

Does Production of Final Consonant Clusters by African American English-Speaking Children Predict Their Comprehension of Standard American English?



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INTRODUCTION

- Children from low-SES families frequently speak a non-standard dialect of English such as African American English (AAE).
- Differences between this non-standard dialect and Standard American English (SAE), the language of instruction in the classroom, may be one reason for the "achievement gap" between middle- and low-SES children.
- AAE differs from SAE in both morphology and phonology (Charity, Scarborough, & Griffin, 2004).
 - One common phonological difference between AAE and SAE is that final consonant cluster reduction is more common in AAE (e.g., "nest" pronounced as "nes", Craig et al., 2003).
- Phonological differences between AAE and SAE impact AAE-speakers' ability to identify ending sounds in words on the Test of Phonological Awareness (Thomas-Tate, Washington, & Edwards, 2004).
 - Phonological awareness is the single best predictor of later reading achievement (Shankweiler et al. 1995).

PURPOSE

- To examine the relationship among AAE-speaking children's production of final consonant clusters, their comprehension of words produced in SAE containing these final consonant clusters, and standardized and non-standardized measures of phonological awareness, linguistic complexity, dialect density, and vocabulary size.
- Hypotheses:
 - There will be a positive correlation between production and comprehension of final consonant clusters.
 - There will be a positive relationship between production of final consonant clusters and performance on both standardized and non-standardized measures of language.
 - There will be a negative relationship between dialect density and the production of final consonant clusters.

METHOD

Note: This study is part of a larger study on dialect mismatch

- Participants:**
 - 109 African American children from 4 to 7 years of age
 - About 25 children at each age range (e.g., 4;0 to 4;11, 5;0 to 5;11)
 - About 50% female and 50% male
 - All typically developing according to parent report
 - Passed hearing screening prior to testing
- Stimuli:**
 - 21 target word pairs. Words in each pair differed only by the presence or absence of the second consonant in a word-final consonant cluster.
 - Monomorphemic pairs:** 10 word pairs contrasted a singleton consonant vs. a consonant cluster in word-final production (*goal* vs. *gold*).
 - Bimorphemic pairs:** 11 word pairs contrasted singular and plural nouns (*cat* vs. *cats*).
 - All words were produced by an AAE-speaking adult female and an SAE-speaking adult female in the phrases, *Say _____ please* and *Show me _____ please* respectively.
- Procedure:**
 - A fifty-utterance language sample was elicited.
 - The CTOPP (Wagner, Torgesen, & Rashotte, 1999), EVT-2 (Williams, 2007), and PPVT-4 (Dunn & Dunn, 2007) were also administered.
 - There were two phases to the experimental measure of SAE comprehension: a familiarization phase followed by a test phase.
 - Familiarization phase:**
 - Associated picture was displayed on a computer screen directly in front of child while the recorded AAE-speaker asked the child to produce each word (*say goal please*).
 - All utterances were recorded.
 - Test phase:**
 - Child was presented three pictures (distracter, filler, and target as shown in Fig. 1) on a touch screen computer and was asked to touch the target picture by the recorded female SAE speaker.
 - Child's response was recorded by the touch screen computer.



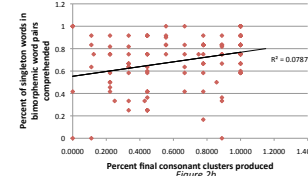
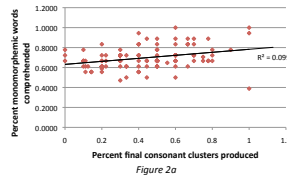
Analysis:

- The children's utterances during the familiarization phase were transcribed and percent of final consonant in clusters was computed for both monomorphemic and bimorphemic stimuli.
- Accuracy on the comprehension task was computed for each stimulus type.
- Standard scores were computed for the norm-referenced tests.
- The language sample was transcribed orthographically. MLU and dialect density (number of AAE features relative to the total number of words in the sample) were computed.
- Correlation analyses were used to examine the relationships between the production of final consonants on monomorphemic and bimorphemic words in relationship to: a) comprehension of potentially ambiguous words in SAE (e.g., "goal" or "cat"); b) standardized measures of phonological awareness and vocabulary size; and c) non-standardized measures of MLU and dialect density.
 - When examining the relationship between the production of final consonant clusters and comprehension of SAE words, the measure of interest was the comprehension of words with final consonant singletons because these are ambiguous in AAE.
 - "col" could mean "coal" or "cold"
 - "cat" could mean "cat" or "cats"

RESULTS

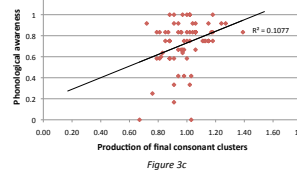
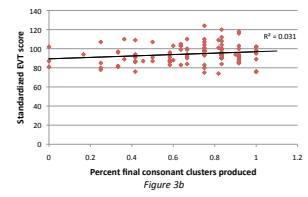
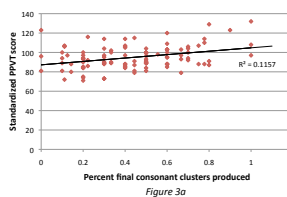
Relationship of final consonant cluster production to SAE word comprehension:

- Production of final consonant clusters in the monomorphemic word pairs was not significantly correlated with comprehension of singleton monomorphemic words. However, it was significantly correlated with comprehension of all monomorphemic word pairs: $r = .26, p < .01$ (see Fig. 2a)
- Production of final consonant clusters in the bimorphemic word pairs was significantly correlated with both comprehension of singleton words in bimorphemic word pairs (*show me cat*) ($r = .28, p < .01$, see Fig. 2b) and with comprehension of all bimorphemic word pairs: $r = .30, p < .01$



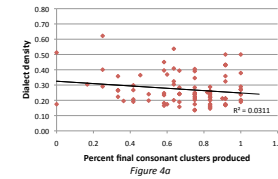
Relationship of final consonant cluster production to language measures:

- Production of final consonant clusters in the monomorphemic word pairs was significantly correlated with the following language measures: PPVT-4 standard score ($r = .34, p < .001$, see Fig. 3a), EVT standard score ($r = .27, p < .01$)
- Production of final consonant clusters in the bimorphemic word pairs was significantly correlated with the following language measures: PPVT-4 standard score ($r = .25, p < .01$), EVT-2 standard score ($r = .26, p < .01$, see Fig. 3b), TACL standard score ($r = .26, p < .01$), and phonological awareness (CTOPP) score ($r = .33, p < .01$, see Fig. 3c)



Relationship of final consonant cluster production to dialect density:

- Production of final consonant clusters in the monomorphemic word pairs was not significantly correlated with dialect density ($r = -.18, p < .50$)
- Production of final consonant clusters in the bimorphemic word pairs was negatively correlated with the dialect density rating ($r = -.36, p < .001$, see Fig. 4a)



Regression Analysis:

- 20% of the variability in the comprehension of words with singleton consonants in the monomorphemic word pairs was explained by dialect density and age (marginally significant, $p = .058$) ($F [6, 83] = 3.21, p < .01$). Production of final consonant clusters in monomorphemic words was not a significant predictor.
- 49% of the variability in the comprehension of words with singleton consonants in the bimorphemic word pairs was explained by dialect density, age, and EVT standard score ($F [6, 83] = 12.14, p < .001$). Production of final consonant clusters in bimorphemic words was not a significant predictor.

DISCUSSION AND CONCLUSION

- Even though the stimuli used to elicit children's productions (AAE-speaking female speaker) consistently did not include final consonants in clusters, some children did produce the final consonant clusters.
 - Children produced, on average, 43% of final consonants in clusters in the monomorphemic word pairs (range = 0 - 100%, standard deviation = 23%).
 - Children produced, on average, 68% of final consonants in clusters in the bimorphemic word pairs (range = 0 - 100%, standard deviation = 24%).
- Production was correlated with comprehension, especially for bimorphemic pair.
 - Show me cat* was potentially ambiguous as the final "s" can be omitted in AAE.
 - Children who were most likely to produce final consonant clusters were also most likely to choose the correct picture for the SAE singleton.
- Production of final consonant clusters was related to language measures.
 - Children who were most likely to produce final consonant clusters were more likely to have higher vocabulary and phonological awareness.
- Conversely, production of final consonant clusters was negatively related to dialect density.
 - Children with higher dialect density produced fewer final clusters;
 - This finding was expected, as deletion of final consonants in clusters is a dialect feature of AAE.
- These results suggest that children who speak dense African American English may be at risk with respect to academic achievement. These children have poorer comprehension of words that are ambiguous in AAE, smaller vocabularies, and poorer phonological awareness.

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