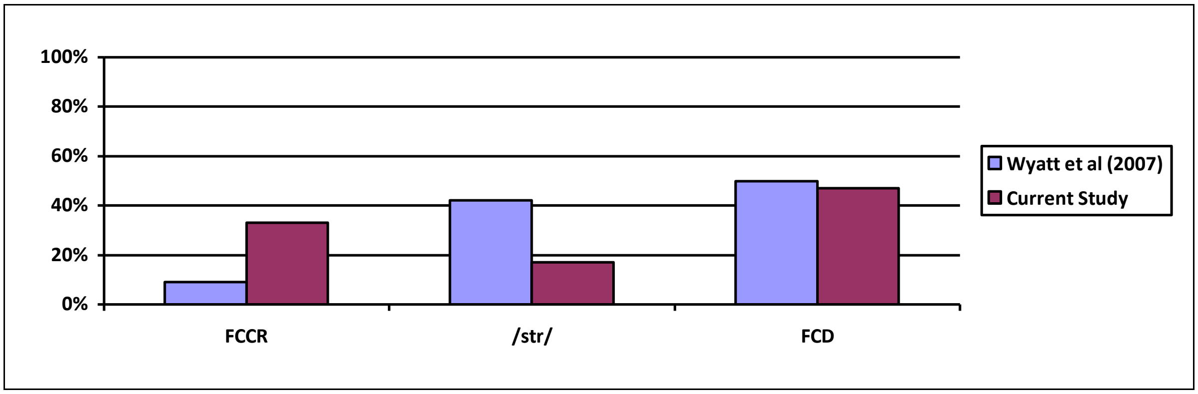


*Figure 8.* Production of Phonological Features by Children who Speak AAE.

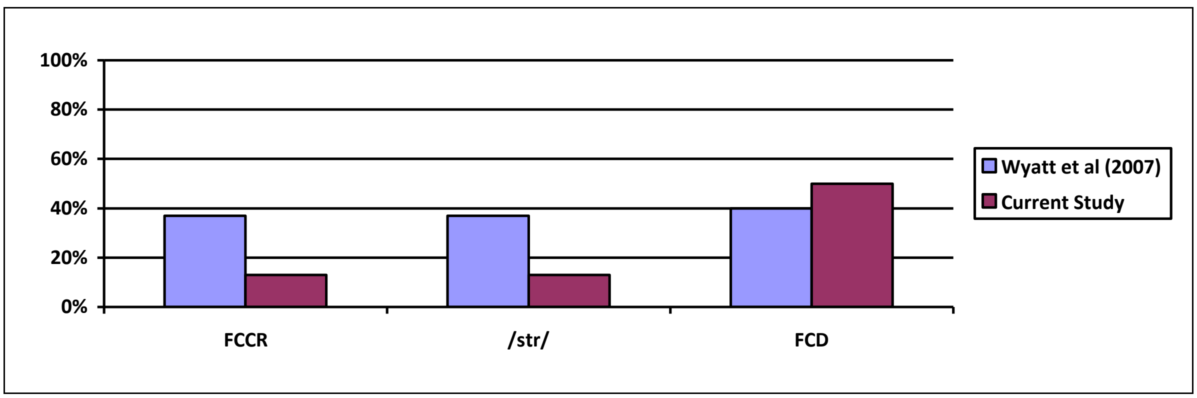


*Figure 9.* Production of Phonological Features by Children who Speak MAE.

The results from the current study indicate that children who speak AAE presented with more difficulty in the comprehension task for /str/ clusters when compared to same-aged children who spoke MAE. Additionally, the results showed that all participants had difficulty with the dialect tasks. These results are similar to those proposed by Wyatt et al. (2007). More differences between the participants were noted during the production task. In the Wyatt et al. study, about 40% of participants were accurate in their production of the target feature, meaning that they produced the original target and not the AAE variant, regardless of dialect spoken. This was not true for the final consonant clusters, where the MAE speakers were more accurate. In the current study, more accurate productions were made by the AAE group, with no real difference in performance noted for the production of voiced final consonants. Hence, the differences in performances across dialect groups were more feature and task specific than dialect specific.

# Chapter 4

# Discussion

The goal of this study was to determine if AAE dialect influenced the fast mapping of novel stimuli in African American school-aged children. In this study, 15 children who spoke AAE were compared to a small number of children who spoke MAE (n = 4). Five tasks (exposure, recognition, comprehension, dialect, and production) were presented to all participants. It was anticipated that the fast mapping skills would be influenced by the AAE dialect; however, this was not the case. Some influence of dialect was evident in the comprehension task as the children who spoke AAE experienced more difficulty rejecting the unknown picture when /skr/ words were presented. Otherwise, results indicated that the responses, especially during the dialect and production tasks, were similar despite the spoken dialect of the children. This outcome was not surprising since these tasks required the participant to respond to subtle phonetic differences in the target stimuli. In the following sections, this study's findings will be further discussed in terms of how they affect the word learning skills of school-age children, how these results compare to the previous investigation with preschoolers (Wyatt et al., 2007), and implications for future research.

## *Dialectal Influences on Fast Mapping*

The results of the current study suggested that use of a dialect did not influence the fast mapping of novel stimuli. The scores of AAE- and MAE-speaking children were similar in the majority (4/5) of the tasks presented. The comprehension task appeared to be slightly more difficult for the AAE-speaking participants. During this task, the children had to indicate that the presented non-word was not pictured on the screen (i.e., select the black square) for the answer to be counted as correct. Of the AAE-speaking participants, 87% of them accurately responded as opposed to 100% of the MAE-speaking participants. Although there is a difference in accuracy between the two groups, the 87% scored by the AAE-speaking children is not a poor score; it is simply lower than the 100% scored by the MAE-speaking children. This percentage represents an average performance over three different phonetic features and, as will be discussed later, there was one feature that accounted for most of the errors here.

Other tasks presented during the experiment included the dialect and production tasks. For the dialect task, the participants were presented with the novel non-word with an appropriate AAE phonological feature. A response was deemed correct if the participants selected the black square as opposed to choosing the photograph of the previously trained unknown object. In this task, both groups of participants were either unable to hear the phonetic difference in the presented stimuli or were reluctant to select the black square. On the other hand, the production task was used to determine if the children recalled the stimulus name and whether their productions included the AAE phonological feature presented. Again in this task, both groups of participants tended not to produce the MAE target response. Of the MAE-speaking participants, 25% of them were able to produce the target word without using the AAE feature, while 32% of the AAE-speaking participants were able to do the same suggesting a slight advantage for speakers of AAE dialect.

One of the possible reasons for the poor performances on these tasks may be that some of the phonological features tested (FCCR, FCD) are sometimes used in the everyday language of many individuals, despite their spoken dialect (i.e., ([bɛst time]→[bɛs time], [bɛd] →[bɛt]). When taking this point into consideration, it is probable that the participants assumed that the non-words presented with an AAE feature during the dialect task were simply produced with allophones of the target word and, therefore, they did not choose the "black square." Although a few children expressed that some of the words presented were slightly different from their target words, many of them still chose the picture of the target word on the computer screen as their response.

Another possible reason for the difficulties noted on the dialect and production tasks may have been that the children, despite their spoken dialect, did not want to be wrong in front of the investigator. It is hypothesized that the children chose or produced the non-words that had already been fast mapped because they assumed that this was the desired response. In other words, they were reluctant to select the black square when the non-word presented was so similar to the previous target. The poor performance on the production task suggested that they were repeating the last production of the target that they heard or perhaps the children had assimilated the phonetic difference into their fast mapped response.

Given the nature of the tasks, the participants were unable to utilize fast mapping assumptions (Mutual Exclusivity, Principle of Contrast) in order to abstract meaning of the novel stimuli, especially when the non-word contained the AAE feature. Mutual Exclusivity (Heibeck & Markman, 1987) maintains that two events cannot occur at the same time, and the Principle of Contrast (Clark, 1987) helps to constrain the meaning of a new word by contrasting it with the meanings of familiar words. Due to the fact that both assumptions state that all items should contrast by meaning, allophonic variations apparently do not affect word meaning at this level of new word learning. Dialectal variations may have more of an influence when learning real words because use of an AAE feature can result in a homonym (e.g., the final consonant cluster reduction in *mend* which results in *men*). At this point, meaning may be affected. So, it would be interesting to try this task with unfamiliar real words that, when altered, would result in a homonym.

The performance of the AAE-speaking children in this study was relatively similar to the MAE-speaking participants. For this reason, dialect does not appear to explain much variation in the fast mapping of novel stimuli between both groups. A closer look into the phonological processes presented to both MAE and AAE-speaking children may provide us with information on how these groups varied from one another, especially since many of the phonological processes characteristic of AAE are also present to a lesser extent in SAE.

### *Difficulty with Specific Phonetic Features within a Dialect*

Three phonetic features that are prominent in the dialect of southern African Americans were examined in the current study. These included: final consonant cluster reduction, backing in /str/ clusters, and final consonant devoicing. Results indicated that backing in /str/ clusters appeared to be more susceptible to dialectal influences than the other phonetic features presented. Children who spoke AAE seemed to experience more difficulty fast mapping novel non-words that included /str/ during the comprehension task. On this task, the children who spoke AAE scored 70% while their MAE-speaking peers scored 100%.

A possible reason for this outcome may be that this phonetic change is only evident in the AAE dialect. This feature is not used by MAE-speaking individuals in their everyday spoken language; hence it was easier for them to choose the correct response during the comprehension task.  Otherwise, the responses of children who spoke AAE were fairly similar to those of the participants who spoke MAE when their performances on tasks testing final consonant cluster reduction and final consonant devoicing were compared.

Both groups had difficulty with the /str/ clusters during the dialect and production tasks. During the dialect task (when the AAE non-word form was presented), none of the MAE-speaking participants were able to select the correct response for all phonetic features tested. However, three of the participants (10%) who spoke AAE were able to select a correct response (i.e., the black square) in non-words with final consonant clusters and two participants (7%) were able to do so in non-words with voiced final consonants. During the production task, 13% of the MAE-speaking participants and 33% of the AAE-speaking participants accurately produced non-words containing final consonant clusters. This was the largest difference in percent accuracy across dialect groups for this task. Additionally, 50% of MAE-speaking participants and 47% of AAE-speaking participants correctly produced non-words with voiced final consonants; however the majority of the participants did not do well with non-words containing /str/ clusters. Only 13% of the participants who spoke MAE and 17% of the participants who spoke AAE produced non-words containing /str/ clusters without the AAE feature, which was the desired response.

The ability for some of the AAE-speaking participants to choose the correct response for non-words with final consonant clusters and voiced final consonants may indicate that children who speak this dialect were beginning to dialect shift across phonetic context, which may be indicative of emerging metalinguistic awareness that the language used at home (i.e., AAE), may not be the language used at school (i.e., MAE; Connor & Craig, 2006).

### *Comparisons to the Preschool Study*

The present study is a continuation of research from a previous investigation of dialect influence on the fast mapping of novel stimuli in preschool children (Wyatt et al., 2007). Results from this study suggested that preschool children appeared to be focusing more on the whole word rather than phonetic details in their fast mapping responses. The current study supports these results given that school-age children continued to use the whole word strategy for word identification. The majority of the participants in the current study did not listen to phonetic differences since the words sounded very similar to one another, demonstrating that their fast mapping skills were not influenced by their spoken dialect.

Additionally, the Wyatt et al. (2007) results indicated that fast mapping of certain phonetic features was susceptible to dialectal influences. In particular, backing in /str/ clusters was more susceptible to dialectal influences than the other phonetic features examined. This finding would suggest that fast mapping may be language dependent, to a certain extent. In other words, it is difficult to reduce, much less eliminate, the contribution of specific language experiences. The results from the current investigation differ from the Horton-Ikard and Weismer (2007) study where fast mapping was found to be language-independent. That is, it required children to rely less on their existing vocabulary knowledge and more on their psycholinguistic abilities during their fast mapping task. In addition, their tasks (exposure, comprehension, production) were presented using real objects for two novel non-words during a puppet play activity, while the current study's tasks (exposure, recognition, comprehension, dialect, and production) were presented using photographs of unidentifiable parts of real objects on a 15-inch computer screen. These task differences plus the number of words trained in one session (1 word in the Horton-Ikard & Weismer study versus 6 words in this study) may have influenced task accuracy.

The performance of the AAE-speaking children on the dialect and production tasks of the current study demonstrated that they were able to recognize allophonic variations in non-words, making them somewhat better at these tasks when compared to the MAE-speaking participants. These findings are consistent with a study by Sligh and Conners (2003) that compared the performances of school-age children who spoke AAE and their same-aged peers who spoke MAE on a task which focused on phoneme deletion. Surprisingly, the children who spoke AAE in this study performed significantly better overall in phoneme deletion than the children who spoke MAE, despite being matched on reading levels. The investigators suggested that one of the possible reasons for this outcome was that children who speak AAE develop exceptionally good phonological analysis skills, due to their experience with two dialects in which there are phonological differences.

It was interesting to note that the performances differed in a systematic way across the two fast mapping studies. For the children who spoke MAE, the older participants outperformed the preschool children across all the recognition and comprehension tasks for all three phonetic features. The same was true for the children who spoke AAE, except performance was lower for both dialect groups when the /skr/ non-words were used, yet the school-age children continued to outscore the preschoolers. There was a notable change in this pattern when the final consonant devoicing feature was tested. In this instance, the school-age children had slightly more difficulty than the preschool children with the recognition task. This finding could indicate some dialectal interference in fast mapping since the production of a voiceless consonant instead of voiced one can result in homonymity. While this same result is true for final consonant cluster reduction, the voiced-voiceless distinction is a more subtle contrast, which proved difficult for the school-age participants in the early stages of fast mapping.

The performances across the studies differed more during the production task. For children who spoke AAE, the school-age participants produced more non-words with final consonant clusters while the preschoolers produced more non-words with /skr/. Both age groups produced the most words with voiced final consonants. These findings would suggest that school-age children who spoke AAE were somewhat more sensitive to phonetic features that could alter word meaning (i.e., *bend* could be confused with *Ben* and *bed* with *bet*).  These children seemed to be able to handle /skr/ non-words as allophones of /str/ non-words, so they did not produce /str/ frequently. Preschool children, on the other hand, produced the /str/ and struggled to produce final consonant clusters. This pattern is difficult to explain other than to suggest that final consonant cluster reduction does happen in everyday talk (i.e., saying “firs time” for *first time*), making final consonant cluster reduction a more frequent occurrence in their language experiences than the skr/str substitution.

The MAE-speaking children had a different response pattern during the production task. Very few responses (less than 10%) by the school-age children included the final consonant cluster or /skr/. On the other hand, the preschool children responded fairly equally across all phonetic categories (around 40%) and their performance was similar to the school-age group in the voiced final consonants category. These findings would indicate that the younger children who spoke MAE were more sensitive to phonetic differences than their older counterparts. The voiced-voiceless distinction was probably important to all of these children since they were in the early stages of alphabetic learning, which tends to focus on basic consonant-vowel-consonant (CVC) words. Hence, voicing is important in differentiating word meanings.

Finally, it should be noted that the Wyatt et al. (2007) study enrolled more children that spoke MAE (n=15) than the current study (n=4) and fewer children that spoke AAE (n=6) than the current study (n=15). This point should be taken into consideration when interpreting the results and comparing them to the current findings. However, it can be argued that this problem has been overcome due to the similar performances of both dialect groups across all ages. In other words, the performance of preschool and school age children who spoke MAE was relatively similar to one another, as well as the performances of the preschool and school-age children who spoke AAE. Since both groups followed the same experimental protocol, we can argue that observed findings are representative of the dialect groups. Nevertheless, it is still possible that the study is underpowered.

### *Study Limitations*

During this study, African American children's accuracy on the dialect and production tasks exceeded that of the small comparison sample of Caucasian children from the same school. This interpretation needs to be considered with caution because of the difference in sample size between the two groups. A small group of participants does not provide as accurate a representation of the population being examined when comparing it to another group that contains a larger number of participants. However, when the two group ages (4-8 years) are merged together and the numbers of participants are more similar across dialects, the overall patterns of performance are quite similar. Nevertheless, more participants should be run in both age groups.

Another limitation present in the current study involved the precision required in the participant response. Fast mapping is hypothesized to be the initial step in lexical acquisition and occurs when a listener constructs at least a partial representation for an unfamiliar word on the basis of a single exposure (Dollaghan, 1987). These tasks required the most sophisticated phonetic processing by the participants; however they were not trained to listen for phonemic differences and, therefore, many of them did not select the correct response for the non-words when presented in the dialect task. Although the fast mapping process is phonetic in nature, it still involves the development of categories, requires some degree of word consciousness, and, therefore, phonetic similarities seem to be stored into the same phoneme category. Hence, in order for the result to be the formation of a new word, the word apparently needs to be significantly different from the other word. Perhaps phonetic differences are more of an issue in the slow mapping phase, which occurs when additional information is gained in subsequent encounters with the already fast mapped new word (Dollaghan, 1987). It is also possible that morphosyntactic differences are what truly distinguishes dialects (Adger et al., 2007). Therefore, if the tasks were more geared towards these levels, a greater difference may be noted between the dialect groups.

Another limitation to the current study was the order in which the five tasks were presented to the participants. This arrangement may have affected the participants' responses to the subsequent task. For example, the production task occurred immediately following the dialect task. It is possible that the participants were holding on to the last production they heard, which happened to include the AAE feature. This finding would suggest that the dialectal feature was stored along with the target word in the fast mapping process or maybe it is just an example of repeating the last thing they heard, known as the recency effect. One of the ways to improve the presentation of the tasks is by changing the order in which all of the tasks are introduced, and make certain that the dialect task does not precede the production task.

Another limitation of the current study was the reliability of the investigator's transcription of the participants' verbalizations. The investigator neglected to record the responses of the children during the production tasks to check transcription reliability. However, the production task was scored only to determine the presence or absence of AAE feature use, so the decision may have been easier (and hopefully more reliable) than a transcribed response.

Lastly, one of the non-words created to elicit AAE features from the participants was not as effective as desired. Results indicated that the word [sɛft], which was based on the real word [lɛft], was not produced correctly or with a dialectal variation by any of the participants. While 64% (7/11) of the children reduced the final consonant cluster, they deleted the /f/ as opposed to the /t/, causing the production of [sɛft] to go to [sɛt]. This result would indicate that the non-word did not reflect the best phonetic environment in which to elicit the desired AAE feature. Additionally, the children's reduction resulted in a real word, which may have created a word that the child already knew. If so, fast mapping would not occur. Therefore, this particular non-word should be replaced with another low phonotactic probability non-word used to elicit final consonant cluster reduction in further investigations.

### *Directions for Future Research*

Given the results of the current study, dialectal influence should continue to be examined in studies concerned with the fast mapping of novel stimuli on African American children so that a more definitive picture on the role of phonetic features during fast mapping can be determined. Future research should duplicate the use of multiple tasks (training, recognition, comprehension, dialect, and production) on either the same participant sample or African American school-age children that are considered middle class. The reason to take a look at the African Americans in the middle class would be to determine if the change in SES status affects their dialect and their ability to dialect shift. Finally, word length should be considered. It may be easier for the participants to store bisyllabic words in their short term memory as opposed to monosyllabic words. Perhaps with the use of bisyllabic words, participants will be able to parse words at the morphophonemic level, e.g. "the light" and "delight." These types of stimuli may be more sensitive to dialectal influences since morphosyntactic parsing is involved.

In addition, future research needs to include a few items in the training task that teaches the participants to listen for phonemic differences as opposed to using a whole word strategy in processing of the stimuli. One way to accomplish this would be to make the “black square” the desired response more often; forcing the child to focus on phonetic differences between the stimuli. Finally, replacing the “black square” with a question mark may make it clearer to the participants that the presented stimulus did not match the target.

Furthermore, an unequal representation of either group of participants may affect the results of the fast mapping measure. Although the current study was able to compare its results to a previous study, future research should attempt to make the number of participants as equal as possible in order to confirm the validity of the results. Finally, future research may want to present participants with three pictures (1 known object, 1 target object for the non-word, and 1 unknown object) as an alternative to modifying the blank-comparison technique by Costa et al. (2001). This setup would demonstrate if the participants are able to focus on phonemic differences, and use the Mutual Exclusivity or Principle of Contrast assumptions to gain information on the novel word.

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Appendices

*Appendix I*

Raw Data for Inclusion Criteria of AAE and MAE Speaking Individuals who Participated in the Study.

| *Code Name* | *Grade* | *Race* | *CA* | *DELV-score* | *PPVT-4* | *Hrng* |
|---|---|---|---|---|---|---|
| KAA8 | Kg | AA | 5;6 | AAE speaker | 97 | Pass |
| KAA6 | Kg | AA | 5;5 | AAE speaker | 89 | Pass |
| KAA4 | Kg | AA | 4;11 | AAE speaker | 88 | Pass |
| KAA3 | Kg | AA | 5;9 | AAE speaker | 90 | Pass |
| KAA1 | Kg | AA | 5;8 | MAE speaker | 106 | Pass |
| KAA2 | Kg | AA | 6;2 | AAE speaker | 100 | Pass |
| KAA5 | Kg | AA | 6;0 | AAE speaker | 94 | Pass |
| KAA7 | Kg | AA | 5;11 | AAE speaker | 82 | Pass |
| | | | | | | |
| FAA4 | 1st | AA | 6;2 | AAE speaker | 98 | Pass |
| FAA2 | 1st | AA | 7;0 | MAE speaker | 106 | Pass |
| FAA7 | 1st | AA | 7;1 | AAE speaker | 87 | Pass |
| FAA1 | 1st | AA | 6;8 | AAE speaker | 89 | Pass |
| FAA8 | 1st | AA | 6;8 | AAE speaker | 92 | Pass |
| FAA5 | 1st | AA | 7;1 | AAE speaker | 97 | Pass |
| FAA6 | 1st | AA | 6;9 | AAE speaker | 86 | Pass |
| | | | | | | |
| SAA3 | 2nd | AA | 8;0 | AAE speaker | 85 | Pass |
| SAA1 | 2nd | AA | 7;5 | AAE speaker | 89 | Pass |
| SAA2 | 2nd | AA | 7;9 | AAE speaker | 81 | Pass |
| SAA5 | 2nd | AA | 7;8 | AAE speaker | 88 | Pass |
| SAA6 | 2nd | AA | 7;10 | MAE speaker | N/A | Pass |
| SAA4 | 2nd | AA | 7;4 | AAE speaker | 95 | Pass |
| | | | | | | |
| KEA1 | Kg | EA | 5;3 | AAE speaker | 105 | Pass |
| FEA1 | 1st | EA | 6;2 | MAE speaker | 107 | Pass |
| FEA2 | 1st | EA | 7;9 | MAE speaker | 95 | Pass |
| SEA1 | 2nd | EA | 7;9 | MAE speaker | 95 | Pass |

Raw Data by Experimental Task and Subject

| *Participant code* | *Age* | *Dialect Group* | *Word List* | *Training* | *Rec.* | *Comp.* | *Dialect* | *Production* |
|---|---|---|---|---|---|---|---|---|
| KAA2 | 6;2 | AAE | A | 100% | 100% | 83.30% | 0% | 33% |
| KAA5 | 6;0 | AAE | A | 100% | 100% | 50% | 0% | 50% |
| KAA6 | 5;5 | AAE | A | 100% | 100% | 100% | 0% | 17% |
| FAA1 | 6;8 | AAE | A | 100% | 100% | 33% | 17% | 33% |
| FAA5 | 7;1 | AAE | A | 100% | 100% | 50% | 17% | 33% |
| FEA1 | 6;2 | MAE | A | 100% | 100% | 100% | 0% | 0% |
| FAA7 | 7;1 | AAE | A | 100% | 100% | 100% | 17% | 17% |
| SAA1 | 7;5 | AAE | A | 100% | 100% | 83.30% | 0% | 17% |
| SAA3 | 8;0 | AAE | A | 100% | 100% | 83.30% | 0% | 17% |
| SAA5 | 7;8 | AAE | A | 100% | 100% | 100% | 0% | 33% |
| SEA1 | 7;9 | MAE | A | 100% | 100% | 100% | 0% | 0% |
| KAA3 | 5;9 | AAE | B | 100% | 83.30% | 83.30% | 0% | 17% |
| KAA8 | 5;6 | AAE | B | 100% | 100% | 100% | 0% | 50% |
| KEA1 | 5;3 | MAE | B | 100% | 100% | 100% | 0% | 33% |
| FAA3 | 7;3 | AAE | B | 100% | 100% | 100% | 33.30% | 17% |
| FAA6 | 6;9 | AAE | B | 100% | 83.30% | 100% | 0% | 17% |
| FAA4 | 6;2 | AAE | B | 100% | 100% | 100% | 0% | 33% |
| FEA2 | 7;9 | MAE | B | 100% | 100% | 100% | 0% | 50% |
| SAA4 | 7;4 | AAE | B | 100% | 100% | 100% | 0% | 50% |