ECHO

E-Journal for Black and Other Ethnic Group Research and Practices in Communication Sciences and Disorders

ECHO is the Official Journal of the

National Black Association for Speech, Language and Hearing

Volume 1, Number 2 **Fall 2005**

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Editorial Board

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Editor's Notes

As an electronic journal ***ECHO*** *provides an economical vehicle for disseminating relevant and timely articles that address the research interests and clinical practice patterns of Communication Sciences and Disorders professionals, particularly those serving Black and other ethnic group populations.*

In this issue of ***ECHO*** *special attention has been given to reporting the research and clinical activities of graduate students in the CSD program at Howard University, Washington, D.C.. Many of these students, under the direction of Dr. Kay T. Payne and her colleagues, are engaging in a new round of important and culturally relevant studies and investigations.*

ECHO *will continue to use a digital format to introduce the breaking research and clinical methods of scholars and practitioners addressing the communication needs of Black and other ethnic groups. As we merge our efforts with the new technologies, we hope any occasional blunder will be met with your patience and tolerance.*

Ronald Jones, Ph.D., Managing Editor

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About the Journal

ECHO*: *E-Journal for Black and Other Ethnic Group Research and Practices in Communication Sciences and Disorders is a professional publication that hosts scientific articles on research and clinical practice patterns, which impact racially, culturally and linguistically diverse populations in America. ***ECHO*** welcomes submissions from any communication science and disorders specialist, researcher and/or scholar, regardless of their race or ethnic background.

Although the National Black Association for Speech, Language and Hearing (NBASLH) has adopted ***ECHO*** as its official journal and will sponsor its publication, the journal remains ecumenical. ***ECHO*** invites submissions from other organizations whose members represent the communication interests and concerns of other racial, ethnic and/or linguistically diverse populations. Submissions to ***ECHO*** may include such topics areas as:

- Scientific research
- Assessment procedures
- Treatment & Prevention techniques
- Cultural, social, professional issues
- Professional issues
- Supervision & Administration
- Other related topics

Contributed manuscripts may take the form of

- Clinical forums and reviews
- Scientific research reports
- Case studies
- Position papers
- Digital presentation
- Letters to the editor

- Other related formats

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Manuscript Submissions

All manuscripts should be accompanied by a cover letter (e-mail) in which the corresponding author:

- Requests that the manuscript be considered for publication;
- Affirms that the manuscript has not been published previously, including in an electronic form;
- Affirms that the manuscript is not currently submitted elsewhere;
- Affirms that all applicable research adheres to the basic ethical considerations for the protection of human or animal participants in research;
- Notes the presence or absence of a dual commitment,
- Affirms that permission has been obtained to include any copyrighted material in the paper; and
- Supplies his or her business address, phone and fax numbers, and e-mail address.

All manuscripts must be submitted electronically and should follow the style and preparation presented in the *Publication Manual of the American Psychological Association* (latest edition); see Journal for exceptions to APA style). Particular attention should be paid to the citing of references, both in the text and on the reference page. Authors requesting blind review must specify and prepare their manuscripts accordingly. Manuscript submissions and inquiries should be addressed to: ECHOEditor@nbaslh.org

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Current Issue

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Effect of Clinician's Accent on Verbal Performance of Preschool Children, Beth R Wilkinson, Friendship Public Charter School System, Washington, D.C.; Kay T. Payne., Howard University

Examining Low-Level Lead Poisoning and Speech/Language Performance in School-Aged Children, Ann Bernadette Mayfield-Clarke, Ph.D., North Carolina Agricultural and Technical State University, Greensboro, North Carolina

Parent-Based Treatment of Childhood Stuttering: Two Case Studies, Kia N. Hartfield, Vanderbilt University; Kay T. Payne, Howard University; Tommie L. Robinson, Jr,, Washington, D.C.; Edward G. Conture, Vanderbilt University

Modification of the Spanish Articulation Measures (SAM) for Salvadoran Spanish Wilma I. Benitez Rivera, Howard University; Kay T. Payne, Howard University

Predicted Influences of Amharic on Spoken English: Clinical Implications, Helen Dowtin. Washington, D.C.; Kay T. Payne, Howard University

Invited Article:

African American English: Nature, Origin, and Implications for Clinicians, Kay T. Payne

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EFFECT OF CLINICIAN'S ACCENT ON VERBAL PERFORMANCE OF PRESCHOOL CHILDREN

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ABSTRACT

This research investigated the effect of a clinician's accent on the receptive and expressive performance of preschool children. Eight subjects were used for the study, including four who displayed an articulation disorder and four who displayed no speech or language disorder. During experimental procedures subjects heard 10 recorded stimulus words spoken with an accent, and the same 10 stimulus words without an accent. Subjects also heard five sentences containing no more than three accented changes, and the same five sentences containing no accented changes. Finally, the subjects heard five sentences with prosodic changes and the same five sentences without those changes. Outcomes of the study revealed differences for comprehension under accented and non-accented conditions, and between word and sentence comprehension for both accented and non-accented conditions. There was also a difference between disordered and non-disordered subjects on comprehension tasks. However, there were no differences between the disordered and non-disordered subjects for production under the accented condition. Results suggest that, despite their deficit, articulation-disordered children do not perform differently with a clinician who has an accent. Moreover, disordered and non-disordered children alike are able to understand and produce sentences without changes when a clinician exhibits accented speech.

KEY WORDS: accent, receptive and expressive performance, preschoolers' language

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INTRODUCTION

Many professionals hold the belief that a clinician's accent will have a negative effect upon clients (ASHA, 1998). Because of this widespread impression, students and clinicians possessing a foreign accent are often denied clinical opportunities. For the purposes of this project, accent refers to the phonological, suprasegmental, and vocal characteristics of one's spoken language (Taylor and Payne, 1998).

A spurious perception exists in the popular culture that accents are either "good" or "bad." Some accents are deemed more acceptable than others (Montgomery, 1999). For example, a British accent is often considered a "good" accent. On the other hand, a Spanish accent in English may be considered a "bad" accent. Thus, parents may be more willing to allow an individual with a British accent to work with their child because they are less worried that this accent will negatively affect their child's performance. Parents and professionals seem to be more concerned, however, when an individual with a Spanish accent is working with the child.

Several studies have demonstrated that an accent does not necessarily impede communication. Munro and Derwing, (1995), for example, concluded that an accent—even a strong one—is by no means an inevitable barrier to communication. Their research also showed that native speakers of a language possess a general bias against foreign accented speech (Munro and Derwing, 1999). This general bias against foreign accented speech may be related to the fact that historically, society has held the belief that an accent is, in itself a bad thing, and is subject to *treatment, intervention*, or even *eradication* in much the same way as a language pathology (Munro and Derwing, 1999).

The American Speech-Hearing-Language Association (ASHA) responded to these concerns and others by issuing several position papers, one of which states that there is no research to support the belief that audiologists and speech-language pathologists who speak with an accent are unable to make appropriate diagnostic decisions or achieve appropriate treatment outcomes (ASHA, 1998). Despite efforts of some to alleviate this preconceived notion, there is still a lack of clarity about the impact of a 'foreign accent' on successful delivery of speech and language services (Langdon, 1999).

Comprehension of Accented Speech

Research supports the notion that a child's speech perception is established at a very young age. In a study of developmental aspects of cross-language speech perception, Werker, Humphrey, and Tees (1981) revealed that infants were shown to discriminate between the voiced and voiceless stop consonants /b/ and /p/ along the same phonetic boundary as English

adults. They concluded that infants at this age possess the ability to discriminate natural linguistic contrasts without prior specific language experience.

Munro (1998) states that listeners are able to understand, often with little or no difficulty, speech that deviates noticeably from typical native-speaker utterances. Even young children, who are essentially untrained listeners, are able to perceive nonnative, accented speech as different from their own. Numerous rating scales have shown that even untrained listeners can readily distinguish foreign-accented from native-produced speech (Cunningham-Anderson and Engstrand, 1989; Flege, 1984; Flege and Fletcher, 1992; Flege, Munro, and Mackay, 1995; Thompson, 1991). Several studies have indicated how easily even heavily accented speech is understood. (Derwing and Munro, 1997; Munro and Derwing, 1995).The fact that nonnative speakers have a tendency to speak at rates slower than those of typical nonnative speakers sometimes helps comprehension, perhaps because listeners utilize the additional time to process accented speech.

The degree of accent assigned to speech is often dependent upon the listener's attitude toward the nonnative speaker. Several studies have shown that listeners sometimes attribute lower status to speakers with nonnative accents (Brennan and Brennan, 1981a and 1981b), express irritation when exposed to accented speech (Fayer and Krasinski, 1987; Gynan, 1985), and display discriminatory behavior toward people with nonnative speech patterns (Kalin and Rayko, 1978; Sato, 1991). A more positive attitude might mean the listener is more willing to understand the speaker despite difficulties of foreign accent. Anderson-Hsieh and Koehler (1998) indicated that a positive attitude toward foreign speech was significantly correlated with comprehension of passages that were the most heavily accented and read at the fastest rate, suggesting that listeners with positive attitudes may make more of an effort to understand nonnative speech. The findings of Munro and Derwing (1999) indicate that when speakers do not possess a positive attitude toward accented speech, they tend to assign harsher scores when rating accent.

Needleman (1998) suggested that prosody affects a listener's ability to utilize syntactic and semantic information, which are important cues for speech perception. According to Needleman, listeners place greater weight on the prosodic elements in the speech signal than on the syntactic and semantic elements. Contrastively, Munro (1995) suggests that although evidence of this sort indicates that non-native prosodic patterns can cause speech to be perceived as accented, the precise role of prosodic errors in the perception of accented speech is not well understood. Munro found that, contrary to the view that prosody strongly affects perception of accented speech, listeners also focus on other stimulus attributes.

Miller, Heise, and Licten (1951) were the first to report that word intelligibility is generally higher when words are presented in a sentence rather than in isolation. These researchers explain that this is presumably due to the limited context for words in isolation. Yet even in the absence of context, listeners are able to comprehend accented speech. When accented speech productions were presented without a meaningful context to untrained listeners, they were nearly always intelligible, and were often rated as highly comprehensible. This research supports the notion that context, rather than prosody, appears to be more effective for comprehending accented speech.

Although it is not yet clear which factors directly influence comprehension of

accented speech, researchers seem to agree that familiarity with the topic, type of accent and the speaker can lead to increased comprehension. This research is meaningful for clinicians because it suggests that if a child is repeatedly exposed to a clinician's accent, the child will be able to comprehend the clinician's speech.

Effect of Accent on Listener's Production

As far as production, research demonstrates that the language children learn is embedded and reinforced through their speech community. Children not only learn to produce sounds intelligibly in their native language, they also learn to produce them according to the language-specific phonetic norms of the surrounding community (Flege, 1981; Ngovo, 1999). Children's language acquisition in the home is better enhanced if both parents speak the same language (Ngovo, 1999). Flege explains that children can discriminate between sounds of two languages. According to Flege, since this ability may influence children's comprehension, it also may also influence their production of the sounds for separate languages.

Evidence from the research on fossilization also supports this notion. Tollefson and Firn (1983) state that fossilization is the process by which linguistic items, rules, or subsystems become permanently encoded in the bilingual sequential learners. This suggests that children's first language is permanently imprinted in their minds, and thus, not easily influenced by non-native speech.

Finally, ASHA in its position paper entitled, "Students and Professionals Who Speak English with Accents and Nonstandard Dialects: Issues and Recommendations," states that students and professionals who speak with accents can effectively provide speech, language, and audiological services to persons with communication disorders as long as they have the expected level of knowledge in normal and disordered communication, the expected level of diagnostic and clinical case management skills, and if modeling is necessary, are able to model the target phoneme, grammatical feature, or other aspect of speech and language that characterizes the client's particular problem (ASHA, 1998). ASHA further claims that all individuals speak with an accent; thus, the nonacceptance of individuals into higher education programs or into professions solely on the basis or presence of an accent or dialect is discriminatory.

The fact that ASHA has focused on this matter demonstrates the importance of the present study. Thus, the purpose of this study is to provide empirical evidence in support of this position. This research will contribute to the literature especially with regard to the diagnostic process. The activities conducted in this investigation relate specifically to the process of evaluation, that is, eliciting words, naming stimuli, and reading sentences to be repeated by clients. While it may be claimed that the treatment process, which requires modeling of target phonemes or grammatical features, demands that a clinician have the elements of standard English, this contention is outside the realm of this particular research.

METHOD

Subjects

The subject sample consisted of eight preschool-aged children (five male, three female) and two speech-language clinicians. All of the children were African-American between the ages of three and five years, who enrolled in an early intervention program in Washington, DC. Four subjects had an articulation disorder, determined by previous assessment procedures, and were receiving speech therapy through a

university speech and hearing clinic. The remaining subjects were non-articulation disordered as determined by prior screening procedures. None of the subjects had hearing disorders, also determined by case history information.

Two clinicians were used to administer the stimuli to subjects. Clinician (M) was monolingual and exhibited non-accented speech. Clinician (M) produced all stimuli, words, and sentences typical of the speakers of the Washington, D.C. community. Clinician (B) was bilingual and exhibited Spanish-accented speech. Clinician (B) spoke Spanish as her first language and was originally from Colombia, South America. Her speech consisted of typical Spanish phonological and prosodic influences on English. Both clinicians audio-recorded their production of the stimulus items.

Materials

The materials used for this study consisted of an audiotape recorder, four audiotapes, and a stimulus book containing 74 colored pictures. The recording guaranteed that the presentation of the stimulus items remained consistent for each subject. It also enabled Clinician (M) , the monolingual clinician, to present the accented stimuli independent of Clinician (B), the bilingual clinician.

The stimulus book consisted of colored pictures representing the different stimulus words and sentences for each condition. The stimulus book was modeled after valid receptive and expressive assessment tools to ensure its reliability and age-appropriateness.

Procedure

Subjects were administered comprehension and production tasks under two separate conditions. Subjects were presented with the same word and sentence stimuli under Condition I (accented speech) and Condition II (non-accented speech) in sittings 1 ½ weeks apart. To effect counterbalancing, half of the subjects received Condition I first followed by Condition II. The other half of the subjects received Condition II first followed by Condition I.

Each word presented under Condition I contained one phonological change that was typical of a Spanish influence on English (e.g., “choe” instead of “shoe”). Five sentences presented under Condition I contained similar phonological changes. Each sentence contained no more than three phonological changes (e.g., “The c**e**t **ee**s in the ba**tt**ub”). The other five sentences presented under Condition I consisted of one prosodic change where the stress on a syllable or group of syllables was different than would be typical of a native English speaker (e.g., “Eat your broc**CO**li” instead of “**BROC**coli”).

In the first sitting, the four articulation disordered subjects underwent Condition I (accented), and the four non-articulation disordered subjects underwent Condition II (non-accented). In the second sitting, which occurred a week and a half later, the articulation disordered subjects underwent Condition II, while the non-articulation disordered subjects underwent Condition I.

For the comprehension task, under both Condition I and Condition II, subjects heard a recording of the stimulus words and were presented with a plate containing three relevant pictures. Subjects were then asked to point to the picture that represented the stimulus word. Similarly, for the comprehension task involving sentences with phonological and prosodic changes, the subjects heard the recorded stimuli and were presented with a plate containing two relevant pictures. The subjects were asked

to point to the picture that represented the sentence expressed on the tape.

The production task entailed repetition of the two clinicians' modeled speech. Under both conditions, the subjects were presented with pictures and asked to repeat the word or sentence expressed by the clinician on the tape. Each stimulus item for the production task was presented with one corresponding picture.

Scoring was achieved for each task separately. For the comprehension task under both Condition I and Condition II, subjects' responses were scored as either "correct" or "incorrect." Data record forms were used to code the subjects' responses. For the comprehension task involving words, the subjects received a "1", indicative of a correct response, if they pointed to the correct picture. Consequently, the subjects received a "0", indicative of an incorrect response, if they pointed to a picture other than the one designated as correct. On the word task, the subjects had the opportunity to score a maximum of ten points.

For the comprehension task involving sentences with phonological changes and prosodic changes, the same scoring procedure was utilized. For the task involving phonological changes, the subjects had the opportunity to score a maximum of five points. The same number of points was available on the task involving sentences with prosodic changes.

For the production tasks, the investigator assessed the similarity of the subjects' responses to each clinician's production. Subjects' responses were then transcribed to illustrate the points of difference from the clinician's model, excluding articulation errors. For the production tasks involving both words and sentences under the accented condition , subjects were given a "1" if their production was different from the clinician's modeled production. A "0" was assigned if the subjects imitated the clinician's modeled production. For the same task under the non-accented condition, the subjects were given a "0" if they produced a response other than an exact imitation of the clinician's modeled production. On this task, subjects had the opportunity to score a maximum of eleven points.

Subjects had the opportunity to score a total of twelve points on the task involving sentences with phonological changes. For the production task involving sentences with prosodic changes, subjects had the opportunity to score a maximum of five points.

Data Analysis

For the comprehension tasks under both conditions, the frequency of correct responses was recorded and the mean was calculated for the combined group of all subjects. For the production tasks under both conditions, the frequency of the points of difference was recorded and a mean was determined for the group of all subjects. Mean differences between Condition I and Condition II were examined using two-tailed t-tests for related samples with alpha level of .05. Mean differences between subject types and sentences containing phonological versus prosodic changes were examined using chi square analysis.

The following research hypotheses provided the framework for data analyses: 1) There are no significant differences for Condition I (accented) and Condition II (non-accented) for comprehension and production; 2) There are no differences between word and sentence tasks under Condition I (accented) for both comprehension and production; 3) There are no significant differences between the articulation disordered and non-articulation disordered subjects for Condition I (accented) and Condition II (non-accented)

for both comprehension and production; 4) There are no differences between the subject groups on comprehension and production tasks containing phonological versus prosodic changes under Condition I (accented).

RESULTS

The main premise of this investigation was that there are no differences for accented and non-accented speech comprehension or production in the subject population. The findings revealed that, indeed, there were differences in both comprehension and production. The study anticipated no differences in word and sentence tasks for accented speech, however, differences were found for the comprehension, but not the production task. With regard to performance of articulation disordered and non-disordered subjects on tasks involving accented speech, comprehension was significantly decreased for disordered subjects. However, results confirmed that there were no differences between disordered and non-disordered subjects on production tasks involving accented speech. A final hypothesis set examined differences between disordered and non-disordered subjects on both comprehension and production tasks involving sentences containing accented phonological and prosodic changes. Findings revealed that there were no differences either for comprehension or production of these sentences.

Comprehension of accented versus non-accented speech was examined for the combined subject group as presented in Table 1. All subjects increased their comprehension under the non-accented condition, even when counterbalancing the order of presentation of the conditions. The mean for the accented condition was 13.37, and the mean for the non-accented condition was 18.75. T-test analysis revealed a mean difference of 5.38 and a t-value of 7.12 ($df = 7$, $p < .05$) indicating a significant difference between comprehension of the accented condition and comprehension of the non-accented condition.

Performance was examined separately for production tasks in the combined subject group as presented in Table 2. Similarly, as in the comprehension task, all subjects improved their production for the non-accented condition. The mean for the accented condition was 22.12, while the mean for the non-accented condition was 25.75. The t-test analysis revealed a mean difference of 3.62 and a t-value of 3.5 ($df = 7$, $p < .05$) indicating a significant difference for production tasks for subjects on the accented condition versus the non-accented condition. The research hypothesis that no differences would exist was, therefore not confirmed for either comprehension or production.

Differences in comprehension for words versus sentences for accented speech were examined. As displayed in Table 3, mean scores were higher for comprehension of words (6.62) than sentences (3.25). T-test analysis yielded a t-value of 6.33, indicating that a significant difference exists in comprehension for word versus sentence tasks in the accented condition. ($df = 7$, $p = .05$).

For production tasks under the accented condition, as exhibited in Table 4, subjects' performance was variable. The mean for the word task at 9.25 was slightly higher than the mean for the sentence task at 8.75. Values for the t-test analysis resulted in a mean difference of 0.37 and a t-value of 0.66 ($df = 7$, $p > .05$), which were not significant.

The next hypothesis examined differences between disordered and non-disordered subjects for comprehension of accented speech. The scores, as presented in Table 5, illustrate that disordered subjects

performed more accurately than non-disordered subjects. The mean for the disordered group was 15.0, while the mean for the non-disordered group was 11.75. A mean difference of 3.25 and a t-value of 2.97 (df =7, $p > .05$) were revealed by t-test analysis. This indicated that a significant difference exists between disordered and non-disordered subjects for comprehension of accented speech. Thus, the research hypothesis was not confirmed.

The study further examined differences between disordered and non-disordered subjects for production tasks presented under the accented condition. These scores are presented in Table 6 which illustrates that, again, disordered subjects performed slightly better than non-disordered subjects. The mean for the disordered group was 22.5, while the mean for the non-disordered group was 21.75. T-test analysis revealed a mean difference of 0.75 and a t-value of 0.84 (df =7, $p < .05$), indicating no significant difference. In this analysis, the research hypothesis that no difference exists for disordered and non-disordered subjects for production under the accented condition was confirmed.

Performance of disordered and non-disordered subjects was further examined on comprehension of sentences containing accented changes in phonology and accented changes on prosody. Scores are presented in Table 7. Although scores for both groups were higher for sentences containing phonological changes, the differences were not significant. Chi Square analysis revealed a chi value of 0.01 (df =1, $p > .05$). This value indicates that, for the accented condition, no significant differences exist between the comprehension of sentences with phonological changes and sentences with prosodic changes. Thus, the research hypothesis was confirmed.

The final hypothesis investigated performance of disordered and non-disordered subjects on production of sentences containing accented changes in phonology and prosody. Results, as presented in Table 8, reveal that all subjects were more accurate in their production of sentences containing phonological changes, and disordered subjects performed better than non-disordered subjects on these sentences. Chi Square analysis yielded a chi value of 0.009 (df =1, $p = .05$), which was not significant. Thus, there are no significant differences between disordered and non-disordered subjects for production of sentences with phonological changes and sentences with prosodic changes.

Generally, the findings revealed that there was a decrease in both comprehension and production tasks involving accented speech. Additional findings would attribute this decrease more heavily to sentences spoken in the accented condition, since subjects performed better on word tasks than sentence tasks. Yet, with regard to production, there was no greater contribution of sentences than words.

It was rightly hypothesized that there would be no difference in subjects' performance whether they were disordered or non-disordered in their comprehension and production of sentences with accented changes in phonology and prosody. Results indicated that this is the case for both comprehension and production. Thus phonologic and prosodic changes in accented speech do not affect children with disorders in articulation differently than children without disorders.

DISCUSSION

The findings of this study were unable to confirm that there is no difference overall for comprehension and production of accented and non-accented speech with preschool children. However, this study confirmed that there is no difference in production between disordered and non-

disordered children for accented speech. This indicates that, despite their deficit, articulation disordered children do not differ in their production when confronted with speech containing accented changes.

The investigation sought to probe more deeply to ascertain the characteristics of accented speech that interfere with comprehension and production. Findings revealed that words were more easily comprehended than sentences, yet production was unaffected regardless of whether the stimulus consisted of isolated words or sentences.

Findings of the study also confirmed that no difference exists in either comprehension or production when disordered and non-disordered children hear sentences containing phonological versus prosodic changes. These results illustrate that disordered and non-disordered subjects, alike, are able to understand and produce sentences when a clinician exhibits mild accented speech.

The main research hypotheses for the study were not confirmed because subjects performed more accurately under the non-accented condition. For comprehension of accented speech, surprisingly, disordered subjects performed more accurately than non-disordered subjects. Yet, for the comprehension task for non-accented speech, the disordered and non-disordered subjects performed relatively the same. Almost all subjects, whether disordered or non-disordered, made errors on stimulus words "yar" (jar) and "peeg" (pig). Many subjects also made errors on the stimulus sentences "a fitch end a creb" (a fish and a crab) and "estars chine een the sky" (stars shine in the sky). It can be reasoned that the accented speech was a problem for the subjects because they performed these items correctly under the non-accented condition.

With regard to the comprehension tasks under the accented condition, it was initially believed that scores on the word task would be higher than scores on the sentence task due to the linguistic complexity of the sentence. For example it was reasoned that since there is greater word content in sentences, more processing time would be needed comprehend accented sentences. The finding of the study is consistent with the literature. i,e. Munro and Derwing (1995) found no evidence that degree of accent of the speaker was related to processing time of the listener.

It was revealed that no difference exists in production of words and production of sentences for the accented condition. Some interesting observations were made in that both disordered and non-disordered subjects were reluctant to repeat the accented words they did not recognize. For example, during the administration of the accented word stimuli "chell" (shell), some subjects responded "turtle," and went on to explain that the picture was that of a turtle not a "shell." During the administration of the accented sentence "a cet ees hiding in the butch" (a cat is hiding in the bush), a few subjects repeated the sentence as, "a cat is hiding in the tree," pausing before saying tree as if to signify that "butch" was not a real word. Other subjects repeated the word "butch" but simultaneously made a confused facial expression as if to signify they were aware that "butch" was not a word used by speakers of their community. From this anecdotal evidence, we may speculate that children do indeed recognize accented speech that is different from their own and do not repeat changes they consider to be different. Thus, a child would not necessarily change his speech to imitate that of a clinician with an accent.

A surprising finding of the study is the significantly better performance of disordered subjects for comprehension of accented speech. This may be explained logically in that comprehension in

disordered children might be expected to be decreased under any condition. The finding of even less comprehension in non-disordered subjects of this study most probably reflects the greater influence of accented speech on comprehension of normal individuals. These results suggest, therefore, that it is not the accent of the speaker that contributes to the lack of comprehension of disordered subjects.

For the production task, disordered subjects scored similarly to the non-disordered subjects. The methodology of this task may explain the performance in that subjects received a score of "0" for imitating the clinician's accented speech, and a score of "1" for producing different speech. When the non-disordered subjects heard "a cet ees hiding in the butch" (a cat is hiding in the bush) but produced "a cat is hiding in the tree," they received a "1" score because "tree" is different than "butch." Likewise, if the disordered subjects heard "a cet ees hiding in the butch" but produced "a cat is hiding in the bus (indicative of a simplification process), they would also receive a "1" score because "bus" is also different than "butch." For non-disordered subjects, the production of something other than the accented speech signified that the presence of the accent did not interfere with their production. For disordered subjects, their consistency in producing articulation errors under both the accented and non-accented conditions suggests that the presence of an accent did not interfere with the production of their speech. Thus, it can be reasonably stated that an accent does not interfere with production patterns in children.

The fact that there was no difference in performance for sentences containing phonological versus prosodic changes for both disordered and non-disordered groups under the accented condition can be explained in two ways. Since the disordered subjects performed better on the sentence tasks under the accented condition, it can be surmised that this increase in accuracy was due to the fact that articulation errors are not manifested when "usual" speech is heard. In other words, the disordered subjects make articulation errors in their speech when the stimulus is typical English speech. Yet, when speech is presented to them in a manner that is not consistent with what they are exposed to on a normal basis, the articulation errors are not revealed. For example, under the non-accented sentence stimulus "a fish and a crab," the disordered subjects produced an articulation error of the "sh" sound in fish. When this same sentence was presented to them under the accented condition ("fitch and creb"), the disordered subjects did not make the same articulation error because they did not attempt to substitute the sound "s" for the "ch" sound. It may be that these subjects only substitute the "s" sound for the "sh" sound.

With regard to why prosodic changes did not affect the comprehension or production of sentences under the accented condition, the findings of this study support the literature in that prosody does not affect the comprehension or production of accented speech (Munro, 1995). Both the disordered and non-disordered subjects appeared to rely on the context within the sentence to comprehend and produce it without errors. The presentation of an accent did not alter either subject group's ability to perceive and generate the message.

Clinical Implications

Results of this study provide data to support ASHA's position that speech-language pathologists possessing an accent should not be denied the opportunity to practice in the profession. The results indicate that children, both articulation disordered and non-articulation disordered,

are able to comprehend accented speech and not to adopt it as their own speech pattern. Children did not produce the accented speech, nor did they imitate the prosodic features of the accented speech. The clinical implications of this research are such that a clinician possessing a mild accent, similar to the accent used in this study, will not negatively affect the comprehension and production of preschool children.

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Table 1: Comprehension Scores of All Subjects

Subjects	***Accented***	***Non-Accented***
1	11	18
2	16	20
3	16	19
4	17	20
5	10	19
6	10	15
7	14	19
8	13	20
N=8	Mean=13.37	Mean=18.75

T-test	df	mean diff.	t-value	p-value
	7	5.38	7.12	<.05

Table 2: Production Scores of All Subjects

Subjects	Accented	Non-Accented
1	24	23
2	20	25
3	22	27
4	24	27
5	22	27
6	20	28
7	23	28
8	22	26
N=8	Mean=22.12	Mean=25.75

T-test	df	mean diff.	t-value	p-value
	7	3.62	3.506	<.05

Table 3: Word and Sentence Comprehension for All Subjects—Accented Condition

Subjects	Word Task Score		Sentence Task Score	
Accented				
1	4		3	
2	8		5	
3	10		4	
4	8		4	
5	5		2	
6	4		2	
7	7		3	
8	7		3	
N=8	Mean= 6.62		Mean =3.25	
T-test	df	mean diff.	t-value	p-value
	7	3.37	6.33	<.05

Table 4: Word and Sentence Production for All Subjects—Accented Condition

Subjects	***Word Task Score***		***Sentence Task Score***	
1	10		10	
2	8		10	
3	10		7	
4	10		10	
5	9		8	
6	10		8	
7	9		9	
8	8		9	
N=8	Mean=9.25		Mean=8.75	
T-test	df	mean diff.	t-value	p-value
	7	0.37	0.66	>.05

Table 5: Scores of Disordered (D) and Non-Disordered (ND) Subjects on Comprehension Tasks—Accented Speech

Subjects	Score
D1	11
D2	16
D3	16
D4	17
n=4	Mean 15.00
ND 5	10
ND 6	10
ND 7	14
ND 8	13
n=4	Mean 11.75
N=8	

T-test	df	mean diff.	t-value	p-value
	6	3.25	2.976	>.05

Table 6: Scores of Disordered (D) and Non-Disordered (ND) Subjects on Production Tasks—Accented Speech

Subjects	Score
D1	***24***
D2	20
D3	22
D4	24
n=4	Mean=22.5
ND 5	22
ND 6	20
ND 7	22
ND 8	22

n=4		Mean=21.75		
T-test	df	mean diff.	t-value	p-value
	3	0.75	0.84	<.05

Table 7: Scores of Disordered (D) and Non-Disordered (ND) Subjects on Comprehension Task Involving Phonological and Prosodic Changes—Accented Speech

Subjects	Phonological Sentence Score	Prosodic Sentence Score
D1	3	4
D2	5	3
D3	4	5
D4	4	2
n=4	Mean 4.0	Mean3.50
N5	2	3
N6	2	4
N7	3	4
N8	3	3
n=4	Mean 2.50	Mean 3.50

Chi Square	df	chi-value	p-value
	1	0.01	>.05

Table 8: Scores of Disordered (D) and Non-Disordered Subjects on Production Task Involving Sentence Types—Accented Speech

Subjects	Phonological Sentence Score	Prosodic Sentence Score
D1	10	4
D2	10	2
D3	7	5
D4	10	4
ND 5	8	5
ND 6	8	2

ND 7	9	5
ND 8	9	5
N=4	Mean=8.5	Mean=4.25

Chi Square	df	chi-value	p-value
	1	0.009	>.05

ECHO

EXAMINING LOW-LEVEL LEAD POISONING AND SPEECH/LANGUAGE PERFORMANCES IN SCHOOL-AGED CHILDREN

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ABSTRACT

This article examines the relationship between low levels of lead and speech/language performances of school-aged children whose blood lead levels are below 25 ug/dl (micrograms per deciliter of whole blood). The 30 subjects were school-aged children between the ages of $5^1/_2$–7 years from low socioeconomic status, African-American families residing in the city of Philadelphia, Pennsylvania and diagnosed as having subclinical lead poisoning. Three distinct lead level groups were used: low lead level (10 ug/dl), moderate lead level (15 ug/dl), and high lead level (25 ug/dl). The subjects were evaluated using measures of speech and language functioning taken from the Clinical Evaluation of Language Fundamentals-3 and the Fletcher's Test of Speech Diadochokinetic Rate. Pearson Product-Moment Correlation Coefficiency and Analysis of Variance were used to analyze the data. Among the major findings of the study:
(1) three statistically significant, moderately negative correlations imply low-lead exposure levels may have consequences for receptive language skills performances, resulting in subtle changes in the children's ability to apply the appropriate structures to sentences and learn new vocabulary; (2) low-level lead had no impact on motor speech performance; and (3) as the blood lead levels increased in the children, significant developmental deficits were identified that suggest possible language-learning difficulties. Despite the need for the development of more sensitive assessment measures that will address information processing behaviors (verbal or speech), sensitive assessment instruments will provide more reliable outcome measures for remediation strategies to be implemented by speech/language pathologists for chronic lead exposed children who present with this pattern/profile of communication deficits.

KEY WORDS: lead poisoning, motor speech skills, receptive-expressive language, school-aged children, Clinical Evaluation of Language Fundamentals-3, Fletcher's Test of Speech Diadochokinetic Rate, blood lead levels, speech/language pathologists, remediation.

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INTRODUCTION

Childhood lead poisoning is a disease uniquely composing a neglected public health issue. Convincing evidence (Chisolm 1993; Dolan 1990) suggests that lead in children is harmful, even at low levels and generates potentially permanent effects in children (Benevich, 1990; Ernhart et al. 1989; Ferguson et al., 1988; Needleman and Gastonis, 1990), their learning potential and capacity (Ernhart et al, 1987; Winneke et al. 1985, 1989; Yamins 1977; Yule et al. 1981, Markowitz, 2000).
Although research to date has established that lead can have adverse effects on children, there is controversy regarding whether lower levels of exposure reliably demonstrate ill effects on health. Notwithstanding, lead is now recognized to cause a syndrome of "subclinical poisoning" (Bellinger, 1987; Landrigan and Graef, 1987; Sachs et al., 1978). Subclinical lead poisoning is blood lead level determined by the Centers for Disease Control (CDC, 1985) as 30 ug/dl (micrograms per deciliter of whole blood) designed as upper "safe" limits of body burden accepted in clinical practice. According to Juberg (2000) and Landrigan et al., (2002), the most recent published data show that the U.S. average for blood lead is 2.9 ug/dl; the CDC action level is 10 ug/dl and the intervention level is 20-44 ug/dl.

Lead has an insidious impact upon the functional status of erythrocytes (red blood cells), the peripheral and central nervous systems, the kidneys, immune system and skeletal system (CDC 1975; Landrigan and Graef, 1987). In addition to its diverse health effects, lead's neurotoxic outcome in children is particularly notable because of the sensitivity to the developing central nervous system (Benevich 1990). According to ATSDR (1988), the concentration of lead in whole blood (PbB) is the most commonly used indicator of exposure in studies relating lead exposure to health and toxicology.

Mayfield (1983) notes that a variety of language and speech disorders are the result of central nervous system (CNS) damage due to low-level lead exposure. The effect of subtle cerebral damage is discernible by a variety of neuropsychological performance deficits (Benevich 1990; Chisolm 1993), including language-learning disorders (Cooney et al. 1989; Landrigan et al. 1975; Needleman et al. 1979; Rothenberg et al. 1989).

Several theories suggest that chronic childhood lead poisoning is one cause of central nervous system damage. (Byers and Lord 1943; Duva 1977; Jenkins and Mellins 1957; Mayfield 1983; MacIntyre et al. 1996; MacIssac 1976; Yamins, 1977). Excessive exposure to lead in children results in impairments in intellectual function and behavioral deficits of various forms, such as, irritability, distractibility, short attention

span, hyperactivity, and other behaviors that make it difficult for the child to learn the skills needed to be successful in society (de la Burde and Choate 1975; Landrigan et al. 1975 and 2002; Needleman et al. 1979). Low-level lead poisoning is also cited as a cause of language-learning difficulties, verbal comprehension, auditory processing, behavior deficits, impaired fine motor function, and even criminality (Ernhart et al. 1981, 1987, 1988,1989; Mayfield 1983; Needleman et al. 1979, 1983, 1990; Sachs et al. 1978).

Past research reports reveal that the verbal I.Q. is one of the most sensitive indices of cerebral injury related to lead exposure. However, there has been no detailed analysis of what the verbal indices imply based on specific aspects of motor speech and receptive/expressive language skills. Hence, the purpose of this article is to present the investigation of the relationship between speech/language performance profiles of school-aged children with blood lead levels below 25 ug/dl (micrograms of lead per 100 deciliter of whole blood range) and its impact upon their communicative behavior.

METHOD

The research design and methodology employed utilized a descriptive between-subjects correlational analysis of low levels of lead absorption and the speech/language performances of six (6) year old African-American children as measured by a standardized assessment tool, (Clinical Evaluation of Language Fundamentals-3) and a non-standardized assessment tool (Fletcher's Time by-Count Test of Diadocholinetic Syllable Rate). In addition to the descriptive statistics, parametric statistics were employed on thirty subjects that determine the existence of a relationship (positive/negative) between the variables under discussion. The descriptive between subjects correlated design was considered due to the basic structure of the study as a result of (1) the absence of manipulation by the researcher; (2) selection of groups/compatibility of subjects in different classifications compared to their performances on speech/language tests; (3) administration of the test, and (4) an attempt to equate subjects on extraneous variables. In an effort to reduce extraneous variable differences, this investigator controlled for age, socioeconomic status and lead level exposure by matching the subjects by age, socioeconomic status, lead level exposure, particularly for the purpose of between-subjects descriptive research.

The intended tasks were to evaluate the subjects' speech/language performance behaviors utilizing speech diadochokinetic syllable rates obtained by Time-by-Count Test of Diadochokientic Syllable Rate (Fletcher 1972; 1978) and language skills assessed by the selected subtests of Clinical Evaluation of Language Fundamentals-3. These tasks were conducted to yield a pattern/profile of the subjects' communicative performance behaviors that may be related to the effects of the low level lead poisoning that will provide insight into the nature, severity and duration of the speech/language performance behaviors. These finding will become crucial in the remediation and recovery from low- level lead absorption. It will also provide evidence to further reduce "safe" lead level to 0 ug/dl.

Despite the widespread lead absorption of school-aged children, Philadelphia, Pennsylvania was identified to be one of highest among the nation's oldest cities with 62% of the children affected. Research (Friend, 1990) also suggested that the northeast and midwest cities have the highest exposure rate when compared to the

south & west where there is a greater number of newer homes.

Subjects

The subjects were selected from the City of Philadelphia Department of Public Health Maternal and Child Health, Childhood Lead Poisoning Prevention Program where 982 African-American children have been followed since birth. There were 77 subjects in Group I (low); 417 subjects in Group II (moderate); and 488 subjects in Group II (high) BLL. Of the 982 subjects, 30 were randomly selected and assigned to three distinct lead level groups (Group I-: 1–8 ug/dl [low], Group II-: 9–16 ug/dl [moderate], and Group III -: 17–25 ug/dl [high]). The subjects ranged in age from 5½–7 years old (with the mean age of 6.0 years) and were selected on the basis of the standards of exposure to lead, i.e. (the concentration of lead in whole blood) micrograms per 100 dl. An attempt was made to evenly distribute the subjects (e.g. based on gender) in each group of five males, five females. However, due the higher percentage of males in the various lead level cohort groups, the end result became a total of 9 males/1 female, (Group I); 7 males/3 females (Group II); and 6 males/4 females (Group III) respectively. Additional subject selection criteria included:

1. Diagnosis of lead absorption in the range of 1–25 dg/dl with a history of metabolic disturbance attributable to lead in soft tissue resulting from the average of at least four multiple blood lead testing.
2. Currently enrolled in the first grade of the local public school system with similar linguistic and socioeconomic backgrounds.
3. Free from any preexisting known handicapping condition at the time of testing as determined by developmental/medical histories identified from the lead poisoning database by the investigator.
4. Normal level of hearing acuity as determined from hearing screening reports documented in the medical records;

Procedure and Materials

All subjects were evaluated using measures of speech and language behaviors. To assess language behavior functioning, selected subtests of the Clinical Evaluation of Language Fundamentals-3 (CELF-3) (Semel et al. 1995) and to assess motor speech behavior, the Fletcher Time–by-Count Test of Diadochokinetic Syllable Rate (Fletcher, 1972; 1978) were administered.

Six (6) of the eleven selected subtests of the CELF-3 were administered to the children. The six selected subtests were: Linguistic Concepts and Oral Directions, Word Structure, Word Classes, Sentence Structure, Formulated Sentences, and Recalling Sentences. The underlying model of Clinical Evaluation of Language Fundamentals-3 includes (10 relationship among semantics, syntax, morphology, and pragmatics or closely related notions of language content, form, and use; and (2) the interrelated domains of receptive and expressive language i.e., listening and speaking or decoding and encoding processes. The CELF-3 assessment tool was selected because it does not penalize the participants for the use of African-American Vernacular English when responding to the expressive language tasks.

Fletcher Time-by-Count Test of Diadochokinetic Syllable Rate Motor Speech Behavior Measurement Tool

Traditionally, diadochokinetic syllable is assessed by counting the number of syllables spoken in a given time period (Fletcher 1972; 1978). A Time-by-Count

strategy is designated to enable an investigator to gather diadochokinetic measurements in a sequential rather than overlapping tasks. This procedure is widely used for evaluation of speech diadochokinetic performance.

Motor speech production performance was evaluated using a speech alternating motion task, i.e. the Fletcher Time-by-Count Measurement (Fletcher, 1972; 1978). The Time-by-Count protocol requests the subjects to produce a specific number of syllables and syllable sequences while the investigator notes the production time on a stop watch.

According to Fletcher (1972, 1978), the norms are based on the total seconds taken to repeat a specific number of syllables before obtaining the diadochokinetic syllable rate instructions for the tasks. The investigator counts the number of sequential motion rate tasks (puh-tuh-kuh) using a stop watch to keep accurate time. When the predetermined number of seconds has elapsed, the subject is requested to stop. A Diadochokinetic Syllable Rate Worksheet (Form A-2) (Shipley and McAfee, 1992) to record the results of the subject's evaluation was used. Diadochokinetic rates were obtained for each of the following syllables: | pʌ|, |tʌ|, |kʌ|, |fʌ|, |Iʌ| |pʌtƏ|, |pʌkƏ|, |tʌkƏ|, and |pʌtƏkƏ|.

Method/Sample Description

Based on the subject selection criteria, several lists were generated with a total of 982 participants, (the percentage of children testing at or below 25 ug/dl) previously diagnosed with low-level lead poisoning. Of the 982 children listed, only thirty were randomly selected and assigned to the three lead groups of ten. Thirty parental consent forms were obtained and thirty subjects were administered the assessment instruments which took approximately four weeks to complete. The researcher met with the public health community outreach workers, three to four days weekly, by appointment. Three sections of Philadelphia, (southwest, north, and west) were targeted as the lead belt where four to five assessments were conducted daily.

The participants were assessed in the home environment, which may account for the average to above-average results of the data. Of the thirty children in the sample, all of the parents were receptive, knowledgeable of lead poisoning, and concerned about the implications of the effects of low-level lead poisoning on the speech-language performances of their children.

Some of the participants were or had been enrolled in Head Start, preschool, kindergarten, extracurricular activities and/or accelerated academic classes. Also, parental involvement with academics was an additional factor that appeared to have favorable impact on the outcome of the study's results. Of the thirty subjects, only three participants were referred for speech/language services in the public schools. Twenty children presented with scores that suggested questionable language performances suspect of probable language-learning problems and seven subjects that demonstrated average to above average scores. The children assessed who had older siblings and parental involvement appeared to perform better on the expressive language subtests than the receptive language subtests. This factor may be attributed to the language models available in the home environment, the ability to imitate spoken language, and the closeness of the family structure.

Despite the "stereotypic" research that indicates low socioeconomic status populations demonstrate marginal outcomes, the data collected finds a positive, yet culturally descriptive account of the subjects

and their families from an African-American perspective, i.e. the home environment was instrumental in the overall effects of lead poisoning on speech-language performances and may have reduced or eliminated any anxiety and/or stress associated with test-taking. It also provided an environment conducive for the participants to perform at their optimum learning levels.

RESULTS

Although inconsistent research findings remain about the causal link of lead exposure and the developmental neuropsychological and behavioral outcomes, it was hypothesized that there is a relationship between low lead level exposure and the speech-language skills of African-American children of lower socioeconomic status.

There were seven study hypotheses presented for this investigation. In summary, it was postulated that there would be no significant correlation between lead exposure levels and the speech/language performances by 5½–7 year old African American children of lower socioeconomic status, which involved their total language scores and their speech diadochokinetic rate. Speech/language tasks yielded a pattern/profile of the subjects' communicative performances that may be related to the effects of the low level lead poisoning. These findings may provoke insight into the nature, severity, and duration of the speech/language performance behaviors.

In summary, for hypotheses 1 through 4, there were three statistical correlations that indicated a moderately negative relationship between the low lead level exposure and the subjects' performances on the Clinical Evaluation of Language Fundamentals – 3. The subjects' performance scores were associated with the amount of low lead exposure level. The average total language scores and the receptive language scores were associated with the lower level of lead to which the subjects had been exposed. Therefore, the increase in the total language scores of the subjects was due to the decrease in the lead level exposure. In addition, the low lead exposure was also found to be related to a developmental gap as shown by the language age equivalents.

There were no statistically significant differences noted within/between the three groups of subjects based on gender and blood level groups. The male subjects' total language scores of the Clinical Evaluation of Language Fundamentals – 3 were significantly higher (better performance) than the females' overall scores.

However, the speech diadochokinetic syllable rate of the females in the moderate/high blood level group performed better than the males in those groups.

There was a statistically significant correlation between the lead exposure levels and some of the selected subtests of the Clinical Evaluation of Language Fundamentals – 3. Based on the associated relationship between the lead exposure and their outcome on subtests, the profiles are as displayed in Table 3. There were no statistically significant differences found within/between blood lead level groups and the selected subtests of the Clinical Evaluation of Language Fundamentals – 3 and/or the speech diadochokinetic rate performance scores.

These findings clearly defined profiles associated with the impact of low lead level poisoning on selected subtests of the Clinical Evaluation of Language Fundamentals – 3 (see Table 3). One profile identified in the area of Receptive Language Channel was Word Classes, which suggested that the subjects had difficulty with and/or would be unable to make

predictions, create meanings, make inferences, or use analogical reasoning for problem solving. The second profile procured the subtest of the Expressive Language Channel, Formulated Sentences, which affected planning and producing sentences for conversation, classroom discourse, academic interaction or written language.

In examination of the total language scores, there were three statistically significant correlations that generated profiles at the p = <.05 level. The selected subtests were (1) RLS Word Classes (r = .5156; p = .004), which concurs with the selection mentioned above; (2) ELS Word Structure (r = .4179; p = .008); and (3) ELS Recalling Sentences (r = .5537; p = .002). With the respect to the Receptive Language Score, Word Classes (r = .5566, p = .001) was the only subtest that emerged. The Expressive Language Score depicted one significant correlation between Word Structure (r = .5861, p = .001). The hypothesis pertaining to language-age equivalent rendered subtest profile, Word Structure (r = .5092, p = .004). Overall, a pattern of performance has been documented to support the task of identifying the impact of blood level exposure on Word Classes, Sentence Structure and Word Structure, resulting in the establishment of associated relationships between these variables that were also statistically significant at the p = <.05 level. There were additional splinter language skills across both receptive/expressive language channels which maybe indicative of predictable language-learning deficits.

DISCUSSION AND CONCLUSIONS

The findings of this study suggest that low-lead exposure levels may have negative consequence for the development of language skills. The low-lead level exposure was moderately and negatively related to the Total Language Score Performances of the school-aged children. Moreover, as the subjects' Total Language Score performances increased (depicting average to above average outcome), the amount of the lead level decreased. Yamins' (1977) research found similar results, indicating that lead was associated with the observed language abilities, concluding that there was a strong negative association between blood-lead levels and certain language abilities in pre-school aged children.

The second correlation that is indicative of a mutual relationship is the impact of lead exposure on the Receptive Language Score performances. There was also a moderately negative link between the lead exposure level and the Receptive Language Score performance components. This correlation suggests that the increase in lead exposure level is associated with the decrease in the Receptive Language Score performances. This fact is documented by MacIntyre et al.'s (1996) study where the receptive language scores were more affected than the expressive language scores, suggesting that if lead toxicity has a relationship to language development, the impact of lead poisoning can be observed in a standardized test score. Additionally, this study also proposes that the consequences of this factor alone points to the need to monitor the school-aged group, between the ages of 5½–7 years old, whose lead level exposure is considered "safe" as deemed by CDC (1991) because of the risk of manifesting receptive language skill deficits. Also, in support of the present findings were Bellinger's (1995) and Cooney's (1995) studies, which indicated that there is general consistency in terms of a modest inverse interaction between indices of lead and global indices of development.

The third correlation between lead exposure level and the language-age

equivalent demonstrated a moderately negative association. As the lead exposure level increased, the language-age equivalent decreased. The decreased language-age equivalent depicted a shallow curve/depression of the subject's language performance (abilities) when compared with their chronological age. From the results of the data, 60% of the total population exhibited language-age appropriate performances that were unaffected by the low level lead poisoning. However, as their lead exposure level increased, there were significant developmental gaps identified that ranged from four months to four years, nine months. The individual variability view of each assessment appeared to develop a pattern/ profile that were related to the impact of the lead on their language performances. The subjects' overall responses yielded age-appropriate (average) findings which appeared to be influenced by the academic/parental support received during the school year. In spite of these findings, there were cases that depicted a fluctuation of subtest scores that predisposed the individual for potential learning disabilities by the third grade and no later than the fifth grade. Despite the sustained attending skills of the children, the low lead exposure level presents a superficial impression that results in long-term consequences on the language-age equivalent performances. The predictive bases of this relationship indicate that because of the lead exposure effect on the children's system, this developmental gap may widen as the child grows due to the subtle damages of lead poisoning.

Ernhart and Greene's (1990) investigation also provides credence toward lead level exposure and language-age equivalent performance. Their research was based on the premise of the central principles of teratology, which would best explain the discrepancy that existed between the effects of lead on verbal abilities on young children and may have its roots in the period of peak lead exposure and their rapid development of language skills. Hence, the probable cause for the widening of the developmental gaps may be a result of lead exposure peak time.

However, in contrast to the three significant correlations identified, this investigation also found that low-lead exposure level was not significantly associated with performances on the speech diadochokinetic rate or Expressive Language Performance Scores. Furthermore, there were no statistically significant difference found between the three blood lead groups and the speech/language skill performances.

The findings from this research support several studies, which clearly pinpoint the lack of association or differences of the lead level and motor behavior (Ernhart and Greene 1990; Needleman et al. 1979, 1990; MacIntyre et al. 1996).

Contradictory findings among low lead studies are strongly documented and appear to be related to differences in research design and the source of the lead exposure. Mayfield (1983) stated that it was conceivable that some children may have experienced similar lead exposures, but different absorption levels and physiological reaction to the lead absorption. Consequently, significant differences may have been masked and impacted the results of past/current studies in terms of research findings. Moreover, the test instruments used in previous studies and current research may have not been sufficiently sensitive to detect subtle problems in language performance in lead exposed children.

The outcome of this research suggests that a relationship does exist between low-lead exposure and language performances. Because of this significant

association, the "safe" level/level of concern should be revisited to further reduce the action level of blood lead to 0 ug/dl.

Therefore, one could take as read that low-level lead poisoning does impact language skill performances in the area of receptive language that exhibits a pattern/profile of behavior that will result in the child's subtle difficulties in their ability to apply the appropriate structures to sentences, recognize & utilize words during vocabulary acquisition skills, inability to create meaning, make predictions, make inferences, and use analytical reasoning for problem solving. Also, the school-aged population of this study bears careful and close monitoring of the type of support they receive during the school year, such as after school curriculum, and parental involvement. Additionally, the source of the lead exposure should constantly be reduced and ultimately eliminated from the home and environment. Multiple testing of the blood lead level should be monitored, change in the dietary regime, and follow-up with medical/educational/psycho-social and speech/language pathologist are needed to provide the children with any remedial techniques/strategies necessary to perform better in school and reduce academic failure in later life.

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NOTE: At the time of this investigation, the Clinical Examination of Language Fundamentals-3 (CELF-3) was the valid standardized test instruments. However, this instrument has been updated to the CELF-4.

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Table 1

Summary of Hypotheses and Statistical Significance of Pearson-Product Moment Correlations Coefficient and Analysis of Variance Between Low-Level Lead Poisoning and Speech/Language Performances of 30 School-Aged Children

Hypothesis	Coefficient (r) / (F)	Significance Level $p < .05$	Statistically Significant
H_1 Lead Level Exposure and Total Language Scores of CELF - 3	r = -.4034	P = .027	Yes
H_2 Lead Level Exposure and Receptive Language Scores of CELF - 3	r = -.4650	P = .010	Yes
H_3 Lead Level Exposure and Expressive Language Scores of CELF - 3	r = -.2788	P = 136	No
H_4 Lead Level Exposure and Language Age Equivalent of CELF - 3	r = - 3730	P = .042	Yes
H_5 Lead Level Exposure and Speech Diadochokinetic Syllable Rate	r = - 1001	P = .599	No
H_6 Difference Between/Within Three BLL Groups and Total Language Scores of CELF - 3	f = 002	P = .961	No
H_7 Difference Between/Within Three BLL Groups and Speech Diadochokinetic Syllable Rate Scores	f = .053	P = 819	No

Source: Statistical significance of data collected for purpose of this dissertation.

Table 2

Demographic Data of the Total Population Involving all Variables Utilized in the Study

Subject #	Blood Lead Levels	Total Language Score	Receptive Language Score	Expressive Language Score	Speech Diadochokinetic Rate Score	Three Blood Lead Level Groups
1	2	123	122	122	10.3	1
2	2	93	102	86	16.0	1
3	3	80	80	82	12.0	1
4	4	90	82	100	11.0	1
5	5	82	72	94	10.3	1
6	5	87	86	90	2.8	1
7	8	96	92	102	2.8	1
8	5	96	92	102	10.3	1
9	10	64	61	72	4.2	2
10	14	67	57	67	7.0	2
11	7	108	102	114	10.3	2
12	5	107	106	108	10.4	2
13	10	84	82	88	3.0	2
14	9	92	82	104	10.3	2
15	9	84	86	84	4.8	2
16	5	78	75	84	1.0	2
17	12	86	75	100	10.0	2
18	13	101	90	112	10.3	2
19	11	91	84	100	13.8	3
20	13	76	72	84	18.0	3
21	10	95	96	96	29.0	3
22	12	62	53	75	0.0	3
23	14	84	75	96	0.0	3
24	14	82	86	80	9.4	3
25	9	84	92	88	10.0	3
26	17	73	61	88	20.3	3
27	20	91	94	90	10.0	3
28	9	122	118	125	10.3	3
29	2	102	110	94	10.3	1
30	5	96	92	102	10.3	1

Subject #	Chrono-logical Age	Sentence Structure (RLS)	Concepts and Directions	Word Classes (RLS)	Word Structure (ELS)	Formulated Sentences (ELS)	Recalling Sentences (ELS)
1	6.5	13	13	15	14	14	13
2	7.1	9	12	10	6	6	11
3	6.1	3	6	11	8	10	3
4	6.4	6	8	7	12	11	7
5	6.0	4	5	8	7	12	8
6	6.0	6	9	8	8	6	11
7	6.0	7	13	6	9	6	16
8	6.0	5	8	13	9	13	9
9	6.9	3	4	7	8	6	3
10	5.6	3	4	6	5	7	9
11	6.0	12	12	7	10	15	12
12	5.6	10	12	11	10	13	11
13	6.0	4	9	8	4	10	13
14	5.6	4	9	8	9	8	15
15	5.6	8	7	8	4	6	12
16	5.6	6	5	7	5	8	9
17	6.4	7	6	5	7	8	15
18	6.4	7	9	9	8	11	17
19	6.5	7	8	7	9	8	13
20	5.9	5	6	6	8	6	8
21	6.0	5	3	4	7	6	5
22	6.7	11	8	11	10	8	10
23	6.4	3	6	9	7	11	10
24	6.5	6	5	12	7	7	6
25	6.0	6	13	7	7	6	11
26	5.9	6	4	4	8	9	7
27	5.8	7	10	10	7	6	12
28	6.0	10	14	15	9	16	17
29	7.11	13	10	12	7	10	10
30	6.4	5	8	13	9	13	9

Note: Thirty (30) subjects were processed, accompanying their individual. (a) Blood Lead Level, (b) T Language Score, (c) Receptive Language Score, (d) Expressive Language Score, (e) Speech Diadochokinetic Rate Score, (f) Three Blood Lead Level Groups: (I) 1-8 µg/dl, (II) 9-16 µg/dl, µg/dl), (g) Language Age Equivalent (LAE) indicative of developmental delay, (h) Subjects' Cl Age (CA), (i) Sentence Structure (Receptive Language Subtest/RLS), (j) Concepts and Directio (k) Word Classes (RLS), (l) Word Structure (ELS), (m) Formulated Sentences (ELS), (n) Recal Sentences (ELS), and (o) Gender 1 = male, 2 = female.

Table 3

Summary of Statistically Significant Correlations Between the Six Selected Sul of Clinical Evaluation of Language Fundamentals - 3 That Projected Pattern/I of Language Performance Affected in School-Aged Children a With Low-Leve Lead Poisoning

	Receptive Language Subtest			Expressive Language Su		
CELF - 3	**Sentence Structure**	**Concepts & Directions**	**Word Classes**	**Word Structure**	**Formulated Sentences**	**Re Ser**
Blood Lead Levels			r= 3725 P = 043		r=- 3591 P= 051 (with borderline significance)	
Total Language Score	r= 5888 p= 001		r=.5156 p= 004	r=.4719 p= 008		r=.5 p=.(
Receptive Language Score			r=.5566 p=.001			
Expressive Language Score				r=.5861 p=.004		
Language Equivalent Score				r= 5092 p= 004		

Level of significance at $p < 0.05$

r = correlation coefficients

p = level of significance

ECHO

PARENT-BASED TREATMENT OF CHILDHOOD STUTTERING: TWO CASE STUDIES

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ABSTRACT

The purpose of this study was to assess treatment outcomes of two behavioral components of a parent-based intervention for parents of two preschool children who stutter (56 months of age): (1) speech rate control and (2) topic initiation techniques. A single participant design was used to assess: 1) Which treatment is most effective in increasing fluent speech? 2) What sequence of treatments is most effective in increasing fluent speech? Results demonstrated some degree of decrease in stuttering with both treatments, but no sequence of treatment appeared to be more effective than the other. Findings were taken to suggest that changes in parental communicative behaviors may be one beneficial part of a comprehensive therapeutic whole in the treatment of early childhood stuttering.

KEY WORDS: parent-based intervention, stuttering treatment, early childhood stuttering, speech-rate control

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INTRODUCTION

For some time, the discussion of parental involvement in the fluency intervention of children who stutter has been a debate that has left researchers divided as to its necessity when treating developmental stuttering in young children (Meyers and Freeman, 1985a; Langlois, Hanrahan and Inouye, 1986; Weiss and Zebrowski, 1991; Guitar, Kopff Schaefer, Donahue-Kilburg and Bond, 1992). One basic question that has arisen from this debate concerns the most appropriate means for including parents in the intervention process as well as for conducting empirical research to assess the therapeutic effectiveness of parental involvement in the treatment of early childhood stuttering.

Considerable research has been performed to determine which types of conversational behaviors that parents use with children who stutter may negatively impact the children's speech disfluencies (e.g., Meyers and Freeman, 1985b,1985c; Weiss & Zebrowski, 1991; Guitar et al., 1992; Rustin and Cook, 1995; Ryan, 2000; Matthews, Williams and Pring, 1997). Potential fluency-disrupting factors, such as rapid speech rate and frequent questions, have been thought to be among the top influential behaviors that can negatively impact the fluency of a child (Rustin and Cook, 1995).

It is believed that the child's speech disfluencies are increased in frequency when he/she tries to match his/her speech rate to that of his/her parents, but lacks the linguistic skills and coordination to move his or her speech mechanism as quickly. Thus, treatment focusing on altering the parent's rate of speech is thought to be useful as an indirect technique to reduce the child's speech rate. Likewise, frequent questioning of the child by the parent(s) may increase communicative pressure on the child during conversation. Such frequent questions may be perceived by the child as interrogation, and/or may mean that the parent places the primary responsibility for conversational discourse on the child (Weiss & Zebrowski, 1992; Rustin and Cook, 1995). If either one or both of these parental behaviors influences the level of speech fluency in a child, then parental involvement during therapy would appear integral to any therapeutic process directed at changing these

parental behaviors. In specific, the aforementioned possible relation between changes in parental speech rate, questioning and childhood stuttering may be empirically studied by systematically manipulating, in a therapeutic setting, both parental speech rate as well as parental topic initiation.

Thus, it was the purpose of the present study to empirically study treatment outcomes associated with parental (1) speech rate and (2) topic initiation as components of a parent-based intervention for parents of two preschool children who stutter (56 months). It was speculated that changes in these two components by parents of preschool children who stutter would be associated with changes in the children's speech fluency.

METHOD

Participants

Participants involved two preschool children who stutter and their parents. The first participant (1) was an African American male child (56 months of age) whose Stuttering Prediction Instrument (SPI) score was 10 (i.e., very mild rating) and considered to be at risk for continuing to stutter. Speech behaviors of participant 1 consisted of primarily normal disfluencies and few stuttering-like disfluencies (SLD). Parents reportedly noticed their child changing words possibly because of fear of stuttering, in addition to other non-speech behaviors at a moderate to severe level during the disfluencies. The parents, however, had not observed teasing or avoidance behaviors because of disfluent speech.

The second participant (2) was an African American male child (56 months of age) who received an SPI score of 23 (i.e., moderate rating). Prior to the study, participant 2 received expressive language intervention, but no speech-language therapy for his stuttering. At the time of this study, Participant 2 was also enrolled in a pre-kindergarten program and was receiving speech therapy for an articulation disorder. According to the parents, he began to stutter at the age of two and, although inconsistent, his speech disfluencies had not increased in severity since the onset of his problem. Parents report concerns about the child's speech disfluencies, the child's observed frustration when having difficulty being fluent, and the fact that the child had been teased. They reportedly also noticed the child's avoidance of situations and changing words for fear of stuttering.

Research Design

This study involved a single participant ABACA/ACABA design where (A) represents baseline measurements and (B) and (C) correspond to speech rate control and topic initiation techniques, respectively. The initial baseline prior to the initial treatment will be referred to as A1; the baseline following the initial treatment, but prior to the second treatment, will be referred to as A2; and the baseline following the second treatment will be referred to as A3 (see Table 1).

Data Collection and Analysis

The initial baseline (A) was used to determine the percenta of disfluent speech and to classify disfluencies according to Yaruss (1997) as interjections, part-word repetitions, word repetitions, phrase repetitions, revisions, incomplete phrases, broken words, or prolonged sounds. Baselines before and after each of the two treatments (B and C) were used to determine the outcome of the prior treatment and establish a baseline for the upcoming treatment.

Following each baseline, parents received instruction during two consecutive sessions consisting of discussions of treatment components by

using examples, supplemental materials, modeling by the investigator, and the opportunity to the view videotaped samples of themselves.

For the *speech rate control* technique the investigator had two goals: (1) for the parent to distinguish between an average conversational speech rate and a much slower fluency promoting speech rate and (2) for the parent to be able to decrease his/her speech rate to a level of significant recognition by the investigator. For the *topic initiation* technique the investigator's goals of training were for the parent to identify alternative topic initiation strategies instead of habitually using questions to elicit conversation, thus decreasing the use of questions during a parent-child interaction.

RESULTS

Total Disfluencies: Pre-Treatment and Treatment Baseline Comparisons

Changes in parental speech rate. P1 showed no change in the percent of total disfluencies (TD%) from baseline (A1) to speech rate control treatment (B). Similarly, P2 only exhibited a 2% decrease in TD% from baseline (A2) to speech rate control treatment (B), findings indicating that changes in parental speech rate have minimal to no influence on childhood stuttering regardless of stuttering severity (see Figure 1).

Changes in parental topic initiation behavior. From baseline to topic initiation treatment (P1: A2 [baseline] to C [Topic Initiation Treatment]; P2: A1 [baseline] to C [Topic Initiation Treatment]), P1 and P2 increased TD% by 17.61% and 1.4 %, respectively. Therefore, it appears that changes in topic initiation had little positive and possibly a slightly deleterious influence on childhood stuttering (see Figure 2).

Total Disfluencies: Pre- and Post-Treatment Baseline Comparisons

Participant 1 (P1) decreased the TD% from 23.5% during an initial baseline (A1) to 11.8% during the following baseline (A2) after speech rate control treatment (B). P1 demonstrated no change in TD%, that is, 11.8% during a second baseline (A2) to 11.8% during the following baseline (A3) after topic initiation treatment (C). Therefore, results for P1 indicate that speech rate control displayed a greater effect in *decreasing* the TD% than did topic change (C) (see Figure 1).

Participant 2 (P2) slightly increased TD% from 17.3% during the initial baseline (A1) to 19.2% during the following baseline (A2) after topic initiation techniques (C). This increase in TD% was even greater following speech rate control (C) with a measurement of 27.8%. Therefore, neither treatment displayed a positive effect in *decreasing* TD% for P2 (see Figure 2).

Changes in Disfluency Types: Participant 1

Changes in parental speaking rate. Changes from baseline (A1) to the treatment of speech rate control (B) influenced disfluency types in P1 by decreasing part-word repetitions (PWR) by 3.5%, one essential stutter-like disfluency, but increasing whole-word repetitions (WWR) and phrase repetitions (PHR) by 1.8% and 1.5%, respectively (see Figure 3).

Changes in parental topic initiation. Changes from baseline (A2) to the topic initiation treatment (C) influenced disfluency types in P1 by decreasing part-word (PWR) and whole-word repetitions (WWR) by 1% and 11%, respectively, but increasing phrase repetitions (PHR) by 20.8%. Therefore, changes in parental topic initiation, when compared to changes in parental speaking rate, had slightly greater

influence (i.e., decrease) for sound/syllable and whole-word repetitions, for P1 (see Figure 4), but also seemed to appreciably increase phrase repetitions.

Changes in Disfluency Types: Participant 2

Changes in parental speech rate. Changes from baseline (A2) to the treatment of speech rate control (B) influenced disfluency types in P2 by decreasing prolongations (PRO), part-word repetitions (PWR), and revisions (REV) by 15.1%, 1.1%, and 4.1%, respectively. An increase was seen in whole-word repetitions (WWR) and phrase repetitions (PHR) by 1.5 % and 6%, respectively. Therefore for P2, both stuttering-like disfluencies (part-word repetitions and prolongations) were decreased during speech rate control (see Figure 5).

Changes in parental topic initiation. Changes from baseline (A1) to topic initiation treatment (C) influenced disfluency types in P2 by decreasing part-word repetitions (PWR), whole-word repetitions (WWR), and prolongations (PRO) by 9%, 8.7%, and 10.2%, respectively; conversely, as with P1, there was an increase in phrase repetitions (PHR), revisions (REV), and interjections (INJ) by 4.8%, 0.6% and 2.4%, respectively. Similar to P1, some of the essential aspects of P2's stuttering disfluencies - part-word repetitions, whole-word repetitions, and prolongations - were decreased in topic initiation change (see Figure 6).

DISCUSSION

This study resulted in four main findings, with the general implications of each discussed immediately below. The first finding suggested that changes in parental speaking rate had little or no influence on the total disfluencies of the two preschool children who stutter. The second finding was that changes in parental topic initiation behavior minimally decreased total disfluencies in a preschooler with mild stuttering and perhaps even slightly increased total disfluencies in a preschooler with severe stuttering. The third finding was that several types of stuttered disfluencies, (i.e., part-word repetitions and prolongations) decreased with changes in parental speaking rate and/or topic initiation behaviors regardless of severity. The fourth finding suggests that the sequence of these two treatments does not appreciably influence stuttering in preschool children.

The influence of changes in parental speaking rate on total speech disfluencies

The fact that changes in parental speaking rate had little influence on the total speech disfluencies of the two participants seems to call into question the use of this measure in the study of treatment outcome. Some have argued (e.g., Adams, 1990), however, that TD% is one reasonably reliable indicator of the presence of stuttering. Furthermore, others have suggested that parental speech rate has some influence on a child's speech rate and resulting (dis)fluency (Rustin and Cook, 1995). Be that as it may, changes in TD % does not necessarily reflect the degree to which the preschoolers' stutterings are changed. Rather, it mainly provides an overview of the child's (dis)fluency, that is, combines stuttering-like (e.g., whole-word repetitions, prolongations and part-word repetitions) together with other or normal (e.g., phrase repetitions, revisions and interjections) disfluencies. Thus, although clinicians may want to continue measuring, for purposes of assessment and treatment, a client's percent of total disfluencies, they will also want to measure the client's stuttering-like disfluencies when assessing the influence of treatment on a client's speech fluency.

The influence of changes in parental topic initiation on total speech disfluencies

As with speech rate control, parents' topic initiation abilities have been reported as another possible influence of (dis)fluency (Weiss & Zebrowski, 1992; Rustin and Cook, 1995). It is believed that altering how parents initiate topics can have a direct effect on the child's ability to be fluent. However, present findings again indicate that TD% was only minimally influenced by topic initiation. This finding seems to suggest, for any measurement of treatment outcome, the clinician also determine what portion of the total disfluencies are stuttering-like.

The influence of changes in parental speech rate and topic initiation on stuttering-like disfluencies.

Results of this study indicate that changes in both parental speech rate and topic initiation techniques alter (i.e., decrease) stuttering-like disfluencies. This further suggests the importance of analyzing not only total, but also specific disfluency types when determining whether changes in parental behavior influence a child's stuttering. Again, if changes in TD% were the sole means for determining the effectiveness of either treatment, the possibility that changes in parental speech rate and improved topic initiation techniques as an ameliorative influence might be overlooked. Most importantly, although findings are preliminary and based on a small sample size, one might offer the tentative suggestion that inclusion of a parental component to stuttering therapy with preschoolers is of benefit to changing children's stuttering.

The influence of sequence of therapy approaches on stuttering-like disfluencies

Although speech rate control preceded by topic initiation parental treatment appeared to decrease the percent of total speech disfluencies when compared to its inverse sequence (i.e., topic initiation prior to speech rate), it was found that both sequences decreased stuttering-like disfluencies. Therefore, it may be cautiously suggested that changes in parental speech rate and topic initiation be considered as one beneficial component of the treatment regimen for preschoolers who stutter. However, results do not suggest whether a specific sequence or combination of treatments is most effective when treating childhood stuttering, but do suggest that this is a topic for further empirical study perhaps involving a longer period of treatment as well as a more powerful research design.

CONCLUSION

Overall, it appears that altering a parent's topic initiation techniques and speech rate control has some influence on a child's stuttering-like disfluencies, for example, part-word disfluencies, regardless of a child's stuttering severity. However, findings also indicate that such alterations seem to increase other or non-stuttered speech disfluencies. During therapeutic intervention with young children who stutter, whether decreases in stutterings occur simultaneously with increases in other, non-stuttered disfluencies remains an open, empirical question that goes beyond the purpose and scope of the present investigation. However, it does seem reasonable to say that this possibility remains an intriguing issue that seemingly invites continued empirical exploration.

Findings appear to support the general notion that parent-child conversations impact the child's speech (dis)fluency (e.g., Meyers and Freeman, 1985b, 1985c). More specifically, involving parents in the therapeutic process of preschool age children who stutter appears to have a direct, seemingly positive, effect on the child's stuttering (Rustin and Cook, 1995).

One ancillary finding of the present study is that clinicians should be encouraged to obtain an extensive conversational speech sample of both the parent and child to determine the child's percent of total disfluencies in addition to the frequency of stuttering-like disfluencies. In this way, the clinician can closely observe any possible links between the conversational style of the parent and the child's speech disfluencies. The present authors hasten to add, however, that such parental behaviors are not viewed as a cause, but as potentially exacerbating and/or maintaining contributors to the frequency and type of the child's stuttering, and as such warrant further basic and applied investigations.

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Table 1

Single participant ABACA/ACABA design

Participant 1				
A1	**B**	**A2**	**C**	**A3**
Baseline	**Speech Rate Control**	**Baseline**	**Topic Initiation**	**Baseline**

Participant 2				
A1	**C**	**A2**	**B**	**A3**
Baseline	**Topic Initiation**	**Baseline**	**Speech Rate Control**	**Baseline**

Note: (A) = Baseline measurements; (B) = Speech rate control techniques; (C) = topic initiation techniques

Figure Caption

Figure 1. Participant 1- Percent of change in total disfluencies from baseline measurements before and after each treatment.

Figure 2. Participant 2- Percent of change in total disfluencies from baseline measurements before and after each treatment.

Figure 3. Participant 1- Percent disfluencies for Speech Rate change by Type of Disfluencies.

Figure 4. Participant 1- Percent disfluencies for Topic Initiation change by Type of Disfluencies.

Figure 5. Participant 2- Percent disfluencies for Speech Rate change by Type of Disfluencies.

Figure 6. Participant 2- Percent disfluencies for Topic Initiation change by Type of Disfluencies.

Figure 1

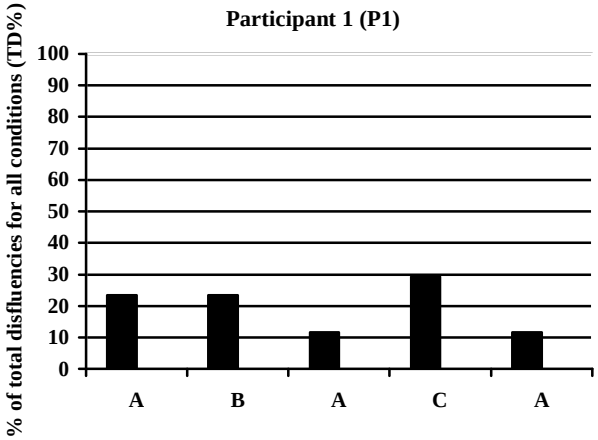
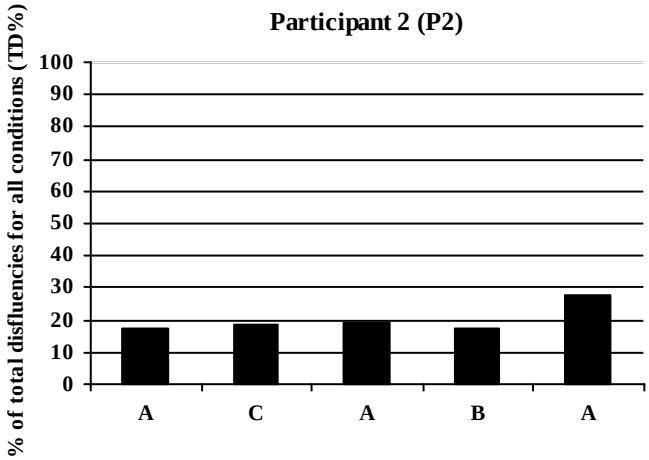


Figure 2



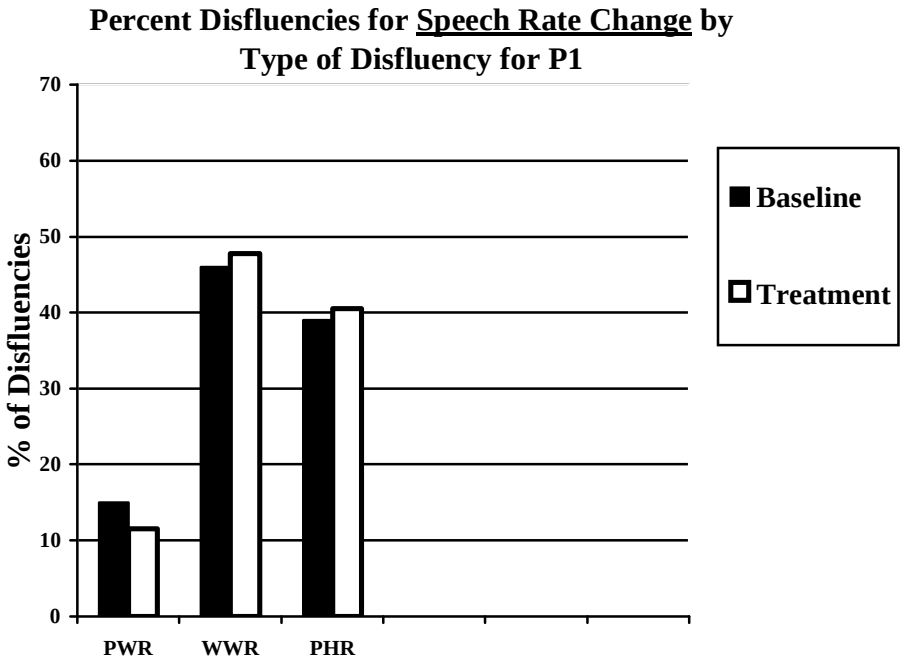
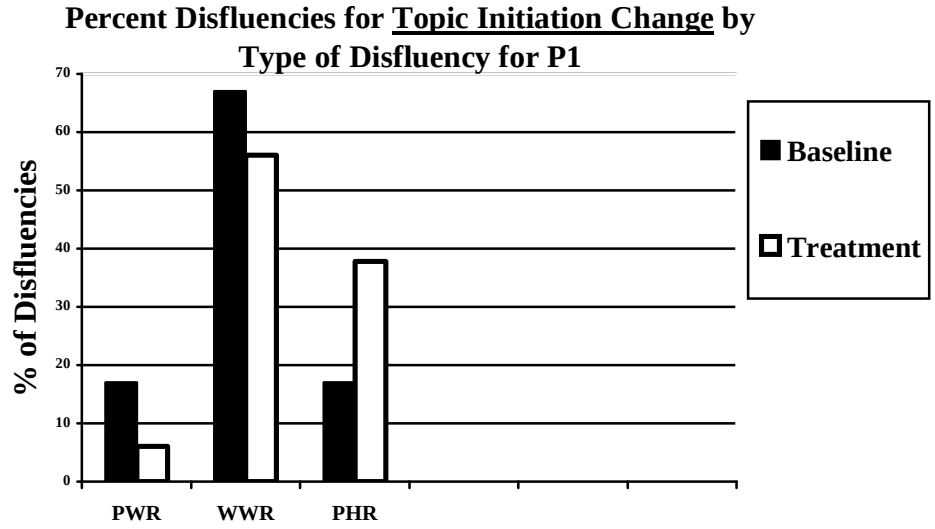


Figure 3

Figure 4



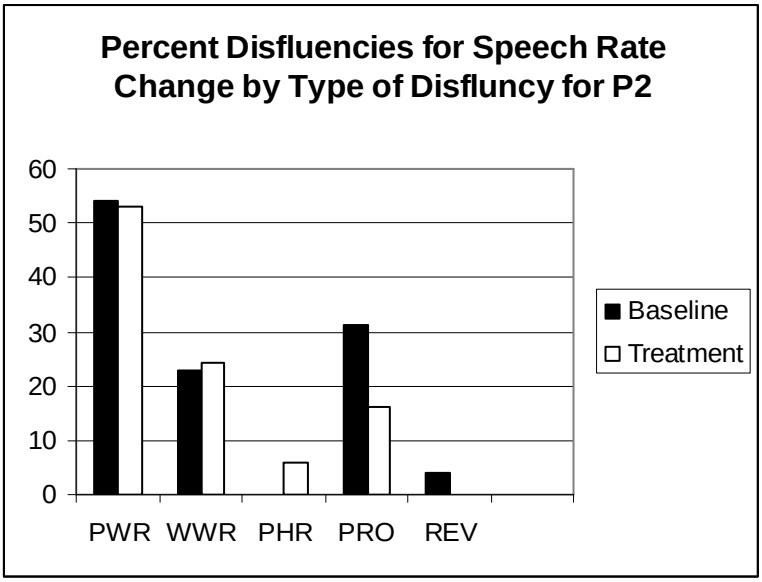
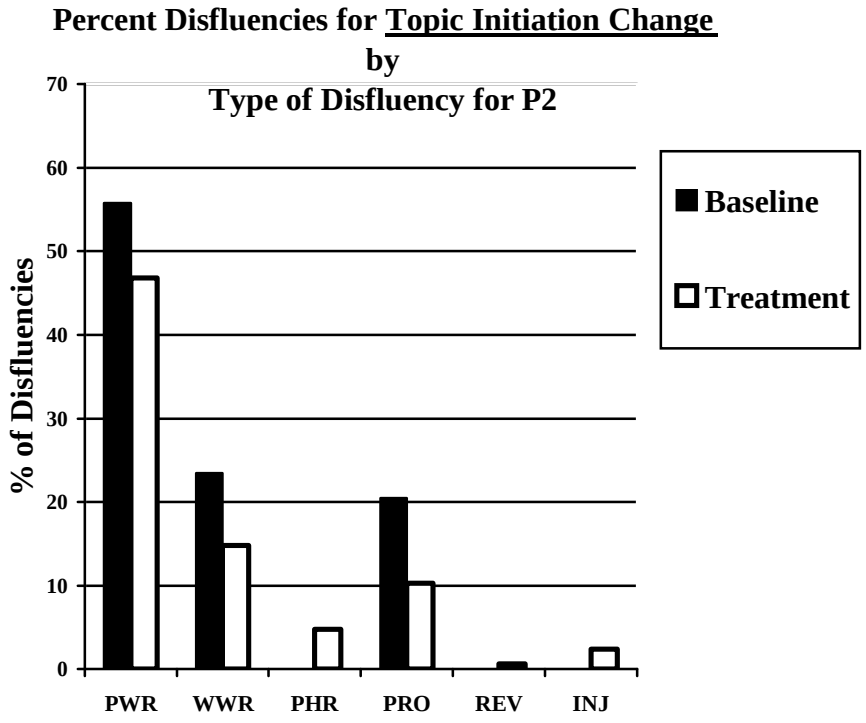


Figure 5

Figure 6



ECHO

MODIFICATION OF THE SPANISH ARTICULATION MEASURES (SAM) FOR SALVADORAN SPANISH

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ABSTRACT

This paper presents an adaptation of the Spanish Articulation Measures (SAM) Student Performance Record Form (Mattes, 1995) for use with the Salvadoran population. SAM is not a standardized instrument, and thus it can be adapted, as necessary, to meet the requirements of the population for which it is used (Mattes, 1995.) A review of the literature provides an overview of the Central American Spanish and Salvadoran Spanish phonology, which services as the foundation for analysis of the SAM. This analysis reveals particular phonological features of Salvadoran Spanish to be considered when assessing a Salvadoran Spanish speaker. The paper presents modifications to the test items to allow for possible changes in phonology and modification of picture items to enable elicitation of relevant phonological features. These modifications, when applied to the SAM Student Performance Record Form, will enable clinicians to distinguish a communication difference from a disorder, and to provide an accurate assessment of articulation disorders in the Salvadoran population.

KEY WORDS: Spanish Articulation Measures, Spanish phonology, Salvadoran language

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ECHO

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INTRODUCTION

More than one in eight people in the United States are of Hispanic origin. In 2002, there were 37.4 million Latinos in the civilian noninstitutional population, representing 13.3 percent of the total. Among the Hispanic population, two-thirds (66.9 percent) are of Mexican origin, 14.3 percent are Central and South American, 8.6 percent are Puerto Rican, 3.7 percent are Cuban, and the remaining 6.5 percent are classified as other. Most Central and South Americans are found in three of the four geographic regions: Northeast (31.5 percent), South (34.0 percent), and West (29.9 percent) (US Census Bureau, 2002). For this reason it is important that speech-language pathologists increase their knowledge and awareness of the differences between Spanish speakers from different countries and origins.

There has been limited research on the Salvadoran population. This population is classified as Central American. However, because Central America is composed of different countries, Spanish dialects vary among these countries. Consequently, the Salvadoran phonological features are important for speech-language pathologists to consider in providing appropriate assessment to this population.

Historically, El Salvador has suffered social and political upheaval that has had marked changes in the society as well as on the language. One of the most important historical issues for El Salvador is its civil war, which lasted for 12 years ending in 1992 (Foster, 2000). During that time, many people fled the country to the United States, settling mainly in Los Angeles, San Francisco and Washington, DC (Jennings, 1994). As a result, Salvadorans comprise the greatest portion of Latinos in Washington, DC (Jennings, 1994). In Los Angeles, the Salvadoran community grew by 80 % between 1980 and 1990 to become the world's second largest Salvadoran population. According to the U.S. Census Bureau (2000) 26.1% of the population on the District of Columbia, and 2.5% of the population in the state of California were Salvadoran.

Salvadoran and Central American Phonetics and Phonology

Because these countries shared a colonial history, the Central American Republics of Costa Rica, Nicaragua, Honduras, and Guatemala have influenced the Spanish language from El Salvador. Mackenzie (2001) stated that this colonial period and its aftermath have resulted in a broad linguistic unity throughout the area. Essentially, Central American Spanish is

characterized by a combination of archaism and nonstandard divergence away from standard Spanish (Mackenzie, 2001).

With the exception of Central Guatemala and Central Costa Rica, Central American Spanish is marked by the characteristic of weak consonantism. For example, the syllable-final /s/ is usually produced as [h]. In other words, it is omitted. (Mackenzie, 2001). This aspiration has its roots in Andaluz, where it began approximately at the end of the sixteenth century (Lipski, 2000). The reduction of /s/ in El Salvador is also noted in the initial position, particularly after a vowel (e.g. la emana /semana (*the week*) (Lipski, 2000). In the syllable-initial position, [s] → [h] variation (as in [Ehanta] santa '*saint*' and [ÂÈtáhe] entonces '*then*') is also common (Mackenzie, 2001).

Additionally, Mackenzie (2001) noted that all syllable-final voiceless stops are at risk for omission. In addition, the characteristic that relates to sonorants is realized as the velarization of nasals in word-final position, usually with the nasalization of the preceding vowel: *[basÈtõN] bastón* 'stick' and*[paN] pan* 'bread' *(Mackenzie, 2001*. Nasals are also velarized before *[n]*, for example *[koÈluNna]* 'column' *and [ÈiNno] himno* 'hymn'. The phoneme */x/* (equivalent to the Spanish */j/*), is either aspirated *(i.e. [x] → [h]* or elided in rapid speech, as in *[tRaÈBao] trabajo* 'work' (Mackenzie, 2001).

Another prominent characteristic is the production of /f/ as /x/ before vowels /u/ and /o/. In some varieties of Spanish the /f/ will become /xu/, even before non rounded vowels (e.g., /e/, /a/ as in): café →→cajue '*coffee*', familia→→ juamilia '*family*' (Lipski, 1995b). In the Salvadoran city of Pachimalco, and maybe among other Indian populations, such pronunciations as ajuan → afan '*in a hurry*' have been heard (Dedonanes 1972).

Spanish Articulation Measures (SAM)

The Spanish Articulation Measures (SAM) (Mattes, 1995) is an articulation test designed to assess production of the 18 Spanish consonants commonly used by Spanish speakers in the United States. SAM is not a standardized instrument, thus it can be adapted, as necessary, to meet the requirements of the population for which it is used (Mattes, 1995.) The tasks in the SAM were field-tested primarily in public school settings with bilingual children in California. Although one of the largest populations of Salvadorans is located in California, some test items are, nonetheless, not relevant to Salvadoran Spanish, and some elicitation stimuli are not appropriate for the language.

The SAM is composed of four sections. Section 1 consists of four general measures designed to provide information about a child's production of consonants and phonological processes. These measures include (a) a Spontaneous Word Production Task which assesses production of consonants, clusters, and the use of phonological processes; (b) a Word Repetition Articulation Screening, which assesses consonant production from repeated words read by the examiner; (c) a Sound Stimulability in Syllables task which assesses the imitative production of consonants in syllables when a model is presented by the examiner; and (d) Articulation in Conversational Speech which measures articulation during conversation with an adult or peer.

Section 2 includes seven criterion-referenced probes designed for use in assessing specific aspects of the student's spontaneous speech production by labeling pictures or creating sentences. Section 3 includes 21 word repetition tasks to assess

consonants or clusters. It is important to note that items purport to probe clusters with /s/ (e.g. esto (*this*), escuela (*school*), especial (*special*). However, the Spanish language does not contain clusters with /s/. The inventory of Spanish consonant clusters includes /pl/, /bl/, /kl/, /gl/, /fl/, /pr/, /br/, /tr/, /gr/, /kr/, /dr/ and /fr/. Thus, for this task it is important to make a distinction between consonant clusters and consonant sequences.

Consonants that occur contiguously are consonant sequences. In Spanish, they typically occur at intersyllabic boundaries (Stockwell and Bowen, 1965). Therefore, for the item esto '*this*' the stimulus "st" is not a consonant cluster, but a consonant sequence, which can be divided in syllables (es-to). An omission of the /s/, therefore, would be a postvocalic omission rather than a consonant cluster reduction. The absence of /s/ clusters is typically the reason why many Spanish speakers attach /ɛ/ to English clusters involving /s/ (e.g., *special* → especial).

Further, the test manual recommends usage of the *Spanish Articulation Observation Record* by the classroom teacher and/or others who interact frequently with the student to identify areas for further testing. This form contains an item to examine cluster deletion, which asks, "Does the child delete sounds from clusters?" As an example, a child might omit one or more sounds from the "str" combination in estrella '*star*'. Following the Spanish rule for consonant sequences, the "str" combination is a consonant sequence, not a consonant cluster.

To guide clinicians in scoring, the test manual also reports research on the developmental norms of Spanish speakers. This information provides expectations for Spanish speakers in terms of phonological development. Several seminal studies relating to the phonological development of Spanish speaking children are reported (Jimenez, 1987; Melgar de Gonzalez, 1976; Merino, 1983). In a review of these studies, Merino (1992) reports the ages at which 90 percent of Spanish speakers should be able to produce Spanish consonants as presented in Figure 1. Although /d/ should be developed by seven years of age, it should be noted that the /d/ sound in word-final position is often omitted by normal adult speakers (Mattes, 1995).

It is recommended that the results of the SAM always be used in conjunction with data obtained from other assessment instruments, as well as with information obtained from samples of conversational speech (Mattes, 1995). The SAM itself specifies that it is important to distinguish dialectal differences from problems that are indicative of a disorder (Mattes, 1995). However, the SAM does not offer a detailed description of the differences that can be accepted for Salvadoran Spanish speakers. For this reason, the following is a description of an adaptation of the SAM based on Salvadoran phonological features.

Modifications to the SAM

Payne and Taylor (2002) suggest that the most reasonable alternative to test bias is modification of existing tests. However, clinicians must be careful that their modifications are valid procedures that are both culturally and age-appropriate. When modification of a test is a viable option, the following preassessment procedures are necessary: 1) review the test to identify potentially biased items, including linguistic features, stimulus items, wording of directions, and value conflicts; 2) review the norming statistics to determine if members of the child's cultural group were included in the subject sample; 3) list all predictable responses for each potential item; 4) review the items to be modified and the predictable responses with a professional member of the client's cultural group or family member; 5)

assess the effect on scoring for the items (i.e., total number of items, weight of each item, effect on basal or ceiling); and 6) administer the test with modifications and score accordingly (Payne and Taylor, 2002).

For this paper the SAM Student Performance Record Form was modified based on the Salvadoran Spanish phonological system. It was observed that 21 items may potentially elicit dialectal features of Salvadoran Spanish as presented in Figure 2. Items 3, 7, 9, 14, 29, and 37 will potentially be produced omitting the final /s/. Also, the final voiceless stops may be omitted for items 7, 16, 20, 22, 25, 34, 36, 38, and 40. Items 4 and 21 will possibly show changes such as substitution of /xu/ for /f/ before vowel /a/. In addition, items 11, 15, and 28 might be elided or aspirated, or produced as /x/ in rapid speech. Finally, item 12 might be produced omitting the initial /s/; and item 13 may be characterized by a substitution of /x/ for /f/ before the vowel /o/.

When using an articulation measure such as SAM, it is also important to be aware of the potential vocabulary differences that may arise from the stimulus pictures. Lexical differences among varieties of Spanish are common. For example, the word *earrings* is “pantallas” in Puerto Rico and “aretes” in El Salvador. A list of the possible lexical differences in Salvadoran Spanish that differ from the items in the SAM is provided on Figure 3. Figure 4 shows a modified record form with all items, including possible changes.

The Student Performance Record Form contains 40 stimulus words to be used for spontaneous word production. The modified Student Performance Record presents the stimulus items, list of phonemes tested, and possible changes in articulation with a pronunciation guide for English speakers.

CONCLUSION

Children should not be considered to have language learning disabilities if problems are observed only in the English language. If the child is truly language disordered, problems will be evident in both English and the primary language (Roseberry-McKibbin, 2002). Therefore, it is important that clinicians understand the subtle differences in individuals who speak various dialects of Spanish. If these differences are not taken into consideration, misdiagnosis can occur.

Informal measures such as the SAM are critical because they provide alternatives to standardized tests. The advantage of instruments such as the SAM is that they can be modified to be sensitive to dialectal differences. This research serves as a model for modification of other non-standardized measures that can be used for children who speak dialects of the various languages of the world.

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Figure 1
Spanish Phonemes Development (Merino, 1992)

Age	Phonemes
3	**/ch, f, k, m, n, ñ, p, t, y/**
4	**/b, g,l, r/**
6	**/s/**
7	**/x, d, rr/**

Figure 2
Stimulus Items of the SAM and Potential Changes for Salvadoran Phonology

STIMULUS ITEMS	PHONEME	POSSIBLE CHANGE
3- Dedos (fingers)	/d/, /d/, /s/	No final /s/, dedo
4- Falda (skirt)	/f/, /l/, /d/	/xualda/ /f/ before /a/ = /xu/ + /a/*
7- Lápiz (pencil)	/l/, /p/, /s/	No final /s/; syllable final voiceless stops at risk in CAS /lai/
9- Nariz (nose)	/n/, /r/, /s/	No final /s/ /nari/
11- Reloj (watch)	/rr, /l/	Aspirated. Elide sound /x/ (rapid speech) /relo/
12- Zapato (shoe)	/s/, /p/, /t/	/s/ to /h/ in syllable initial position /hapato/
13- Teléfono (telephone)	/t/, /l/, /f/, /n/	/telexono/ /f/ in front of /o/= /x/*
14- Huevos (eggs)	/w/, /b/, /s/	No final /s/, /uebo/
15- Jaula (cage)	/x/, /l/	Aspirated. Elide sound /x/ (rapid speech) /aula/
16- Llanta (tire)	/y/, /n/, /t/	Syllable final voiceless stops at risk in CAS, /dʒa ña/
20- Pastel (cake)	/p/, /s/, /t/, /l/	Syllable final voiceless stops at risk in CAS, /pasel/
21- Estufa (stove)	/s/, /t/, /f/	/estuxua/ /f/ before /a/ = /xu/ + /a/*
22- Pasta (toothpaste)	/p/, /s/, /t/	Syllable final voiceless stops at risk in CAS, /pasa/
25- Plato (plate)	/p/, /l/, /t/	Syllable final voiceless stops at risk in CAS, /plao/
28- Bruja (witch)	/b/, /r/, /x/	Aspirated. Elide sound /x/ (rapid speech) /brua/
29- Tres (three)	/t/, /r/, /s/	No final /s/, /tre/
34- Guante (glove)	/g/, /w/, /n/, /t/	Syllable final voiceless stops at risk in CAS, /guane/
36- Carta (letter)	/k/, /r/, /t/	Syllable final voiceless stops at risk in CAS, /kara/
37- Estrellas (stars)	/s/, /t/, /r/, /y/, /s/	No final /s/, /estre dʒa/
38- Bicicleta (bicycle)	/b/, /s/, /k/, /l/, /t/	Syllable final voiceless stops at risk in CAS, /bisiklea/
40- Barco (boat)	/b/, /r/, /k/	Syllable final voiceless stops at risk in CAS, /baro/

Figure 3
Stimulus Items of the SAM and Semantic Differences for Salvadoran Spanish

STIMULUS ITEMS	***POSSIBLE WORD DIFFERENCE***
8- Máscara (mask)	Anteojo
15- Jaula (cage)	Cárcel
16- Llanta (tire)	Rueda
18- Televisión (television)	Televisor
19- Dólar (dollar)	Dinero/Billete
20- Pastel (cake)	Cake
21- Estufa (stove)	Cocina
24- Clavo (nail)	Piocha
27- Plátano (plaintain/banana)	Guineo/Banana
31- Abrigo (jacket)	Chamarra
39- Árbol (tree)	Árbol/Palo
40- Barco (boat)	Lancha

Figure 4
Modified Record Form with all items, including possible changes

STIMULUS ITEM	PHONEME	POSSIBLE CHANGE
1- Vestido (dress)	/b/. /s/. /t/.	/bestido/
2- Chimenea (chimney)	/ch/. /m/. /n/	/ʃimenea/
3- Dedos (fingers)	/d/. /d/. /s/	No final /s/. /dedo/
4- Falda (skirt)	/f/, /l/, /d/	/xualda/ /f/ before /a/ = /xu/ + /a/
5- Guitarra (guitar)	/g/. /t/. /rr/	/gitarra/
6- Cuchillo (knife)	/k/. /ch/. /v/	/kuʃiʤo/
7- Lápiz (pencil)	/l/, /p/, /s/	No final /s/; syllable final voiceless stops at risk in CAS **/lai/**
8- Máscara (mask)	/m/. /s/. /k/.	/maskara/
9- Nariz (nose)	/n/, /r/, /s/	No final /s/ **/nari/**
10- Pared (wall)	/p/. /r/. /d/	/pared/
11- Reloj (watch)	/rr/, /l/	Aspirated. Elide sound /x/ (rapid speech) **/rolo/**
12- Zapato (shoe)	/s/, /p/,/t/	/s/ to /h/ in syllable initial position **/hapato/**

Figure 4
Modified Record Form with all items, including possible changes (cont'd)

STIMULUS	PHONEME	POSSIBLE CHANGE
13- Teléfono	/t/, /l/, /f/,	/telexono/ /f/ in front of /o/= /x/
14- Huevos (eggs)	/w/, /b/, /s/	No final /s/, /uebo/
15- Jaula (cage)	/x/, /l/	Aspirated. Elide sound /x/ (rapid speech) **/aula/**
16- Llanta (tire)	/y/, /n/, /t/	Syllable final voiceless stops at risk in CAS, **/ dʒana/**
17- Araña (spider)	/r/, /ñ/	/araña/
18- Televisión	/t/, /l/, /b/,	/telebision/
19- Dólar (dollar)	/d/, /l/, /r/	/dolar/
20- Pastel (cake)	/p/, /s/, /t/, /l/	Syllable final voiceless stops at risk in CAS, **/pasel/**
21- Estufa (stove)	/s/, /t/, /f/	/estuxua/ /f/ before /a/ = /xu/ +
22- Pasta (toothpaste)	/p/, /s/, /t/	Syllable final voiceless stops at risk in CAS, **/pasa/**
23- Escalera (stairs)	/s/, /k/, /l/,	/eskalera/
24- Clavo (nail)	/k/, /l/, /b/	/klabo/
25- Plato (plate)	/p/, /l/, /t/	Syllable final voiceless stops at risk in CAS, **/plao/**
26- Flor (flower)	/f/, /l/, /r/	/flor/
27- Plátano	/p/, /l/, /t/,	/platano/
28- Bruja (witch)	/b/, /r/, /x/	Aspirated. Elide sound /x/ (rapid speech) **/brua/**

Figure 4
Modified Record Form with all items, including possible changes (cont'd)

STIMULUS	PHONEME	POSSIBLE CHANGE
29- Tres (three)	/t/, /r/, /s/	No final /s/, /tre/
30- Dragón (dragon)	/d/, /r/, /g/, /n/	/dragon/
31- Abrigo (jacket)	/b/, /r/, /g/	/abrigo/
32- Libro (book)	/l/, /b/, /r/	/libro/
33- Candado (lock)	/k/, /n/, /d/, /d/	/kandado/
34- Guante (glove)	/g/, /w/, /n/, /t/	Syllable final voiceless stops at risk in CAS **/guane/**
35- Campana (bell)	/k/, /m/, /p/, /n/	/kampana/
36- Carta (letter)	/k/, /r/, /t/	Syllable final voiceless stops at risk in CAS **/kara/**
37- Estrellas (stars)	/s/, /t/, /r/, /y/,	No final /s/, /estredʒa/
38- Bicicleta (bicycle)	/b/, /s/, /k/, /l/, /t/	Syllable final voiceless stops at risk in CAS **/bisiklea/**
39- Árbol (tree)	/r/, /b/, /l/	/arbol/
40- Barco (boat)	/b/, /r/, /k/	Syllable final voiceless stops at risk in CAS **/baro/**

ECHO

PREDICTED INFLUENCES OF AMHARIC ON SPOKEN ENGLISH: CLINICAL IMPLICATIONS

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ABSTRACT

Speech-language pathologists must be able to treat any population and be prepared to advocate for all clients. To do this, they need to have knowledge of the cultural and linguistic characteristics of their clients, particularly, those with diverse social and linguistic backgrounds. Research on the appropriate methods of assessment and treatment of certain language groups is growing steadily, but many populations, particularly those in Africa, are conspicuously absent from the literature. As an example, the introduction of Ethiopian immigrants into American society is increasing. This means that speech-language pathologists are encountering a new language population. The official language of Ethiopia, Amharic, is spoken throughout the country and is widely regarded as the language most associated with the wealthier, educated, powerful ethnic group, the Amhara. The purpose of this discussion is to present an overview of the linguistic features of Amharic, their impact on spoken English, and recommended clinical practices for speech-language pathologists to consider when working with Ethiopian immigrants who speak Amharic.

KEY WORDS: Amharic, foreign languages, Ethiopian immigrants, linguistic diversity

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ECHO

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INTRODUCTION

As the number of bilingual citizens steadily increasing, the field of speech-language pathology is charged with providing a multitude of culturally diverse groups. One of the recent objectives of the American Speech-Language-Hearing Association is to "increase clinicians' sensitivity to, and knowledge of the cultural and linguistic characteristics of diverse clients" (Fung, 1999). Speech-language pathologists must be able to treat any population and be prepared to advocate for all clients. The ability of speech-language pathologists to perform these functions is largely dependent on their awareness of the needs and concerns of culturally and linguistically diverse populations, including persons who are bilingual. Research on the appropriate methods of assessment and treatment of certain language groups is growing steadily, but many populations, particularly in those Africa, are conspicuously absent from the research.

Ethiopian Immigrants to America

Issues of political and civil unrest, which plague countries across the globe, have long afflicted the African nation of Ethiopia. Events such as droughts and ethnic conflicts have compelled many Ethiopian citizens to immigrate to America. The introduction of Ethiopian immigrants into American society means that speech-language pathologists are encountering a new language population. The official language of Ethiopia, Amharic, is spoken throughout the country and is widely regarded as the language most associated with the wealthier, educated, powerful ethnic group, the Amhara. Speech-language pathologists must be versed in the characteristics of Amharic in preparation for assessing and treating Ethiopian clients who have immigrated to the United States. Thus, the purpose of this discussion is to present an overview of the linguistic features of Amharic, their impact on spoken English, and recommended clinical practices for speech-language pathologists.

Phonetic Inventory of Amharic

The phonetic inventory, or sound system, of Amharic consists of the consonant sounds: /p/, /b/, /m/, /t/, /d/, /k/, /q/, /n/, /f/, /s/, /z/, /ʃ/, /j/, /h/, /p'/, /tʃ/, /dʒ/, /tʃ'/, /ʒ/, and /ɸ/.

The ten vowel sounds are /ɛ/, /a/, /u/, /o/, /i/, /ɔ/, /ɨ/, /ʌ/, /e/, and /ə/.

Several sounds in the Amharic and English phonetic inventories overlap, however, it is important to note the instances in which the inventories differ. Figure 1 displays a comparison of the phonetic inventories of both languages.

The differences in phonetic inventory, such as the absence of /ɹ/ in Amharic and of the /ɸ/ in English lend themselves to predictable changes when a speaker of Amharic attempts to produce the sounds of English. Additionally, the absence of combinations such as s- clusters

in Amharic will impact the production of English by speakers of Amharic.

Further distinguishing Amharic from English is the presence of ejectives in the Amharic language. Ejectives are productions of phonemes that involve compression of the air stream above the glottis before the air is released through the mouth as the glottis rises. Voiceless stops, affricates, or sibilant fricatives can become ejectives. In Amharic, the consonant sounds /p/, /t/, /k/, and /s/ can be produced as ejectives. The ejective is transcribed phonetically by placing the symbol ['] after the consonant sound (Ladefoged, 1975). The difference between the production of [p] and [p'], for example, can be virtually imperceptible to the untrained ear, but is an important distinction for speakers of Amharic as the use of the regular or ejective form of a single phoneme can change the meaning of a word.

Morphological Features

The regular form of Amharic verbs consists of three consonants that constitute a root or base. These consonants are repeated or combined with various prefixes, suffixes and vowel combinations to represent tense, subject, and object agreement, or other features (Hudson, 1985; Rose, 2003).

Another notable morphological feature of Amharic is the use of consonant lengthening to change the meaning of a word. Since this lengthening is not allophonic, words that differ only in the length of one consonant constitute minimal pairs.

Written Language: The Amharic Alphabet

As a Semitic language the written form of Amharic is closely related to Hebrew and Arabic. The Amharic alphabet uses characters to represent consonant sounds only. The accompanying vowel sounds are indicated by subtle changes in the consonantal character, such as an additional straight or curved line, though the change is different for each consonant (Alemayehu and Willett, 2002). Figure 2 illustrates the Amharic alphabet with phonetic transcription.

Predicted Influences of Amharic on Spoken English

Because of the numerous differences between spoken Amharic and spoken English, significant changes will occur when a speaker of Amharic is learning English. Several changes can be expected to occur. Consonant sounds that do not occur in Amharic will be deleted or replaced (Roseberry-McKibbin, 2002). For example, in the word *bother*, the voiced interdental fricative /ð/ is likely to be replaced by a similar sound that does occur in Amharic, such as the voiced alveolar fricative /z̪/or the voiced alveolar stop /d/. Thus, /bɑðər̪/may be produced as /bɑzər̪/or /bɑdər̪/. Similarly, the voiceless interdental fricative /θ/ will become /t/;/v/ will be replaced with /f/, and /r/ can become /l/, /ɾ/, or /ʀ/.Thus, the word *caḅ*will likely become [kæβ̪]since /b/ does not follow short vowels in Amharic. Many Amharic speakers will demonstrate epenthesis of the vowel sound /ɛ/ before an s- cluster or /ə/ in the middle of pl- or kl- cluster because such clusters do not exist in Amharic. For example, the word scoop [skup] will become [ɛskup'] and play [ple] will become [pəle].

In addition, final consonants are often devoiced or deleted, fricatives may become stops, stops may become fricatives, and vowels are often shortened, lowered, or raised. The production of a consonant or vowel will differ according to its environment, the speaker's familiarity with English, and the presence or absence of that phoneme in the Amharic inventory.

Clinical Implications

In order to demonstrate the changes that may occur in an Amharic speaker's production of English, passages read by speakers of Amharic were translated as presented in Figure 3. The vowel and consonant changes are highlighted and color-coded according to the type of phonological process. Thus, Figure 3 illustrates the quantity of changes, as well as and the types of changes that are typical Amharic influences on spoken English.

For a given speaker, such a high number of phonological changes might be cause for concern. However, because the changes in Figure 3 are to be expected, and are the result of the influence of Amharic on English, they represent the typical influences of the first language (L1) on the second language (L2).

While changes occur normally due to L1 influences, they may pose a significant concern since the number of articulatory changes greatly impacts speech intelligibility. Though consonant changes can affect the listener's comprehension, changes in vowel sounds greatly impact speech intelligibility. For example, vowel changes, such as /e/ → /æ/ in the word *snake* (snake → snack), are especially significant because they change the meanings of the word. Listeners who are unfamiliar with the expected changes who do not have sufficient context are likely to misunderstand the message (Bleile, 1996).

The determination of speech intelligibility is accomplished through several methods, most of which use the total number of consonants distorted, substituted, or replaced. Each measure is used to assess severity of an articulatory or phonological disorder and to establish targets to address in therapy (Bleile, 1996). One method by which intelligibility is determined is to compare the consonant changes in a speech sample to a list of the relative frequency of occurrence of those consonants in the English language. The consonants that are replaced or deleted in Figure 3 rank among the 21 most frequently used English consonants. The number and frequency of consonant changes in Figure 3 may easily result in decreased scores on tests of articulation.

Figure 4 lists the productions that are expected to occur when the Goldman-Fristoe Test of Articulation – 2nd Edition (GFTA-2) (Goldman and Fristoe, 1986) is administered to a native speaker of Amharic. The predictions are based on the phonetic inventory of Amharic presented in Figure 1 and the linguistic features of the sounds represented in the sample items.

As demonstrated in Figure 4, 27 items on the GFTA-2 would be scored as errors to yield a diagnosis of mild articulation disorder for a five-year-old, and a diagnosis of severe articulation disorder for a 20-year-old client. A clinician who adheres to a normal scoring protocol would list normal articulatory changes as errors and possibly place clients in unwarranted, timely, and possibly costly speech therapy. In order to avoid misidentification of a difference as a disorder, the speech-language pathologist should give credit for changes that are expected to occur (Taylor and Payne, 1983). If the speech-language pathologist makes these adjustments, the number of errors would decrease from 27 to 1 (item 32, *knife).* A raw score of 1 would give a 5-year-old child a standard score of 109, which is within normal limits. For a 20-year-old client, a raw score of 1 would equal a standard score of 96, which is also within normal limits.

Conclusion

The method and strategies described in this paper can be utilized not only with speakers of Amharic, but with all linguistically diverse populations. In order to provide fair and thorough service, it is

crucial for speech-language pathologists to become aware of the salient features of their clients' languages. More efficient and effective service delivery can be achieved through the use of contrastive analysis of linguistic features and consideration of first language influences. Several resources compiled by linguists and speech-language pathologists, including works by Roseberry-McKibbin (2002) and Ladefoged (1975) which detail common features of diverse languages that can provide clinicians with the information needed to perform such the procedures described herein. Compiling information on the phonemic inventories and effects of first language features on second language speech intelligibility can assist clinicians in becoming excellent diagnosticians and advocates for linguistically diverse populations.

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Figure 1 - Comparison of Amharic and English Phonetic Inventories

Adapted from Indiana University (2004)
(http://www.indiana.edu/~hlw/Appendices/languages.html)

	Amharic	English
/ɲ/	+	-
/β/	+	-
/ɾ/	-	+
/ʋ/	-	+
/θ/	-	+
/ð/	-	+
/æ/	-	+
/ʊ/	-	+
/ɪ/	-	+

Figure 2 – Written Language of Amharic
www.omniglot.com Omniglot.com (2004)

ሀ	ለ	ሐ	መ	ሠ	ረ	ሰ	ሸ	ቀ	ቈ	በ	ተ	ቸ	ኀ	ኈ	ነ	ኘ	አ
h	l	ḥ	m	ś	r	s	š	q	qu	b	t	č	ḫ	ḫu	n	ñ	ʾ
[h]	[l]	[ħ]	[m]	[s]	[r]	[s]	[ʃ]	[k']	[kʷ]	[b]	[t]	[ʧ]	[h]	[hʷ]	[n]	[ɲ]	[ʔ]

ከ	ኸ	ወ	ዐ	ዘ	ዠ	የ	ደ	ጀ	ገ	ጐ	ጠ	ጨ	ጰ	ጸ	ፀ	ፈ	ፐ
k	h	w	ʿ	z	ž	y	d	ǧ	g	gu	ṭ	č̣	p̣	ṣ	ẓ	f	p
[k]	[h]	[w]	[ʔ]	[z]	[ʒ]	[j]	[d]	[ʤ]	[g]	[gʷ]	[tʼ]	[ʧʼ]	[pʼ]	[ts]	[ts]	[f]	[p]

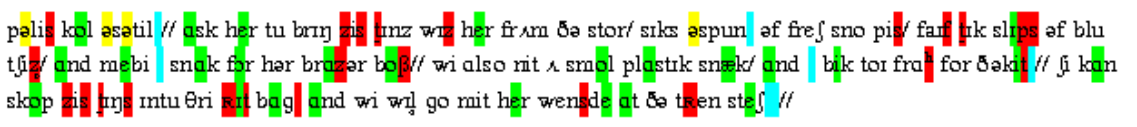
Figure 3. Transcribed English speech sample from Amharic speakers

Adapted from the George Mason University Speech Accent Archive (2004)
(http://classweb.gmu.edu)
Associate Professor Steven H. Weinberger, Author

Sample Passage

Please call Stella. Ask her to bring these things with her from the store: Six spoons of fresh snow peas, five thick slabs of blue cheese, and maybe a snack for her brother Bob. We also need a small plastic snake and a big toy frog for the kids. She can scoop these things into three red bags, and we will go meet her Wednesday at the train station.

Amharic Speaker Transcription



Key: - vowel epenthesis - vowel replacement - deletion of sounds or words

- consonant change in place, manner, or voicing (e.g., a fricative becomes a stop)

Figure 4. Predicted Responses of an Amharic speaker on the GFTA-2.

Word	Target Sound	Response	Changes
clown	final /n/	[klɑ̃ʊ̃], [klɑʊ]	n → ∅, ʊ → ʊ̃
rabbit	medial /b/	[rɑβɪt]	b → β
bathtub	final /b/	[bɑstoβ]	b → β
frog	final /g/	[frɑk] , [frɑʰ]	g → k, g → ʰ
knife	final /f/	[nɑɪ]	f → ∅
slide	final /d/	[eslɑɪt]	d → t
rabbit	initial /r/	[ʁɑβɪt]	r → ʁ
carrot	medial /r/	[kɑrɪt]	r → r
thumb	initial /θ/	[tʌm]	θ → t
bathtub	medial /θ/	[bɑstoβ]	θ → s
bath	final /θ/	[bɑs]	θ → s
vacuum	initial /v/	[fɑkjũ]	v → f
shovel	medial /v/	[ʃʌfəl]	v → f
five	final /v/	[fɑɪf]	v → f
drum	final /m/	[dʁɐ̃]	m → ∅, ʌ → ɐ̃
zipper	initial /z/	[sɪpər], [sɪpə]	z → s
scissors	medial /z/	[sɪsərz]	z → s
flowers	final /z/	[flɑʊərs]	z → s
this	initial /ð/	[dɪs], [zɪs]	ð → d, ð → z
feather	medial /ð/	[fezər], [fezə]	ð→ z
quack	/kw/ cluster	[kəwɑk]	kw → kəw
plane	/pl/ cluster	[pəlen]	pl → pəl
slide	/sl/ cluster	[eslɑɪ]	sl → esl
spoon	/sp/ cluster	[espun]	sp → esp
drum	/dr/ cluster	[dʁɐ̃]	dr → dʁ
stars	/st/ cluster	[estɑrs]	st → est
swimming	/sw/ cluster	[eswɪmɪŋ]	sw → esw
tree	/tr/ cluster	[tʃʁɪ], [tʃri]	tr, tʃr → tʃʁ, tr, tʃr → tʃr

Key:

- vowel epenthesis
- deletion of sounds or words
- consonant change in place, manner, or voicing (e.g., a fricative becomes a stop)

AFRICAN AMERICAN ENGLISH: NATURE, ORIGIN, AND IMPLICATIONS FOR CLINICIANS

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INTRODUCTION

The phenomenon known as *African American English* has been designated with various terminology. Like the nature of the linguistic code itself, its reflexive terminology is dynamic, mirroring the tenor of the era. In the late 1990's, fervent discussion in the media referred to this linguistic code as *Ebonics*. That term was coined in 1973 by psychologist Robert Williams from segments of the words *ebony* and *phonics* in reaction to the need to eliminate archaic terms such as *Negro Nonstandard English*. The literature of the decades from 1970 through the 1990's referred to *Black English* or *Black Dialect*. Often the word *vernacular* was inserted to capture the concept of *nonstandardness*, hence *Black English Vernacular (BEV)* or *Vernacular Black English (VBE)*.

Today most scientific and scholarly documents designate the language as African American English (AAE) or African American Vernacular English (AAVE). Although the word Ebonics remains a part of the active lexicon, its use is not preferred in scholarly documents due to the negative connotations and emotionality associated with the media discussions of the mid 1990's.

AFRICAN AMERICAN ENGLISH

There is a popular misconception that AAE is incorrect, lazy, defective, ungrammatical, and broken English. On the contrary, evidence from many years of linguistic investigation establishes that AAE is a legitimate, rule governed, socially constructed variety of American English (Linguistic Society of America, 1997; Payne and Taylor, 1998). Other popular misconceptions include: 1) that AAE is slang, rap, hip-hop, or jive talk, 2) that AAE is genetic among African Americans, 3) that AAE is the result of incomplete, faulty, or failed attempts to learn Standard English, and 4) that speakers of AAE have inferior intellectual abilities. In actuality, slang and jive talk are dynamic, temporary in-group semantic codes, while rap and hip-hop are creative, artistic uses of the language, similar to poetry in Standard English.

The myths surrounding AAE are the result of racial prejudices generated from the slavery era through the Civil Rights era that have not been entirely extinguished. They are maintained partly due to the public's lack of knowledge of esoteric linguistic concepts regarding dialects, standards, and language evolution. Unfortunately these myths have led parents, educators and legislators to the idea that AAE should be eradicated and replaced with Standard English. This discussion will provide evidence of the nature and origin of AAE, so that AAE will be appreciated as a rich historical and cultural resource to its speakers, and SLPs will be able to provide more culturally

appropriate services to the African American population.

There are two major positions on the origin of AAE. These positions were formulated from debates in the early 1900's. Historically there was little knowledge of, or attention given to, African languages prior to the 1930's. Debates dating to the turn of the century questioned whether words and structures used by African Americans had their origin in African languages. Most vehement in his position was George Phillip Krapp who stated, "characteristics of Negro English assumed to be peculiar property of Negroes, are merely survivals of good old English; it is reasonably safe to say that not a single detail of Negro pronunciation or syntax can be proved to have any other than English origin." (Krapp, 1924).

This position, known as the Anglocentrist or Eurocentric view, held that African slaves learned English from white plantation overlords, who themselves spoke a nonstandard version of the "Queen's English". Krapp goes further to state that the speech of the white overlords to slaves was, itself, much simplified, probably lacking verb tenses, noun case distinctions, pronouns and plurality. Anglocentrists supported their position with evidence that features of AAE, such as pronouncing *asks* as *aks,* resembled those of Old English as written by Shakespeare and Chaucer. Some scholars, including more recent linguists such as Mufwene (1996), posit that features of AAE have their origin in dialects of British English. For example, the familiar phonological rules of AAE have been associated with the Cockney dialect of London (Wakelin, 1972).

[ð] → [v] as in mother→muvah, and
[Θ] → [f] as in health→healf

The Anglocentric view has been successfully challenged by contemporary linguists such as John Rickford and others. According to Rickford (1999) the most salient argument against the Anglocentric view relates to the absence of these features in modern Standard American English. He questions why, if the British dialects were prevalent in white settlers at the time of slavery, were the features adapted only by African slaves, and not spread to other regions of the country and preserved in modern Standard English?

Linguistic evidence has established that AAE is a creole, or mixture of several African and European languages. The scholarly research since the 1930's that has supported the creolist position holds that AAE developed from a fusion of English and other European and African languages. Lorenzo Dow Turner, in his 1949 volume, *Africanisms in the Gullah Dialect*, provided the first evidence for the creolist position. Turner, a linguist and master of five African languages, as well as Portuguese, Arabic, German, French, and Dutch, documented that Louisiana Creole, West African Creole and West Indian Creole were one and the same as Gullah, a language spoken by former slaves isolated on the sea islands off the coast of South Carolina and Georgia. Gullah is established to be an early version of AAE (Dillard, 1972).

Taylor (1972) documents the creolization process of AAE as follows:

> In the early part of the 16th century, Africa's West Coast was opened for trade. The first major European country to establish trade was Portugal. In instances when peoples from various regions came into contact, it was customary for them to use vocabulary from one language to communicate. This process is called

pidginization. At the outset of its development, a pidgin is usually very informal. Over time, it becomes more formal, in that the vocabulary of the dominant language is embedded into the phonological and syntactic system of the non-dominant language. When this formal linguistic system becomes a native or first language for a group, it is said to be creolized.

Portuguese Creole spread quickly to the New World and subsequently became the worldwide lingua franca. Portuguese Creole probably came to the New World when captured Africans arrived in Spanish and Portuguese colonies. It flourished on both sides of the Atlantic for two centuries.

From 1630-1640, the Dutch ousted the Portuguese from their bases on both sides of the Atlantic, thus, a strong Dutch influence was exerted upon Portuguese, casting another European language, upon an African phonological and syntactic mold. This language constituted a major element in the development of Afrikaans of South Africa.

About the same time as the Dutch were replacing the Portuguese, France and England were establishing power in Africa. With the rapid growth of sugar plantations in the New World, France became very active in the slave market. Thus, a New French Creole emerged on both sides of the Atlantic. This Creole survives today in Martinique, Haiti, French Guyana, and Louisiana.

The creolized form of English appears to have been facilitated by these earlier creolizations of European Languages. English Creole was brought to America from Africa and Jamaica (the main way station) by the slaves. The most distinct English Creoles survive today in Jamaica, Guyana and the coastal areas of Georgia and South Carolina (Gullah) (Taylor, 1972).

The language of the African slaves came to be known as Plantation Creole. In Africa, the linguistic form, *Krio*, survives today in Sierra Leone, and Pidgin English is widely spoken in Liberia. Many words from African languages, albeit with phonological changes, exist today in both AAE and Standard English. In addition, certain grammatical structures of AAE that differ from Standard English are traceable to African languages. Figures 1, 2, and 3 provide specific examples of African lexical elements and grammatical structures in both Standard English and AAE.

Dillard (1972) maintains that Plantation Creole continued to evolve into the present form of AAE. This evolution was effected through the natural process of decreolization. According to Rickford (1998) decreolization occurs when a creole variety is gradually leveled in the direction

of the standard variety. From the continuous contact of slaves and white settlers, Plantation Creole gradually merged and converged toward Standard English. Evidence of this process is particularly evident in the similarities among AAE, Southern Nonstandard English and Appalachian English, as shown in Figure 4.

Although the standard variety remains dominant, the process of decreolization involves changes to both languages. Surprisingly, the changes that occur are not random, but follow certain linguistic principles in ways that are systematic and predictable. The propensity for change relates to the structure of the standard variety, the cognitive basis of its organization, and the pressures exerted to affect the changes (Wolfram, 1986). For example, in Standard English the features that are perhaps most susceptible to change are those which are hypercorrect for everyday spoken communication. Consider the following expression in which the changes have become acceptable in Standard English.

I , too → Me too
With whom are you going? →
Who are you going with?

Wolfram outlines four principles that account for the susceptibility of Standard English forms to undergo changes during decreolization. Generalization relates to the tendency for rules restricted to a limited linguistic environment to be changed to extend to other environments or beyond the restrictions for its use. There are several examples of generalization in AAE. Multiple negation extends the rule for negativization in standard English which permits one negative in a sentence, e.g., *He didn't see anyone*. By extension, the sentence *He didn't see nobody* is acceptable and common in AAE.

Regularization is the natural pressure for change of irregular linguistic forms to be consistent with the predominant rule. Standard English is replete with irregular forms of verb conjugations, tenses, plural markers and other features. Examples of AAE regularization include:

saw	→	seed
had written	→	had wrote
he doesn't	→	he don't
if I were	→	if I was

The inverse of the process of regularization is known as analogy. Just as some components become regularized to the dominant pattern, others assume the irregular form, as illustrated in the examples of irregular past tense below.

Standard English // AAE

bring - brought - had brought// bring - brung - had brung

do - did - had done // do – done - had did

come - came - had come // come - came - had came

Another principle of natural change is redundancy reduction. Redundancy is the operative rule in Standard English which requires agreement between subject and verb, and marking of plurality and possessiveness. Thus in Standard English, *she like<u>s</u> the cake, a dozen egg<u>s</u>* and *Bobby'<u>s</u> shoe* are obligatory even though third person is marked by *she*, plurality is stated in *a dozen* and possessiveness is stated in *Bobby* + the article, *shoe*. In the following example, note the redundancy in the third person singular as compared to other constructions.

Singular // Plural

1st person I like the cake //

We like the cake

2nd person You like the cake //

You like the cake

3rd person She likes the cake //

They like the cake

Only for the third person singular case is –s required for the verb ending. Hence two markers are used, *she* and –s. The requisite -s in *she lik*es adds no new meaning, but merely changes the form. Indeed, the AAE construction, *she like* is exact in meaning to the Standard English version *she likes*. The AAE rule is similar for redundancy reduction in marking plurality and possessiveness, as in *fifty cent* and *the man coat*.

Wolfram states that many changes can be explained on the basis of these principles. Figure 5 provides some phonological features of AAE and the principles which are the basis for their changes.

WHAT SHOULD CLINICIANS DO?

The role of speech-language pathologists with regard to AAE is controversial. As language specialists, clinicians are called upon to provide services wherever an issue of speech or language problem exists. This may sometimes include some speakers of AAE who may be experiencing difficulties in the classroom but who do not have a disorder.

Taylor (1986) takes an extreme position, arguing that speech-language pathologists have no role with regard to speakers of AAE. He supports this position by reiterating that the domain of speech-language pathology is clinical rehabilitation. Even where speech-language pathologists are found in the educational system, their domain is special education. The aim of therapy is to build or reconstitute a linguistic system that has been impacted by some type of impairment. In the therapy process a new linguistic system is established, as "errors" are eliminated completely and permanently. Taylor argues that since social dialects, such as AAE, are not the result of impairment, they are outside the purview of speech-language pathology. Therefore the only role for clinicians is separating the true disorders from normal dialectal difference, and providing treatment only for confirmed disorders.

Taylor's argument does not advocate the total neglect of AAE by clinicians. Rather, the question of what to do about AAE is an issue for regular education. He maintains that the professional responsibility for AAE rests with classroom or language resource teachers. Even within the educational system, a bidialectal approach is advocated. In a bidialectal approach, Standard English features are taught as an alternative to AAE for use whenever appropriate. Thus, AAE is not eradicated in favor of Standard English. Rather, AAE is preserved as a valuable cultural resource to its speakers.

Taylor's argument is considered both radical and liberal. It is radical because it removes speech-language pathologists from the arena of AAE. Yet it is liberal in that it seeks to value and preserve AAE. It is this duality that constitutes the root of controversy. For school systems, in which only Standard English is valued, preservation of AAE is not usually a priority. Moreover, they argue, research has documented the many academic problems of children who speak AAE. It would appear, therefore, that there is a critical role for

speech-language pathologists to eradicate AAE.

The American Speech-Language-Hearing Association's (ASHA) Position Paper on Social Dialects (1983) attempts to provide a definitive response to this controversy. ASHA recognizes the distinction between speech and language disorders and social dialects such as AAE. ASHA's position asserts that speech-language pathologists may provide "instruction" to speakers of social dialects, however, only on an elective basis. The intent here is that children should not be placed in special education on the basis of AAE so they can receive therapy from a speech-language pathologist. AAE speakers who are performing well in reading and other language activities, and who have no other cognitive deficits, should not be considered as candidates for therapy. Likewise, AAE speakers who display behavior problems in the classroom should not be dispersed to speech therapy to receive instruction in Standard English.

ASHA's position is consistent with the requirements of the Individuals With Disabilities Education Act [IDEA] (first adopted as PL94-142, 1975). ASHA further requires that to provide elective services, a clinician must 1) demonstrate sensitivity and competence in the linguistic features of the dialect, 2) understand the effects of negative language attitudes on language performance, and 3) be familiar with linguistic contrastive analysis procedures.

Whether or not clinicians decide to provide Standard English instruction, there are important issues in regard to speakers of AAE. Many clinicians will inevitably encounter speakers of AAE in their caseload. ASHA's position makes it clear that, in these instances, the clinician's role is to distinguish a communication disorder from a communication difference, that is, AAE.

In the screening process, clinicians must be careful to select instruments that are dialect sensitive, that is, instruments that do not count AAE features as errors. Further, distinguishing differences from disorders is a critical element of the diagnostic process. Here the issue of test bias is the main problem. Most standardized tests are designed to score features of AAE as errors. This constitutes a linguistic bias in these instruments.

African American children may also vary in the number of AAE features they utilize. In addition, the rules of AAE may be in free variation and not obligatory in every instance. Therefore, clinicians also should not assume that all African American children use all, or the same, AAE features in every context. Moreover, speakers of AAE may display code switching between features of AAE and Standard English. Code switching, whether conscious or unconscious, is related to the situational context and the conversational participants. The implication of this vast variability of AAE is that an ethnographic approach, as well as dynamic assessment, should be utilized in assessment of AAE speakers. Pena (1996) describes dynamic assessment as a "test-modify-retest" procedure to identify the problems that are truly in need of treatment. It may also be necessary for clinicians to obtain language samples in different environments and with various conversational partners.

Only in instances where a speech or language disorder is confirmed, either with or without AAE, should a child be enrolled for therapy. Moreover, in the strictest sense, only the features that are errors reflective of a true disorder should become targets for therapy. Whether or not to also include AAE features in treatment with these children is a source of continued debate. On one side of the issue, the "Preservationist" position holds that only a bidialectal

approach should be used with speakers of AAE. Since AAE is sometimes a valued cultural resource to its speakers it should be valued and preserved. Preservationists further maintain that carryover effects are lessened since reinforcement of Standard English features may not be achieved in the child's social environment.

Also related to the issue of inclusion of AAE features for therapy are the questions of 1) whether to disregard AAE in therapy, 2) whether clinicians should use AAE features in therapy, and 3) when to terminate therapy for AAE speakers. During therapy children may give accurate responses, although in AAE. For clinicians these can become teachable moments to utilize the bidialectal approach by contrasting the AAE form with the Standard English form. It is crucial that clinicians never denigrate AAE, and avoid the tendency to refer to AAE as incorrect. Linguistic changes from Standard English to AAE should not be described or designated with the language typically used to describe disorders. For example, *substitution* is the term used to describe articulation errors. Its written designation is represented with the phonemes separated by a slash [/]. Dialectal features should be described as changes, and represented with an arrow [⟼]. The arrow is spoken as *become*s.

Many clinicians would consider it unethical, even abhorrent to use any form other than Standard English in therapy. Use of any form other than Standard English is generally considered as poor modeling. A bidialectal approach requires an attitude of acceptance, as well as a level of comfort with AAE. Use of AAE can enable clinicians to become models for bidialectalism, and to teach code switching ability (Seymour, 1986). AAE is often used by African Americans who are bidialectal to make a salient point or to demonstrate social and cultural solidarity. For example, African American preachers often stir the emotions of the congregation by making certain statements using AAE, thus honing their facility with both AAE and Standard English. AAE can be used in a similar fashion by clinicians as a motivational strategy. In every case, it is preferable that clinicians who utilize AAE in therapy do so with extreme discretion in order to avoid cultural offenses. The following are two examples of discretionary use of AAE by a clinician.

(1) Clinician: (complementing a client)
Wow, that was bad! [very good]
That was the bomb! (giving the high five)

(2) Client: (Telling a story)
…and he closed the door and he wouldn't let nobody in.

Clinician: That's right. He wouldn't let nobody in, and he wouldn't let anybody in.

Clinicians may also be hesitant to dismiss AAE speakers from therapy when their errors are corrected, but AAE features remain. It follows logically that if the clinician's only responsibility is to treat true disorders, then treatment for AAE features is unnecessary, and perhaps unethical. Thus, dismissal is the best action. ASHA's position on social dialects makes it clear that "It is the role of the speech-language pathologists to treat only those features or characteristics that are true errors and not attributable to the dialect."

There is a role for clinicians as advocates for children who speak AAE. It is not sufficient for clinicians to accept the limits of the profession without regard to how speakers of AAE will receive the instruction needed for success in the classroom. While the main responsibility

for Standard English instruction rests with teachers, historically their attitudes and instructional methods have failed many African American children. Traditional methods have failed primarily because they have been 1) prescriptive, 2) corrective, and 3) unaccepting of AAE as a legitimate linguistic code (Taylor, 1986). Clinicians may assume a consultative and instructional role to enlighten classroom teachers and share appropriate methods for a bidialectal approach.

It was the intent of this paper to equip speech-language pathologists with information pertaining to AAE in order to promote understanding, acceptance, and respect for AAE and its speakers. AAE is an orderly, rule-governed, legitimate linguistic system with deep historical and cultural roots. Its stigmatization exists because of the many myths and negative perceptions of its speakers. It is only with this knowledge and the proper attitudes toward AAE and its speakers that clinicians can deliver the most efficient and effective clinical services to respond to their needs.

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Figure 1
African Words in AAE

Word	Contemporary Meaning	Origin
bad	very good	Mandingo
bad mouth	to slander	Mandingo
boogie	dance performance	Bantu
bug	to annoy	Mandingo
chick	pretty young woman	Wolof
cool	calm, controlled	Mandingo
doll-baby	little child	Yoruba
hip/hep	to be aware of	Wolof
jam	musical performance	Wolof
jive	misleading talk	Wolof
kill	to affect strongly	Wolof/Mandingo
the man	the authority	Mandingo
poontang	sexual intercourse	Bantu
rap	verbal play	West African
skin	to slap hands	Temne
tote	to carry	West African

Adapted from Holloway, J and Vass, W. (1993). The African Heritage of American English. Indiana University Press.

Figure 2
African Words in Standard English

Word	*Contemporary Meaning*	*Origin*
adobe	grass for a roof covering	Tivi
banana	fruit	Wolof
banjo	musical instrument	Kimbundu
bogus	deceitful	Hausa
goose	touch someone's backside	Wolof
guy	person	Wolof
hulla balloo	noise, uproar	Bautu
jazz (jazz up)	speed up, exaggerate	Bautu
phoney	false, counterfeit	Mandingo
rukus	noise, commotion	Bautu
voodoo	witchcraft	Fon
yakety yak	chatter	Bautu
zombie	spirit	West African

Adapted from Holloway, J and Vass, W. (1993). The African Heritage of American English. Indiana University Press.

Figure 3
African Syntax in AAE

Syntactic structure	Example	Origin
"Done" as past completive marker	He done gone	Wolof
"Been done" as remote past marker	He been done gone	Wolof
Undifferentiated third person singular	He → She went home	West African
Undifferentiated third person pronoun and third person possessive pronoun	He bumped he head	Mandingo
Zero copula	He big	West African
Infinitives as present habitual tense marker "be"	I be tired	Bautu
Differentiation of third person singular (you) and third person plural (you) pronouns	Y'all You-uns	Wolof

Adapted from Holloway, J and Vass, W. (1993). The African Heritage of American English. Indiana University Press.

Figure 4
Feature Similarities of AAE, Southern Nonstandard English (SNE) and Appalachian English (AE)

Feature	*Example*	*AAE*	*SNE*	*AE*
Final consonant cluster reduction	test→tes	X	X	
Deletion of past tense marker-ed	rubbed→rub	X	X	
Plural formation irregularity	desks→desses	X	X	
Future tense "gonna"	she gonna go	X	X	
Double modal	I might coulda done	X	X	X
Intensifying adverbs	right large	X	X	X
Deletions of relative pronoun	That's the dog bit me	X	X	X
Same interrogative form for direct and indirect questions	I wonder was she walking	X	X	X

Adapted from Williams, R and Wolfram, W. (1977). Social Dialects: Difference vs Disorders. American Speech and Hearing Association

Figure 5
Linguistic Principles of Phonological Rules of AAE

AAE Rule	Linguistic Principle	Example
Final consonant cluster		
reduction		
for voiced pairs	Redundancy reduction	old → ole
for unvoiced pairs	Redundancy reduction	ask → ass
for past tense –ed construction	Redundancy reduction	missed → miss[1]
for past tense –ed construction before a vowel	Analogy	messed up → mess up
for plurals following clusters	Redundancy reduction	tests → tesses
Devoicing of voiced sounds		
[ð] initial position	Generalization	they → dey
[ð] intervocalic position	Generalization	feather → feavuh
[ð] final position	Generalization	bathe → bave
Final consonant deletion	Generalization	bad → ba’
[l] reduction or deletion	Redundancy reduction	help → hep
[r] reduction or deletion	Generalization	door → doe their book → they book[2]
initial [w] reduction	Generalization	this one → this ‘un
[ŋ] reduction	Redundancy reduction	eating → eatin
past tense [d] following voiced sounds	Generalization	lived → live [3]
Modification of voiceless sounds		
[Θ] medial and final position	Generalization	nothing → nufin
past tense of verbs ending in [k]	Analogy	liked → lik-ted
matathesis of	Regularization	ask → aks

[s] and [k] cluster simplification of [sks] and [skt]	Regularization	asks → ass asked → ast

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[1] Note that what appears to be a grammatical rule related to absence of past tense marker is actually a phonological rule of final cluster reduction

[2] Wolfram (1986) argues that this seemingly grammatical construction resulting in absence of plural possessive pronoun is actually a phonological change affected by deletion of final –r

[3] Again what is perceived as a grammatical construction is explained by a phonological rule