ECHO: Journal of the National Black Association for Speech-Language and Hearing

ECHO: Journal of the National Black Association for Speech-Language and Hearing is an international e-journal concerning communication and communication disorders within and among the social, cultural and linguistically diverse populations, with an emphasis on those populations who are underserved.

Volume 10, Number 2 **Fall 2015**

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The following individuals served as reviewers or otherwise contributed, editorially, to the journal during 2014. We thank them for their conributions to ECHO (any omissions were certainly unintentional):

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About the Journal

ECHO: Journal of the National Black Association for Speech-Language and Hearing is a peer-reviewed, refereed journal that welcomes submissions concerning communication and communication disorders from practitioners, researchers or scholars that comprise diverse racial and ethic backgrounds, as well as academic orientations.

ECHO welcomes submissions from professionals or scholars interested in communication breakdown and/or communication disorders in the context of the social, cultural and linguistic diversity within and among countries around the world.

ECHO is especially focused on those populations where diagnostic and intervention services are limited and/or are often provided services which are not culturally appropriate. It is expected that scholars in those areas could include, but not limited to, speech-language pathology, audiology, psychology, linguistics and sociology.

Articles can cover any aspect of child or adult language communication and swallowing, including prevention, screening, assessment, intervention and environmental modifications. Special issues of *ECHO* concerning a specific topic may also be suggested by an author or through the initiation of the editors.

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- Communication breakdowns among persons due to culture, age, race, background, education, or social status
- Use of the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) framework to describe communication use and disorders among the world's populations.
- Communication disorders in underserved or marginized populations around the world
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- Dialectical differences and their effects on communication among populations
- Evidence base practice research with culturally and linguistic diverse populations
- Provision of communication services in low income/resource countries
- Provision of communication services in middle income/resource countries
- Provision of communication services to immigrant and/or refuge populations
- Effects of poverty on communication development and the provision of services
- Education/training issues in serving diverse populations
- Ethical issues in serving diverse populations
- Role of religion in views of communication disability and its effect on service delivery

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- tutorials
- clinical forums
- description of clinical programs
- scientifically conducted program evaluations demonstrating effectiveness of clinical protocols
- case studies
- letters to the editor.

Manuscript Submissions

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

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- 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;
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All manuscripts must be submitted electronically and should follow the style and preparation presented in the Publication Manual of the American Psychological Association (fifth edition, 2001; 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. Manuscript submissions and inquiries should be addressed to: nbaslh@nbaslh.org.

ECHO: Journal of the National Black Association for Speech-Language and Hearing

Volume 10, Number 2 **Fall 2015**

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AFRICAN AMERICAN STUDENTS' PERFORMANCE ON A PRAXIS SIMULATION: TOWARD AN UNDERSTANDING OF THE PERFORMANCE GAP

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ABSTRACT

The purpose of this investigation was to provide an item analysis of students' performance on a Praxis examination simulation toward an understanding of the test performance gap between African Americans and the general population. Data analysis was constructed to reveal whether there are specific courses and content areas that are difficult, and whether difficult areas are related to course level. Results were predictable in that the distant undergraduate courses, as well as the scientifically complex graduate courses were found to be most difficult. The investigation also sought to provide insight into characteristics of questions that may account for the differential performance. There was a substantial core of difficult questions wherein participants selected the same incorrect answer which was interpreted as a potential cultural bias. This investigation concluded that lack of knowledge in specific course areas, as well as cultural bias, contribute to the differential performance of African American test takers on the Speech-Language Pathology Praxis.

KEY WORDS: Praxis, test item analysis, African American test performance

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INTRODUCTION

Passing the Praxis is one of several requirements for speech-language pathologists to obtain state licensure, American Speech-Language Hearing Association (ASHA) certification, or to be fully qualified for practice in schools. The Praxis is a comprehensive multiple choice examination designed to cover material learned in academic course matriculation. There is concern regarding the lower scores of minority test takers as compared to their mainstream peers (Riquelme, 2011). This concern is supported by research by Nettles, Scatton, Steinberg, & Tyler (2011) and Frierson (1989), which has documented race and ethnicity as predictors of pass and failure rates on several tests in the Praxis series.

This phenomenon is known as the standardized test performance gap. The test performance gap has been observed in minority individuals as early as kindergarten and continuing into adulthood (U.S. Commission on Civil Rights, 2010). The gap for the speech-language pathology Praxis has led researchers, academicians, and professional organizations to seek appropriate means to remedy the situation. However, despite these efforts, the Praxis continues to be a barrier to many minority graduates gaining full access to the profession.

According to statistics for the Speech-Language Pathology Praxis in 2011-2012, the mean score for all test takers was 675; while the mean score for African American test takers was 622 (ASHA, 2013; Riquelme, 2011). ASHA reported that the overall pass rate on the Praxis was 84.7 percent, however the failure rate for African Americans has been cited to be as high as 53.8 percent (Payne, 1997).

The performance gap for standardized tests such as the Praxis does not exist solely because of academic deficiencies of the test takers. For example, Riquelme (2011) reported that minority graduate students felt it was impossible to improve Praxis scores simply by studying the course content. Moreover, these students reported that despite their lower pass rates, their academic program had indeed provided adequate information on the content of the examination.

This phenomenon has led critics to posit that there is an inherent cultural bias in standardized tests. However, the exact nature of this bias has not been fully elucidated. Hence, the construct of test-wiseness has been explored for its relationship to cultural bias. Millman, & Pauk (1969) define test-wiseness as the natural capacity to utilize the test format and context to gain an advantage. Individuals who are test-wise have been observed to perform better than their peers of equal knowledge, whereas individuals who lack test-wiseness perform less well even when they have equivalent knowledge (Scruggs & Mastropieri, 1992).

Payne (2001) advances several strategies toward developing test-wiseness that include developing reasoning skills that match the expected cognitive processes and values; predicting the examiner's intent; focusing; and recognizing key words that provide clues. Payne also provides strategies for developing reading comprehension skills, time utilization and intelligent guessing.

An additional construct that may relate to cultural bias is attributed to the test taker's cognitive style. Originating from research on visual perception, the construct of cognitive style was initially defined by Allport (1937) as one's habitual mode of perceiving, conceptualizing and recalling information, and using knowledge for problem solving. Although there are several conceptions of cognitive style, Riding & Rayner (1998) provide a model that is useful in relation to standardized test performance. Known as the Analytic-Wholistic Model, these investigators describe the characteristics of analytic individuals as being reflective, sensitive to the parts of a stimulus, having a long attention span, and having a deep intensity of concentration. These are undoubtedly qualities required for successful performance on standardized tests.

By contrast, predominantly wholistic individuals appear to have characteristics that are not conducive to successful test performance such as impulsivity, focus on the global characteristics of stimuli, short attention span and more shallow intensity of concentration. Since the qualities of analytic individuals are related to the expectations of most standardized tests, investigators including Shade & New (1993) assert that cognitive style is related to culture and hence, another possible explanation for the standardized test performance gap.

Certainly, the degree of knowledge and preparation by the test taker will affect performance. Since the Speech-Language Pathology Praxis contains material from undergraduate as well as graduate courses, it may be reasoned that due to lack of retention, undergraduate course content would present greater difficulty than graduate course content. However, it can be argued conversely that due to the greater complexity of the material, graduate courses would be more difficult than undergraduate courses.

These aspects of difficulty in the Praxis have not been explored. Therefore, the purpose of this investigation was to provide an analysis of African American graduate students' performance on the Praxis. Utilizing a simulation of the actual examination, data analysis was constructed to reveal whether there are specific courses and content areas that are difficult, and whether difficult areas are related to course level. Beyond these parameters, the investigation sought to provide deeper insight into the characteristics of questions that account for the differential performance of African Americans. Specific research questions included the following:

1. Which courses rank highest in terms difficulty?
2. Do undergraduate courses rank higher than graduate courses in terms of difficulty?
3. Which Praxis content areas rank highest for difficulty?
4. What error patterns emerge from item analysis of participants' selection of incorrect answers?

METHOD

Participants

Participants included 37 second-year African American master's students enrolled in a historically Black university (HBCU). All participants were in the final semester of graduate study and all had completed the same curriculum for Council on Academic Accreditation (CAA) accredited institutions. Participants were enrolled in an online Praxis preparation course designed to enhance their test preparation skills, provide familiarity with expectations of the examination and practice with Praxis-type questions.

Materials and Procedure

On the first day of the course, participants took an online simulated Praxis examination composed of questions from the ETS Guide to the NTE Speech-Language Pathology Specialty Area Test (1995). This preparation guide presented a 142-item exercise composed of retired questions from previous Praxis examinations together with correct answers and a conversion table for estimating the Praxis score. Participants were allowed 120 minutes to complete the questions.

Although this exercise was somewhat different from the current Speech-Language Pathology Praxis revised in 2014 which contains 132 questions to be completed in 150 minutes, the integrity of the simulated Praxis as presented in the preparation guide was preserved in order to utilize the accompanying conversion table.

Data Analysis

For courses taken at the undergraduate level a total of 65 questions were identified as reflecting course material in the following areas:

Anatomy and Physiology (10)	Ethics/Professional Issues (7)
Audiology (5)	Language Development (6)
Clinical Methods (27)	Phonetics (2)
Counseling (5)	Speech Science (3)

Similarly, the remaining 77 questions were categorized under nine graduate level course areas as listed below. For this investigation, courses in Aphasia, Motor Speech Disorders and Dysphagia were combined in a single category designated as Neurogenic Disorders.

Augmentative & Alternative	Multicultural Awareness (7)
Communication (AAC) (5)	Neurogenic Disorders (15)
Articulation Disorders (6)	Research (4)
Diagnostics (14)	Stuttering (9)
Language Disorders (9)	Voice Disorders (8)

A third classification was conducted to allow analysis according to broad content areas as follows: (1) Basic Human Communication Processes [anatomy and physiology, phonetics, speech and hearing science, language development]; (2) Phonological and Language Disorders; (3) Neurological Disorders; (4) Clinical Management [clinical methods, diagnostics, multicultural awareness, AAC]; (5) Speech Disorders [fluency, voice, resonance]; (6) Professional Issues/Psychometrics/Research; and (7) Audiology.

Initial data analysis entailed calculation of the frequency and percentage of correct and incorrect answers. Answers were counted as incorrect when participants selected any option that was not scored, or left the question unanswered. A question was defined as difficult if 30 percent or more participants answered incorrectly. In addition, the frequency and percentage of participants marking each option (A, B, C, D) was calculated for each difficult question in order to examine patterns among the incorrect selections.

The percent of difficult questions was used for intra-category comparison and to determine relative ranks for difficulty with regard to courses and content areas. The rankings took into account the total of difficult questions in light of the frequency of questions for that assigned category. For example, the course with the highest frequency of questions, together with a high percentage of incorrect answers was ranked as most difficult.

RESULTS

Overall Performance

Table 1 presents the overall performance of 37 participants. A score of 91 or more correct answers was required to pass. As evidenced by the data, 30 participants (81.1 percent) passed, and seven participants (18.9 percent) failed. This performance is roughly commensurate with the present national pass rate.

Table 1. Overall Performance of Participants

(N) Participants = 37 (N) Questions = 142

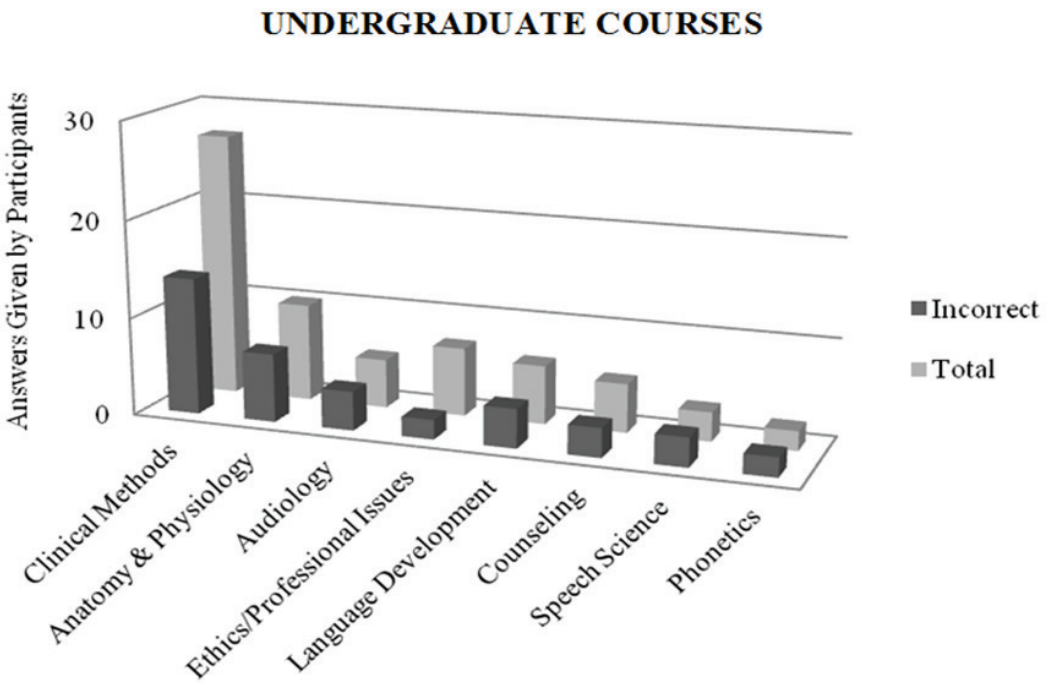
OVERALL PERFORMANCE				QUESTION ACCURACY					
				Correct Answers		Incorrect Answers			
Mean Raw Score	Mean Scaled Score	Pass	Fail	All Participants	≥70% of Participants	All Participants	≥30% of Participants	≥50% Same Answer	≥70% Same Answer
91.13	600	30 / 81.1%	7 / 18.9%	4	60	0	82	23	10

Analysis of correct and incorrect answers revealed that although most participants passed, as few as four questions were answered correctly by every participant, and there were no questions answered incorrectly by every participant. More than half of the questions (n=82) were designated as difficult i.e., answered incorrectly by 30 percent or more participants. These questions were subjected to further examination for potential sources of cultural bias.

Course Ranks

Figure 1 presents the frequency of incorrect answers together with the ranks of in terms of difficult questions for undergraduate courses. By a wide margin, Clinical Methods was observed to have the highest frequency of questions overall, as well as the majority of the difficult questions, thus earning it the top rank for difficulty among undergraduate courses.

Figure 1. Frequency of Incorrect Answers and Rank of Course Difficulty



The frequency of incorrect answers and ranks in terms of difficulty for graduate courses is presented in Figure 2. It is not surprising that the highest ranking graduate course for difficulty was Neurogenic Disorders. Topics in Neurogenic Disorders are comprised of complex scientific and medical information found to be difficult for many students. Moreover, the organization of this area which combined questions from three courses resulted in a relatively high frequency of questions overall; hence a high number of difficult questions. With the exception of Neurogenic Disorders and Diagnostics, the data of Figure 2 do not exhibit marked differences among the ranks of the remaining graduate courses. When the ranks of graduate courses are adjusted for total questions, the proportion of difficult questions per course are essentially identical.

Figure 2. Frequency of Incorrect Answers and Rank of Course Difficulty

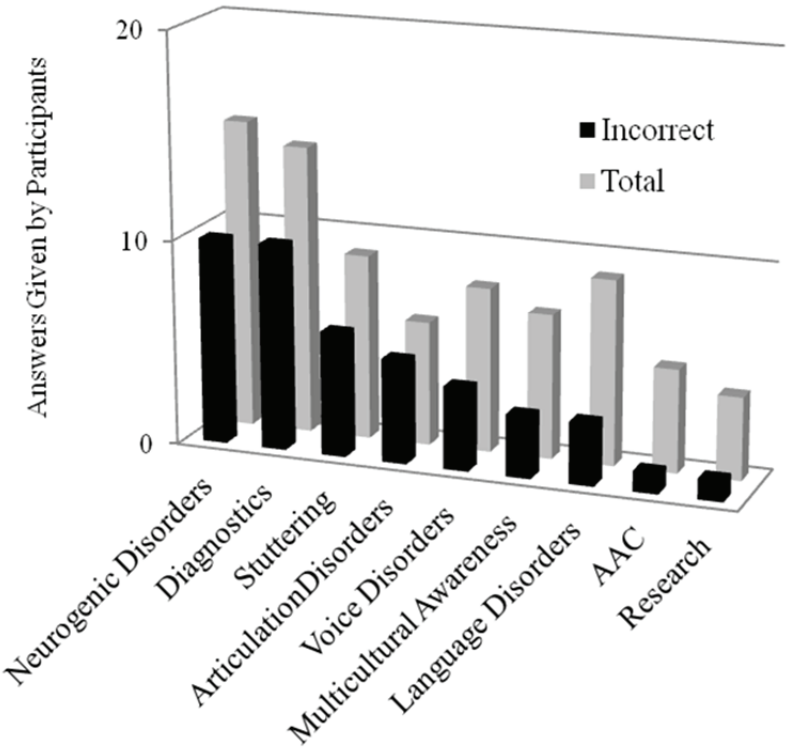


Table 2 displays ranks for all the courses in terms of difficulty. The course areas with the highest frequency of questions were also observed to have the highest frequency of difficult questions. Therefore, these areas ranked as most difficult.

Table 2. Ranks of All Courses in Terms of Difficulty

Rank	Course	Total Questions	Difficult Questions (n)	% Incorrect
1	Clinical Methods	27	14	51.8
2	Neurogenic Disorders	15	10	66.6
3	Diagnostics	14	10	71.4
4	Anatomy & Physiology	10	7	70.0
5	Stuttering	9	6	66.6
6	Articulation Disorders	6	5	83.3
7	Voice Disorders	8	4	50.0
8	Audiology	5	4	80.0
9	Multicultural Awareness	7	3	42.8
10	Language Disorders	9	3	33.3
11	Ethics/Professional Issues	7	2	28.5
12	Language Development	6	4	66.6
13	Counseling	5	3	60.0
14	Speech Science	3	3	100.0
15	Phonetics	2	2	100.0
16	AAC	5	1	20.0
17	Research	4	1	25.0
Totals		**142**	**82**	**57.7**

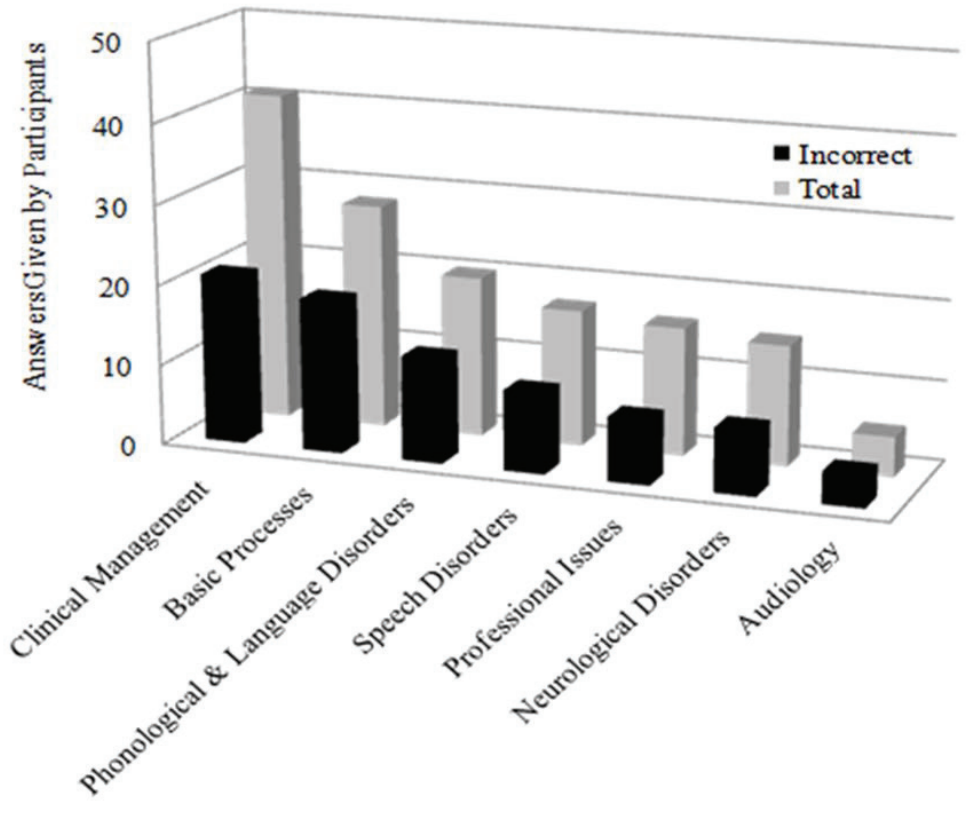
Undergraduate Courses

The shaded areas of Table 2 provide a visual of the analysis by undergraduate or graduate level. Table 2 reveals that the undergraduate course in Clinical Methods and the graduate course in Neurogenic Disorders achieved the top ranks followed by the graduate course in Diagnostics which ranked third.

The data reveal that most undergraduate courses with the exception of Clinical Methods and Anatomy and Physiology have fewer questions overall, thus fewer difficult questions. Hence, for this analysis, they were not highly ranked. Given the preponderance of undergraduate courses within the lower ranks, it would initially appear that undergraduate courses contributed minimally to the overall difficulty of the examination.

However, a different view of undergraduate courses became evident when questions were re-organized and grouped according to content areas. Figure 3 provides the frequency of incorrect answers and difficulty for the seven content areas. The broad area of Clinical Management comprises a large number of questions incorporating the undergraduate course in Clinical Methods, plus the graduate courses in Diagnostics, Multicultural Awareness and AAC. As a category with a large volume of questions, Clinical Management was the highest ranking Praxis content area in terms of difficulty.

Figure 3. Frequency of Incorrect Answers and Rank of Difficulty for Praxis Content Areas



Ranking second was Basic Human Communication Processes which is comprised solely of undergraduate courses related to non-disordered communication. As evidenced by Figure 3, more than half of the questions in Clinical Management and Basic Human Communication Processes proved to be difficult. Hence, when courses were grouped into content areas, it is clear that undergraduate course content comprised a large portion of the examination with a high preponderance of difficult questions.

Also as evidenced by the data, a separate hierarchy of difficulty exists for the content areas. Table 3 provides summary statistics for ranks among the content areas. Most notable are the percentages of difficult questions. Ranking first, questions in the content area, Clinical Management are most numerous (n=46) and represent a sizeable portion of the difficult questions (54.3%). The second ranked content area, Basic Human Communication Processes, with 28 questions also displayed a large percent of difficult questions (67.8%).

Table 3. Ranks of Praxis Content Areas in Terms of Difficulty

Rank	Content Area	Total Questions	Difficult Questions (n)	% Incorrect
1	Clinical Management	46	25	54.3
2	Basic Communication Processes	28	19	67.8
3	Phonological & Language Disorders	15	8	53.3
4	Speech Disorders	17	10	58.8
5	Neurological Disorders	15	10	66.6
6	Professional Issues	16	6	37.5
7	Audiology	5	4	80.0
Totals		**142**	**82**	**57.7**

Also notable from the data of Table 3 is the observation that Neurological Disorders (previously classified as Neurogenic Disorders) ranked fourth among the seven content areas. Yet, the same category ranked first among the nine graduate courses (refer to Figure 2) and second among all courses (refer to Table 2). This phenomenon is reflective of the fact that there were fewer content areas than graduate courses, and Neurological Disorders had vastly fewer questions when categorized as a content area.

Because of the variability in the number of questions per course, the classification by undergraduate or graduate level did not yield results that are meaningful and useful. However the analysis by content area revealed that when courses were grouped, undergraduate courses contributed largely to the overall difficulty of the examination. Generally, it may be concluded that questions related to the basic tenets of the field, plus questions requiring practical application contributed most heavily, and that complex medical and scientific course material also contributes to question difficulty.

Though informative, the quantitative data of this investigation lack sufficiency to reveal the exact nature of the performance gap for an individual test taker. Hence, an analysis of the difficult questions was conducted to gain insight from the answer selections of participants. A difficult question was presumed to be "ambiguous" when 50 percent or more participants who answered incorrectly exhibited preference for the same wrong answer which, for purposes of this research, was designated as the "alternative response." Among the 82 difficult questions, 23 met the criterion for designation as ambiguous (Refer to Table 1).

Ambiguous questions occurred in each of the course and content area categories, however there was a preponderance of ambiguous questions (n=10, [45%]) in the content area of Clinical Management. These findings are consistent with those from the analysis of difficulty, since questions from this content area were most numerous and they represented a sizeable portion of the difficult questions.

It was not surprising that most ambiguous questions were found in Clinical Management which is naturally subjective in nature in that the questions, as well as the answer choices are constructed from the perspective of the item writer. Since the test taker would be expected to assume the exact mental perspective of the item writer, there is a possibility for mismatch of the cultural perceptions or viewpoints.

As an exemplar, the following question, found to be ambiguous, reflected a possible mismatch of perspectives. The intended correct answer is (D), however 32 percent of participants selected (C).

A 5-year-old boy with cerebral palsy exhibits multiple articulation errors characterized by slow and labored speech, general slurring, and some problems with saliva control. The vowels and plosives are generally recognizable; the sibilants and fricatives are inconsistent, sometimes intelligible, sometimes distorted, and sometimes omitted. The boy's parents want their son's speech to improve. The speech-language pathologist can most appropriately suggest which of the following treatment strategies.

A. Intensive drill on isolated fricatives, emphasizing the accuracy of articulatory movements, and monitoring for generalization to new words

B. Extensive ear-training exercises with emphasis on the child's ability to judge the accuracy of his own productions and the development of a self-monitoring system

C. Development of a parent-training program, with exercise routines to be implemented in the home setting, with the parents providing regular practice on target sounds

D. A multifaceted approach combining a synthesized speech system, an analysis of communicatively important targeted words, and practice producing the nearly intelligible words

(adapted from Educational Testing Service, 1995).

For this question, ambiguity is evident from the relatively large percent of participants choosing (C) which can arguably be a reasonable answer, particularly since treatment approaches in schools strive to maximize parental involvement. Moreover, synthesized speech (D) would appear to be incorrect, even inappropriate, since it fails to honor the parents' desire. According to the prescribed explanation for the correct answer, the test taker was expected to evaluate the relative success rates of the various treatment approaches and select the approach with the highest success rate. The ambiguity in this question relates to the different perspectives on what should receive higher priority—empirical soundness, or social acceptability of the procedure.

A subset of the ambiguous questions was further examined for potential cultural bias. It was not presumed that a question was culturally biased simply because it was ambiguous. Therefore, this analysis subjected questions to a more stringent standard of 70 percent or more participants selecting the alternative response. A total of 10 questions met this criterion, and these were examined for potential cultural bias (Refer to Table 1). Cultural bias was presumed when the alternative response would be reasonably selected because of the participant's lack of test-wiseness, or use of culturally based reasoning, i.e., wholistic cognitive style. In estimating the Praxis score, it was determined a test taker who answered these 10 questions with the alternative response would receive a penalty equal to score 60 points.

The following question is an example of potential cultural bias. The correct answer, (C), was selected by 32% participants. Of those who answered incorrectly, 76% chose (D).

On the Khan-Lewis Phonological Process Analysis profile, a 3-year-old African American child shows weak syllable deletion, initial-cluster reduction, /θ/ becomes [t], and /r/ becomes [w]. It can concluded from this pattern that the child

A. shows significant delay in phonological processing

B. has a possible hearing loss that must be investigated further

C. is showing normal development of phonological skills

D. is showing features of African American English in addition to several phonological processing errors

(adapted from Educational Testing Service, 1995).

Indeed, more participants selected the alternative response than the correct response. The potential bias is reflected in the participants' probable expectation that since the focus was an African American child, the concept being tested was avoidance of misdiagnosis based on dialect features, notwithstanding the fact that w/r substitution is a phonological processing error. Moreover, it may be reasonably argued that (C) and (D) are essentially the same answer since a 3-year-old of any ethnicity would display the phonological errors described. This pattern of reasoning is an example of wholistic cognitive style.

DISCUSSION

By analyzing performance on a simulated Praxis examination, this investigation attempted to shed light on the performance gap for African American test takers on the Praxis. Although many questions were found to be difficult, performance of our participants roughly mirrored the national pass rate. Generally, our results were predictable in that the basic theoretical and distant undergraduate courses, as well as the scientifically complex graduate courses proved to be most difficult. The trends observed in this investigation were logical and predictable, thus we contend that the findings of this investigation can be broadened beyond the performance of African Americans to the general population of test takers.

This investigation revealed that lack of knowledge in specific course areas by participants, as well as cultural affected performance. This information, plus knowledge about the difficult areas can assist test developers, training programs and graduate students to address the test performance gap for the Speech-Language Pathology Praxis.

Implications for Test Developers

The Praxis is constructed and administered by ETS in conjunction with ASHA. Typically, adjustments and modifications to the examination are made in accordance with new research innovations and changes in practice. An important implication of this research is the necessity for identification and redistribution of difficult questions among all the content areas.

While ETS has access to an extensive validation process to ensure fairness of its examinations using the Differential Item Functioning (DIF), this measure is not practical for the Speech-Language Pathology Praxis since the pool of test takers from ethnic minorities is small. However, analyses using the methodologies of this investigation would be useful for identifying questions that are potentially culturally biased.

Despite the inherent issues, it is unlikely that the multiple choice format for the Praxis will be eliminated. However, ETS and the ASHA Praxis Advisory Committee may consider alternatives to the current all-or-none scoring system that introduces a scoring bias when questions are ambiguous. An alternative would involve partial credit for the alternative response. A post hoc analysis of African American test takers' answers would reveal questions that should ultimately be eliminated. Many other creative ideas for scoring adjustment can be accommodated with the new online testing platform introduced in 2014.

Implications for Training Programs

The implications of this investigation are not exclusive to African American test takers. However, there are several logical implications for HBCUs, minority serving institutions and any program desiring to ensure the success of its students.

Foremost, our findings support the need for instruction or review of clinical management theory and principles at the graduate level, i.e., learning theory, behavior modification and response shaping. Traditionally, course content in clinical methods is provided in the undergraduate curriculum in a didactic course in the absence of extensive knowledge of the disorders, or opportunities for application through practicum. Contrastively, graduate courses focus heavily on the nature and etiology of speech and language disorders, albeit without the general theory and principles assumed to have been gained at the undergraduate level. Yet, it is the precise application of these basic theories and principles which is reflected in the questions from graduate level courses.

Hence, programs wishing to ensure the success of their students would be well served to focus graduate courses on clinical applications, e.g., clinical decision making, best practices and evidence based practices. It is often observed that some students, although they may exhibit the knowledge of the profession, are not necessarily endowed with the ability to transfer academic information to practice, particularly when presented with questions presented hypothetically such as the questions on the Praxis.

Implications for Test Takers

While the findings of this investigation do not purport to pinpoint particular weaknesses in undergraduate or graduate curricula, individual students may benefit from the strengthening of their knowledge of scientific and medical course content. Students typically prepare for the Praxis by reviewing graduate course material while focusing on the courses most difficult for them personally. Yet as many as one-third of the questions are from undergraduate courses. An important implication of this research is that course review should focus equally on undergraduate material. In addition, rather than concentrating on courses that are most difficult, test takers should concentrate their review on the content categories with the highest volume of questions i.e., Clinical Management.

Test takers should also recognize that questions, particularly those related to clinical management, can be subjective in nature. Hence, test takers should recognize that they will be expected to adopt a universal perspective. While taking the Praxis, test takers should expect and learn to recognize subjective questions. When selecting the answer to subjective questions, test takers should avoid answering based on their personal experiences and perspective. Rather, test takers should strive for opportunities to display their "book knowledge" while making clinical decisions. These qualities are developed through familiarity and practice with Praxis type questions. Therefore, in addition to course review, test takers should seek multiple opportunities to practice with Praxis type questions.

It is well agreed that the field of speech-language pathology is enriched by its cultural diversity and diversity of perspectives. The Praxis has traditionally been a barrier to full inclusion of minority individuals in the profession. While the nature of cultural bias in the Praxis requires further exploration, this investigation is a step toward that exploration and understanding.

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ECHO: Journal of the National Black Association for Speech-Language and Hearing

BEYOND THE LYRICS: A PHONOLOGICAL ANALYSIS OF HIP HOP/RAP MUSIC

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ABSTRACT

Hip Hop and Rap Music emerged in the late 1960s to early 1970s as a new form of musical expression, appealing to many across various spectrums (e.g. race, age, geographical regions, education level, SES, etc.). Its influence on the speech of African American youth is profound. The present study focuses on the phonological features Hip Hop/Rap Music as it progressed from its budding subculture infancy in the early 1970s, starting with the historical precursors of the mid 1960s, to its current explosion into the new technologies of mass media. The current research explored linguistic characteristics of African American English within the Hip Hop/Rap genre of music by longevity and region. Significant phonological differences were found across longevity/era (Pioneers, Old School, New School and Contemporary). Minimal differences were found geographically (east coast, west coast and the south). As this musical entity continues to grow in popularity and blur the distinction between a variety of sects (e.g. SES, geographical, ethnic, age, educational levels, etc.) and mediums (e.g. speaking, spelling, literature, etc.), it is vital that speech-language pathologists explore and stay current with the evolving phenomenon.

KEY WORDS: African American English; Dialect; Phonological features; Sociological issue

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INTRODUCTION

Oh you know what else they tryin to do
Make a curfew especially for me and you
The traces of the new world ordah
Time is getting shortah
If we don't get prepared people it's gone be a slaughtah

"Cell Therapy" – Goodie Mob (1997, track 5)
New School Artist; Southern Region

African American English (AAE) is a social and ethnic dialect spoken by many African Americans with a slave ancestral history (Stockman, 1996). It has a hypothesized pidgin or creole origin dating back to the early 1700s (Rickford, 1998). In 1977, Geneva Smitherman published "Talkin and Testifyin: The Language of Black America" a seminal discussion about Black English that contributed greatly to our understanding of this complex and rich language. Smitherman described Black English as having two dimensions: language and style. She also raised the question, "How could blacks claim American equality if they were not speaking American lingo?" (Smitherman, 1977, p. 11). Some African American "intellectuals" wrote and rapped in the black idiom to preserve the language's distinctiveness in the literature (e.g. Richard Wright, Zora Neale Hurston, Toni Morrison, etc.). Discussions concerning the de-creolization of Black English to become more Americanized have frequently taken place in which a continuum of views emerged.

Fast forward to today, where we find individuals from all walks of life mesmerized by a genre of music that was given life by the language and style of African American English. This genre of music known as hip hop/rap, is highly influential with a huge loyal following. This popular cultural entity appeals to many races and ethnicities across a variety of ages, geographic regions and educational backgrounds. It is a form of lyrical delivery laid over a musical backdrop of sampling, scratching and mixing. Hip hop/rap music is characterized by both strong and subtle innuendos created through words, phonological elements and unique suprasegmental features. African American English form (phonology, morphology and syntax) and content are central to the structure and style of this musical phenomena and can be described as the generative source of this expressive cultural movement.

Although the beginning of rap music is said to have its beginning in the late 1960's to early 1970's, a connection to the story telling and rumored encoded messages in the Negro Spirituals can be made. Negro spirituals are the earliest form of song expressions by African Americans. Negro spirituals are defined as, "Black religious songs that possess a lyrical quality and express a wide range of emotions including; hope, pain, fear, and joy". African slaves came from a strong history of vigorous singing and continued this ritual once they were brought to the United States. Language, however, was one of the primary changes to the slaves' singing/songs (Brooks, 1984; Parker, 1999).

The beginning of rap music followed the black cultural consciousness movement with Rosa Parks' refusal to move to the back of the bus in 1955 (Hip Hop artists, Outkast, rapped about this in 1998, track 3) and Martin Luther King, Jr's emergence as a prominent figure in the civil rights movement. This was a critical period in American history in which African Americans fought for civil rights through marches, rallies, and other non-violent demonstrations that were almost always met with by violent opposition. Additionally, it was during this period that African Americans were concerned with defining their own culture and pride. Music, particularly a type of music called soul music, addressed all these issues. The term 'soul music' was used increasingly as a forum for Black expression as well as to designate an entire field of music being created by African Americans. In the sixties, music gave the African American artists a vehicle of expression which served as a concept of Black identity, but also of black musical expressiveness and creativeness (Brooks, 1984; Parker, 1999).

Smitherman (1977) writes about "black orators, creative artists, and scholars rappin the Black Thang" (p. 2) and Reverend Jesse Jackson using black rhythmic speech. African American English language and style with its controversial and often stigmatizing beginning has traversed the airwaves and made its way to the iPods, iPads and other portable media players of people of all ages and from every walk of life. People from diverse regions and backgrounds find themselves listening to and singing the catchy lyrics of many of the hip hop/rap artists. Out of the mouths of babes comes phrases such as "crank dat", "how you do dat dere", "watch me ro", "sippin on the sizzurp", and "walkin down the street smoking." Studies have indicated that teenagers were exposed to music ranging in time from 16.8 hours to 40 hours per week (American Academy of Pediatrics, 1996; Rideout, Roberts & Foehr, 2008). The amount of exposure is most likely increasing as the affordability, availability and portability of listening devices has also increased. Additionally, air time on many smooth jazz radio stations have given way to the more popular rhythm & blues and rap music format. In an article discussing the demise of straight ahead jazz, Adler (2012) laments the fact that "stations are playing more hardcore rap stuff" (p34).

The present research is part one of a two part study systematically investigating facets of African American English contained in hip hop/rap music. The current study analyzes hip hop/rap music for several phonological features common to African American English. The analyses in this study dissect some of this genre's most popular songs by longevity (era) beginning with those released during the music's budding subculture infancy in the late 1960s/early 1970s to its current explosion into the new technologies of mass media today. This study also phonologically analyzed the music for regional differences (East, West and South) taking into consideration the pattern of Hip Hop/Rap music development and pre-identified rap regions.

The overall goals of this study were:

- To compare the amount of cluster reduction occurrences (in hip hop/rap music by longevity (Pioneers, Old School, New School and Contemporary) and region (East Coast, West Coast, and South).
- To compare the amount of substitution processes in hip hop/rap music by longevity and region
- To compare the amount of structural changes (singleton and syllabic reductions or additions) in hip hop/rap music by longevity and region

METHODS

A representative group of 944 Hip Hop/Rap artists from the three primary rap regions (East, West and South) spanning the 1970s to current day were considered for inclusion in the current study (www.rapartist.com). Eight researchers narrowed the comprehensive list of artists to two hundred and sixty three (263) rap/hip hop artists by identifying artists familiar to four or more (50%) of the researchers.

The 263 familiar artists were sub-classified by geographic region and longevity (e.g., Pioneers, Old School, New School, and Contemporary) in the rap industry. A total of 21 artists were then identified for analysis based on data from Billboard.com. Billboard.com uses data from song sales and airplay to rate popularity.

Geographic Region

Using the growth pattern of the hip hop/rap music movement and development (East, West and South) in the United States, three prominent regions were identified: East Coast–New York, New Jersey, Washington, DC area; Detroit (north east); West Coast– California, Las Vegas; and South – Georgia, North Carolina, South Carolina, Louisiana, Mississippi and Texas. The artists analyzed were counterbalanced by the three geographical regions (seven per region) based on their place of birth, musical influence/connections or record label location (see Tables 1-3).

Table 1. East Coast Artists and Songs Analyzed.

	REGION: East Coast						
Artist	Kurtis Blow	Grandmaster Flash	Afrika Bambaataa	Queen Latifah	MC Lyte	Kanye West	Lil Kim
Songs	The Breaks	The Message	Planet Rock	Unity	Cha Cha Cha	Gold Digger	Queen B
	Basketball	White Lines	Looking for the Perfect Beat	Ladies First	Cold Rock a Party	Through the Wire	The Jump Off

Table 2. West Coast Artists and Songs Analyzed.

	REGION: West Coast						
Artist	Ice Cube	Snoop Dogg	Tupac	MC Hammer	Too Short	Ice T	The Game
Songs	You Can Do It	Gin and Juice	Dear Mama	2 Legit 2 Quit	Shake That Monkey	New Jack Hustler	Hate It or Love It
	Kool Aid	Drop It Like Its Hot	Thug Life	You Can't Touch This	Life is Too Short	OG-Original Gangster	West Side Story

Table 3. Southern Artists and Songs Analyzed.

	REGION: South						
Artist	Lil Wayne	Goodie Mob	Juvenile	Luke	Gucci Mane	Waka Flocka	Soulja Boy
Songs	A Milli	Cell Therapy	Back That 'Thing' Up	Pop that	Lemonade	Hard in Da Paint	Turn My Swag On
	Fireman	Dirty South	Slo Motion	I Wanna Rock	Freaky Gurl	Oh Le Do It	Crank Dat

Longevity

The same artists were classified into four longevity categories (see Table 4). The pioneer era begins with the rise of hip hop culture which included the emergence of Afrika Bambaataa in the years 1970 to 1973. The pioneer era was considered to have symbolically ended with the release of Run DMC's "It's Like That" in 1983, which marked the end of old school rap styles. The decades of the 1980s (Old School) and 1990s (New School) was characterized by hip hop/rap's large scale movement into mainstream media and the emergence of the West Coast and Southern regions as substantial areas of hip-hop and rap production. The more recent Contemporary Era is represented by 2000s to the present day and is characterized by the mass use of the Internet as a means for attaining new music (Brooks, 1984; Parker, 1999).

Table 4: Longevity of Artist.

Pioneers (1970-1979)	Old School (1980-1989)	New School (1990-1999)	Contemporary (2000-present
Afrika Bamabaataa	Ice T	Goodie Mob	Gucci Mane
Grandmaster Flash	Luke	Ice Cube	Soulja Boy
Kurtis Blow	MC Hammer	Juvenile	The Game
	MC Lyte	Kanye West	Waka Flocka
	Queen Latifah	Lil Kim	
	Too Short	Lil Wayne	
	Tupac	Snoop Dogg	

The researchers attempted to counterbalance the 21 artists by both Region and Longevity. This was, however, not possible as certain regions produced more popular artists at various points in time.

Design of the Phonological Analysis

Two popular songs from each artist were analyzed using common speech sample analysis procedures. Lyrics (speech sample/ transcripts) for all songs were obtained from Urbanlyrics.com, AZlyrics.com or Metrolyrics.com. For consistency, two verses and one chorus from each song was analyzed for the three classes of phonological features. The features included: cluster reductions (e.g., best→bes; bend→ben); substitutions (e.g., them→dem; with→wit; syrup→sizurp); and structural changes in terms of consonant & syllabic reductions/additions (e.g., b****→beyotch; work→wizerk). Each of the three phonological categories was evaluated for differences between geographical regions and longevity eras.

Training of the coders was performed to ensure validity and consistency in identifying the phonological features. Six one hour sessions were conducted in which phonological processes were reviewed, the three categories and subcategories were outlined and songs were analyzed and discussed.

The protocol for phonologically analyzing the samples consisted of the coder listening through quality, noise cancelling headphones to the song a minimum of five times. During the first phonological listening session: researcher familiarized self with the song. Second phonological listening session: researcher transcribed/altered the written lyrics to be phonologically verbatim with song. Phonological listening sessions three through five: researcher listened to song coding one class of phonological processes at a time. See Appendix A for an example of a coded verse.

RESULTS

Songs were phonologically analyzed for differences in the amount of (1) cluster reductions, (2) substitutions, and (3) structural changes (singleton/syllable additions/reductions) by region and longevity. Analysis of variance (ANOVA) was conducted for each phonological category by region and longevity.

Region

The total number of phonological features was compiled for (1) east coast, (2) west coast, and (3) southern artists. The means for the phonological categories for each region are shown below in Table 5. The substitution processes used by east coast artists were significantly different ($p=0.0001$, alpha= 0.05) from those used by artists from the west and south. There were no significant differences across the three regions for cluster reduction/ deletions and syllabic structural changes (see Table 6).

Table 5. Means of Phonological Features by Region.

Geographic Region of Artist	MEAN CLUSTER REDUCTIONS	MEAN SUBSTITUTIONS	MEAN STRUCTURAL CHANGES
East Coast	24.14	25.71	8.71
South	19.14	56.43	19
West Coast	19	58.71	19

Table 6: Analysis of Variance of Phonological Features by Region.

		Sum of Squares	df	Mean Square	F	Sig.
CLUSTER REDUCTIONS by Region	Between Groups	120.095	2	60.048	.310	.737
	Within Groups	3485.714	18	193.651		
	Total	3605.810	20			
SUBSTITUTIONS By Region	Between Groups	4754.381	2	2377.190	13.353	**.0001***
	Within Groups	3204.571	18	178.032		
	Total	7958.952	20			
STRUCTURAL CHANGES By Region	Between Groups	493.714	2	246.857	.856	.442
	Within Groups	5193.429	18	288.524		
	Total	5687.143	20			

* = 0.05 significant level

Figure 1 below reveals more substitutions are evident in the music of artists in the west coast and south. Artists on the east coast used half the amount of substitutions.

Figure 1. Substitutions by Region.

Longevity

The means for the phonological features are shown in Table 7 across the four longevity eras. ANOVA results (see Table 8) showed significant differences across the three phonological categories (cluster reduction, substitutions, and structural changes) by eras. Substitution processes (p=0.024) and syllabic reductions/additions (p= 0.037) used by the pioneers artists were significantly different (alpha = 0.05) from those used by the old school, new school and contemporary artists. The cluster reduction process (p=0.10, alpha=0.10) also showed significance differences.

Table 7. Means of Phonological Features by Longevity.

Era of Artist	MEAN CLUSTER REDUCTIONS	MEAN SUBSTITUTIONS	MEAN STRUCTURAL CHANGES
CONTEMPORARY	32.25	60.75	36.5
NEW SCHOOL	14	50.57	10.43
OLD SCHOOL	17.71	47.71	11.86
PIONEER	28.33	18.33	8.33

Table 8. Analysis of Variance of Phonological Categories by Longevity.

ANOVA Table - Longevity						
		Sum of Squares	df	Mean Square	F	Sig.
CLUSTER REDUCTIONS By Era	Between Groups	1084.964	3	361.655	2.439	**.100****
	Within Groups	2520.845	17	148.285		
	Total	3605.810	20			
SUBSTITUTIONS By Era	Between Groups	3314.393	3	1104.798	4.044	**.024***
	Within Groups	4644.560	17	273.209		
	Total	7958.952	20			
STRUCTURAL CHANGES By Era	Between Groups	2190.905	3	730.302	3.551	**.037***
	Within Groups	3496.238	17	205.661		
	Total	5687.143	20			

* = 0.05 significant level
** = 0.10 significant level

A visual comparison of the three phonological features across time reveals mean cluster reductions varied by initially decreasing and then dramatically increasing (see Figure 2). Substitutions in rap music showed a consistent increase across time (see Figure 3) while minimal structural changes were noted from 1970 – 2000. A significant increase in the amount of structural changes was noted in Contemporary artists (2000-Present). See Figure 4.

Figure 2. Cluster Reduction by Longevity.

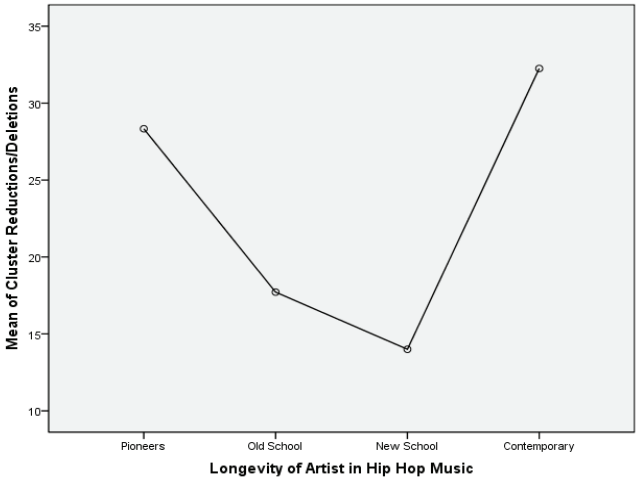


Figure 3. Substitutions by Longevity.

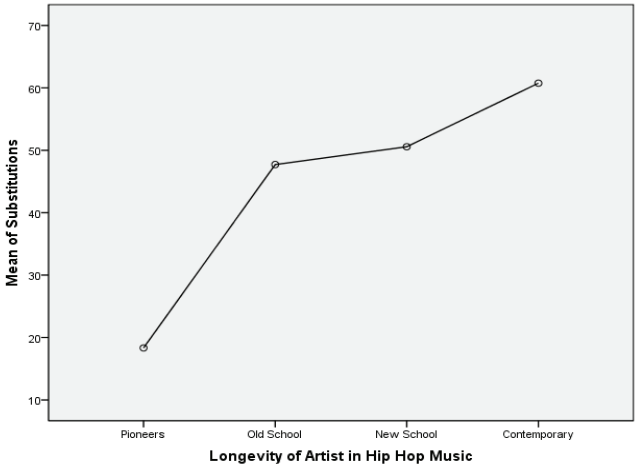
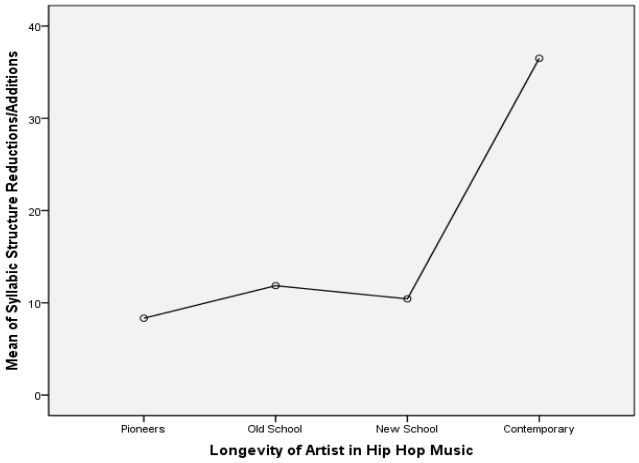


Figure 4. Structural Changes by Longevity.



The researchers noted that the Contemporary artists used all phonological features regardless of their region. Artists such as Waka Flocka and Souljah Boy contributed greatly to the total number of phonological features/processes. New school artists, Kanye West and Snoop Dogg contributed greatly to the number of substitutions recorded.

DISCUSSION

The major findings of this study reveal hip hop/rap music as a dynamic, unique and evolving entity. Phonological features of hip hop/rap music are changing across time and, to a lesser degree, changing across geographic regions.

Longevity

Throughout the study, Old School and New School appeared to be mirror images of each other. The least amount of changes was observed between Old School (1980-1989) and New School (1990-1999). Cluster reductions, substitutions and syllabic changes were prevalent in their music but primarily to an equivalent degree across the 20 year period.

The use of cluster reductions seemed to rise and fall by era with the Pioneers and Contemporary artists using the most in their lyrics. The New School hip hop artists used the least amount of cluster reduction. A noticeable decrease in cluster reduction occurred between Old School and New School artists. With the exception of a few (e.g. Luke and Lil Wayne), the artists during the 1980-1999 distinguished themselves as being intelligible and understandable artists. Tupac and Snoop Dogg practiced a style of rap that was characterized by slow beats and clarity (Lu, 2013). Old and new school, female artists such as MC Lyte, Queen Latifah and Lil Kim's music is also characterized by clear, understandable rapping/stanzas.

Of particular interest is the significant increase in the amount of substitutions and syllabic changes between Pioneer artists (e.g. Afrika Bambataa) and the artists of today (e.g. Waka Flocka). Artists such as Afrika Bambataa, Kurtis Blow and Grandmaster Flash were pioneers establishing a new frontier for many African American rap musicians to follow. In the 1970's, African Americans embraced this new genre of music as a consumer. There were, however, limits on how much these artists could extend their creative and poetic license. During the pioneer's era, public scrutiny was vast from both European Americans and African Americans. European Americans controlled the airwaves and African Americans were cautious as this music had the potential to become a musical genre hailed as representative of African Americans as a whole.

Evidence of an increase in linguistic creativity is seen in the growth of structural changes used from the pioneers through the contemporary artists. Contemporary artists' use of syllabic structures is both qualitatively and quantitatively noteworthy. Waka Flocka, Souljah Boy and Gucci Mane appear to have massaged the English language into an entity that combines words at one's own discretion and make phonological/orthographic changes whenever desired. Songs with titles such as "O Le Do It", "Crank Dat" and "What I'm Talking Bout" are a relatively common occurrence in the contemporary era.

The prevalence, however, of linguistic liberties actually became evident in the music of Snoop Dogg and Kanye West. These two New School artists were a rarity in their era. It is possible that their creative bravado may have contributed to their success and distinctive sound.

By 2000, African Americans were the consumers and the producers, financiers and promoters. The level of controversy surrounding the content of the music added to the appeal and artists began to increase their linguistic creativity thus defining their sound and distinguishing their music. One could question if there is a link between linguistic liberties in lyrics and popularity/airplay.

Region

An unexpected finding was that regional phonological differences were not significantly prevalent across all three phonological categories. This lack of significance is surprising as linguists have long recognized geography as a major contributor to language variation. It has been noted, however, that the rules are likely to alter slightly from region to region. There is a gradual shift with no clear-cut breaks versus glaringly obvious difference (Atchison, 1991).

The only significant phonological difference between the regions was substitutions. East Coast artists used less substitutions than the West Coast and Southern artists. The phonological characteristics of the West Coast and Southern artists were identical within the music examined. This finding was unexpected as the researchers felt more similarities would exist between the East (northeast) Coast and South due to factors related to slavery migration patterns and the geographic regions where, historically, there is more of a concentration of African Americans. From 1970-2010, African Americans have constituted an average of 19% (South), 11% (Northeast) and 5% (West) (U.S. Census Bureau, 2012).

A more plausible explanation for the lack of linguistic variation based on geography would be access to media and technology. The ability for artists and consumers to access music has continuously grown and evolved and become more global than ever. No geographical walls or boundaries exist.

CONCLUSION

As this musical entity continues to grow in popularity and blur the distinction between a variety of sects (e.g. SES, geographical, ethnic, age, educational levels, etc.) and mediums (e.g. speaking, spelling, literature, etc.), it is vital that speech-language pathologists explore and stay current with the evolving phenomenon. The amount of time young people spend with entertainment media has risen dramatically, especially among minority youth. Today, 8-18 year-olds devote an average of 7 hours and 38 minutes (7:38) to using entertainment media across a typical day (more than 53 hours a week). Additionally, because they spend so much of that time 'media multitasking' (using more than one medium at a time), they actually manage to pack a total of 10 hours and 45 minutes worth of media content into those seven days of the week. More time and influence may be yielded by the media community than any other factor (Rideout, Roberts, & Foehr, 2010).

The need and appropriateness of utilizing Hip Hop/Rap Music as a teaching, research and clinical tool in speech-language pathology is apparent. The phonological comparisons conducted within this study are the beginning of a series of planned analyses and comparisons. An image category (Mainstream/Crossover, Hybrid and Controversial) will be used to compare the artists across phonological features. Additional linguistic analyses will target semantics (content) and the sentence/verse structure (syntax) of the songs.

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APPENDIX A

Sample verse analysis for three phonological categories.

Song/Artist: West Side Story/The Game **Region:** East Coast **Longevity:** Contemporary

EZ Lyrics*	Production	Phonological Feature
I'm **lowridin** homie, 6 Tre impala	loraɪdɪŋ→loraɪdɪn	Nasal for nasal substition **
Gold spinnin chrome hydraulics	gold→gol spɪnɪŋ→ spɪnɪn	Cluster reduction*; Nasal for nasal substitution**
Run up on my low-low you **stop breathin**	stɑp→stɑ briðɪŋ→ briðɪn	Structural change (CCVC to CCV)***; Nasal for nasal substitution**
Hollow tips make **niggas** disappear like houdini	nɪgəz → nɪgəz	Derhoticization**
Gang bangin is real	geŋ→ge: beŋgɪŋ→beŋgɪn	Structural change (CVC to CV)***; Nasal for nasal substitution**
Homie I'm **livin** proof like Snoop Dogg C-Walkin on top of **da** devils roof	lɪvɪŋ→ lɪvɪn ðə→də	Nasal for nasal substition **; Stopping of fricative**
Rap critics wanna converse, about this and that		No phonological categories noted
Cuz red strings in this converse and this a Dre track	bikɔz→kʌz ðə→də	Structural change (CVCVC to CVC)***; Stopping of fricative**
Keep jibberin jabberin, I'll pull a .38 magnum	ʤɪbɜ˞ɪŋ→ ʤɪbɜ˞ɪn ʤæbɜ˞ɪŋ→ ʤæbɜ˞ɪn	Nasal for nasal substutitution; Nasal for nasal substitution**
And get the clickin and clackin	klɪkɪŋ→klɪkɪn klæekɪŋ→klæekɪn	Nasal for nasal substutitution; Nasal for nasal substitution**

* Phonological category – cluster reduction
** Phonological category – substitutions
***Phonological category – syllable structure changes

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CAREGIVERS' PERCEPTIONS OF BURDEN WHEN PROVIDING CARE TO LOVED ONES WITH CHRONIC NEUROLOGIC HEALTH CONDITIONS

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ABSTRACT

This review acknowledged that caregivers experience both positive and negative outcomes from providing long-term care. It may be of benefit for a future review to further explore specific aspects of caregiving, such as, strengthened relationships between caregiver and care recipient, increased spirituality on the part of the caregiver, and increased caregiver life satisfaction. A future review might also look at cultural differences in caregiving amongst caregivers to persons with chronic neurologic health conditions. Research that adds to the body of literature regarding the caregiving experience will aide allied and medical health professionals in structuring individual caregiving interventions that improve the outcomes for both caregiver and care recipient.

KEY WORDS: long-term healthcare, caregiver experience, caregiving, chronic illnesses

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INTRODUCTION

Former First Lady Rosalyn Carter stated, "There are only four kinds of people in the world, those who have been caregivers, those who currently are caregivers, those who will be caregivers, and those who will need caregivers" (Rosalyn Carter Institute for Caregiving [RCI], 2010). The RCI for Caregiving was created to promote the better understanding of the caregiving experience and its influence on both the caregiver and the care recipient (RCI, 2010).

A "caregiver" is defined differently in the literature. Most definitions of caregivers are separated into informal and formal caregiving systems (Winslow, 2003). The term formal caregiver is used to refer to a paid professional who has some degree of training in providing skilled care (e.g., home health providers) (Winslow, 2003). In contrast, an informal caregiver refers to those people related to the patient as close relative, extended relative, friend, or neighbor (Winslow, 2003). The generic term caregiver is used in this literature review to refer exclusively to an informal caregiver.

Caregiving has become a normal and virtually expected part of life for many Americans due to the increase in the number of people with chronic health conditions (RCI, 2010). This is also true for adults who have chronic neurological health conditions such as Parkinson's disease, dementia, Alzheimer's disease, and stroke. Eighty percent of persons who survive a stroke will return to their communities and require some degree of caregiving (Chumbler, 2004), which is often provided by a family member or friend (RCI, 2010).

Family members may choose to provide healthcare for family members because it allows the person with a chronic health condition to continue to be a part of the family unit as well as the community (Schulz, Martire, & Klinger, 2005). Other families may choose to provide care for loved ones because of cultural expectations (Hinojosa, 2009). Families may find that providing care in home is a necessity because of changes to health care legislation and the increasing cost of healthcare (Lim & Zebrack, 2004). There is also influenced by a shortage of healthcare professionals available to provide care and increasing life expectancy of patients, thus leaving the care of the patient to the family (Ekwall et al., 2006).

The population worldwide continues to increase. There are approximately 35 million Americans, aged 65 and older, alive today (RCI, 2010). This figure suggests that by the year 2030, there will be some 71 million Americans age 65 and older (RCI, 2010). This rising number of older adults will also increase the number of adults who require care. Current estimates place the number of older adults needing daily care at approximately 12 million (RCI, 2010). Estimates on the current number of familial caregivers providing care to adults ranges from approximately 25 million (Lim & Zebrack, 2004) to up to as many as 44 million (Wales, 2007 The rising number of caregivers and care recipients will likely have an influence on the health care industry, patient outcomes, and the economy.

The estimated economic value of the caregiver is approximately $257 billion, or 20% of all healthcare expenditure, if caregiving were a paid trade (Lim & Zebrack, 2004). Higher estimates of the economic value of the caregiver are approximately $375 billion dollars annually (RCI, 2010). This higher figure indicates that caregiving as a paid trade would equal the total expenditures for the Medicare Program ($342 billion in 2005) and Medicaid Program ($300 billion in 2005) (RCI, 2010). It is also estimated that caregiving expenditures are more than that of long term care and home health care expenditures ($206.6 billion in 2005) and at least four times more than the total expenditure for formal home health care ($76.8 billion in 2005) (RCI, 2010).

Managing the needs and providing care for a person with a chronic neurological health condition may lead to heightened distress on the part of the caregiver. This review of the literature will explore perceptions of caregivers towards factors contributing to

their own sense of burden and changed needs once becoming a caregiver. Strategies for limiting negative impact on caregivers will be noted and discussed as part of this review.

While this review will focus primarily on the negative aspects of caregiving, it bears mentioning that there are numerous positive benefits to becoming a caregiver. Caregivers may find that they have increased life satisfaction when providing care (Center on Aging Society, 2004). The caregiver and care recipient may strengthen their relationship (Center on Aging Society, 2004). Additionally, some caregivers report an increase in their spirituality as a result in caregiving and find this to be both positive for themselves and their ability to provide care (Spurlock, 2005). Some caregivers will experience resilience in even the hardest of caregiving circumstances (Tedeschi & Kilmer, 2005). Others experience Posttraumatic Growth (PTG) and will grow because of the traumatic event, in this case caregiving, and therefore experience positive changes in their lives (Tedeschi & Kilmer, 2005). This author is in agreement with the literature that there are numerous positive experiences that come out of providing care. These positive experiences warrant further investigation as a strengths based way of providing caregiver interventions (Myers, 2003).

BACKGROUND

The interest in understanding the caregiving experience is attributed to both the increasing number of caregivers and these caregivers' potential effects on patient outcomes (Lim & Zebras, 2004). Of particular interest are the perceived needs of caregivers that are shaped by their perceptions of the experience. Caregivers express a perception of burden as well as satisfaction when providing care (Andren & Elmstahl, 2005). Typically, research that looks at caregivers' perceptions of burden focuses on the relationship between stress and coping (Myers, 2003). Myers (2003) acknowledges that two theories surrounding stress and health are instrumental in understanding how to intervene.

The first theory is Schulz and Salthouse's General Model of the Stress Health Process (1999). This theory states that stressful situations begin when the care recipient exhibits some sort of limitation and then subsequently has a behavior that follows (Schulz & Salthouse, 1999 and Myers, 2003). The caregiver is then tasked with responding to that event in either a positive or negative way, which begins the cycle of positive or negative outcomes for the caregiver and care recipient (Schulz & Salthouse, 1999;Myers, 2003). The negative response to the initial event can lead to negative feelings, such as anger and resentment, and eventually lead to the perceptions of caregiver burden (Schulz & Salthouse, 1999; Myers, 2003).

The second theory described by Myer (2003) is Pearlin et al.'s (2003) Conceptual Model of Caregiving Stress. This theory states that there are four domains: family network, social networks, caregiving history, and socioeconomic status (Pearlin et al., 2003; Myers, 2003). Pearlin et al., (2003) describes the primary and secondary stressors (Myers, 2003). Primary stressors include subjective and objective assessments of burden, whereas secondary stressors includes things such as finances or family relationships (Pearlin et al., 2003;Myers, 2003). Subjective reflections of the caregivers' experience can have an influence on the caregiver and care recipient can have an effect on the both the caregiver and care recipient (Gort et al., 2007).

Caregivers tend to have better physical health in the initial phases of the caregiving experience (RCI, 2010). The outcomes for both caregiver and care recipient tend to be overall positive when caregivers express perceptions of contentment or joy with the caregiving experience (Niyomthai, Putwatana, & Panpakdee, 2003). Blume (1999) found that caregivers to persons with Alzheimer's disease experience a sense of hope and meaning when providing care. Caregivers who enjoy a positive caregiving experience are more likely to report a low number of family life events, moderate level of family hardiness, and overall positive sense of wellbeing (Niyomthai, Putwatana, & Panpakdee, 2003). A positive caregiving experience may lead to positive health and quality of life outcomes for the care recipient (Center on Aging Society, 2004). Additionally, caregivers will have better outcomes in terms of health and satisfaction if they view their role as caregiver as positive (Center on Aging Society, 2004).

However, some caregivers report a negative caregiving experience, which may have a negative influence on both the caregiver and care recipient. It is estimated that of all caregivers, 20-30% experience adverse effects that can be directly related to caring (RCI, 2010). This negative caregiving experience is referred to as caregiver burden (Garlo et al., 2010). Caregiver burden is defined as "the physical, financial, and psychosocial hardships of caring for a loved one struggling with a medical condition" (Garlo et al., 2010). Burden is a perception of the caregiver that is believed to occur due to the interaction of a variety of factors.

Research cites emotional and psychological factors as major sources of perception of burden (Winslow, 2003). Financial stressors are also reported as a major source of caregiver burden (Thompson, et al., 2004). Researchers have also found that declining family relationships (Hughs, 1999), increased feelings of anger and hostility (Anthony-Bergstone, 1988), decreased physical health (Whitlatch, 1997), and decreased psychological and emotional well-being (Hughs, 1999) may also contribute to perceptions of burden for the caregiver.

The burden of caregiving may manifest in the caregiver as declining caregiver health, declining quality of life, and increased mortality rate (Garlo, et al., 2010). Current research also shows that caregivers who express greater perceptions of burden exhibit

an increase in stress and depression (del-Pino-Casdo et al., 2011). Caregivers may experience decreased immunity, exhaustion, and self-neglect (RCI, 2010). Caregivers with heightened perceptions of burden are also at risk of substance use, including alcohol and drugs, and other negative health behaviors such as poor diet, lack of exercise, and decreased amounts of sleep (RCI, 2010). Approximately one in ten caregivers cites caregiving as a direct cause of their own declining health (RCI, 2010).

Care recipients are also at risk of negative outcomes because of caregiver perceptions of burden. The type and quality of care the caregiver is able to provide tends to weaken if caregivers perceive a decline in their overall sense of well-being (Ostwald, 2009). The caregivers' sense of wellbeing can influence their own health and the relationship between the caregiver and care recipients. This could potentially lead to negative health outcomes for the person receiving care. For example, persons receiving care from a caregiver who reports a perceived sense of burden and exhibits signs depression are more likely to exhibit signs and symptoms of depression (Chumbler, 2004). Caregiver burden may also lead to poor participation by care recipient in rehabilitation and increased risk of early entry into a long term care facility (Chumbler, 2004). Additionally, the care recipient is at an increased risk of abuse and neglect when the caregiver's needs are not attended to (RCI, 2010). The act of caregiving has numerous implications for the caregiver and the care recipient. Understanding the specific factors that lead to perceptions of burden will help to identify and address the specific needs of the caregiver.

The caregivers' report of burden as well as contentment and joy typically encompasses a wide range of subjective feelings (Gort et al., 2007). These feelings can be based on both internal and external factors such as finances, psychological conditions (e.g., depression), and physical health (Gort et al., 2007). Often, medical professionals seek to quantify these subjective reports with more objective data through the use of caregiver burden scales. Numerous caregiver scales provide some objective assessment of the amount of burden that the caregiver perceives (Gort et al., 2007). Scales available include the Perceived Caregiver Burden Scale (PCB) and the Zarit Scale (ZS). The ZS and PCB are widely used because of their good reliability and validity (Gort et al., 2007; Gupta, 1999). Use of scales to quantify the caregiver experience allow for deeper exploration into the caregivers' perceptions and may help medical and allied health professionals provided more person specific caregiver interventions.

Deeper exploration into the caregivers' perceptions of burden allow for identification of the multiple factors that contribute to perceptions of burden. One factor is the nature and type of chronic health condition of the person receiving care, which can affect the caregivers' perception of burden (Schultz, Martire, & Klinger, 2005). Garlo et al., (2010) found that there were differences in caregivers' perceptions of burden between those providing care for persons with heart failure and those providing care to persons with chronic obstructive pulmonary disease (COPD). Thus differences do exist; however, Garlo et al. (2010) caution that when examining the differences in the type of chronic health condition and their relation to differing caregiver burden, direct comparisons within a single study would be more beneficial. Direct comparisons will allow for the detection of true differences versus differences in study methodology (Garlo et al., 2010). Comparisons of caregiver perceptions of burden across different neurologic conditions is not within the scope of this review as it is intended to provide a broad overlook regarding caregiver burden with respect to care recipients who have chronic neurologic health conditions.

Caregiving to Persons with a Chronic Neurologic Condition

Caregiver burden often develops due to the numerous changes the caregiver experiences; it is thought to be a predictor of the caregivers' perceptions of strain and distress (Andren & Elmstahl, 2007). The caregiver to a person with a chronic neurologic condition will require different skill sets at different periods of time throughout the rehabilitation process (Andren & Elmstahl, 2007; Ostwald, 2009). The care recipient experiences changes in physical, cognitive, and emotional statuses that differ with the level of severity and overall disablement, thus requiring the caregiver to adapt to these changes (Andren & Elmstahl, 2007; Ostwald, 2009). The perceived sense of burden may be heightened in the initial stages of the rehabilitation process because of the rapid onset of these changes in the care recipient as in stroke (Ostwald, 2009) or the gradual but pervasive decline of skill seen as in dementia (Andren & Elmstahl, 2007) . Additionally, caregivers themselves experience a rapid onslaught of changes in their own lives (Ostwald, 2009). Changes in the emotional, psychological, financial, physical, and social aspects of their lives can influence the caregivers' perceived sense of burden (Andren & Elmstahl, 2007).

Social Impacts on Perceived Burdens

Social Networks

In the initial stages of caring for someone with a neurologic health condition, the caregiver may experience changes in the social aspects of their lives. It is not atypical for caregivers to feel as though they are isolated (National Family Caregiver Association, 1994). Caregivers reported a decline in life satisfaction, in part due to decreased socialization opportunities (Coughlan & Humphrey, 1982) and changed relationships (Anderson, 1988). Caregivers often report feelings of isolation because of loss of normalcy of their routines, including socializing (National Family Caregiver Association, 1994). Caregivers who once found themselves socially active may now be spending a majority

of their time with the care recipient. This in turn may lead to the caregiver engaging in self-neglect behaviors, which can increase the risk of poor health outcomes for the caregiver (RCI, 2010).

Caregivers also report negative feelings regarding their social networks of non-caregivers who, in their opinion, do not understand what it means to be a caregiver (National Family Caregiver Association, 1994). This could have an impact on how caregivers respond to their social networks. Caregivers frequently have to be engaged with the health care professionals who service the medical needs of the care recipient (Love, et al., 2005), yet often these caregivers require assistance that cannot be given by the health care systems, such as assistance with everyday chores, grocery shopping, or even respite (Levine, 2000). Some caregivers do not seek help from others in an effort to preserve existing social relationships outside of the care recipient (Stajduhar & Davies, 1998).

The caregivers' social network may perceive that the caregiver could use assistance and may seek to help the caregiver; however, they may withdraw offers of help and assume the caregiver is managing well if repeated attempts to help are not acknowledged (Worden, 2009). When caregivers find that the social network has stopped reaching out to them, they may then begin to feel as though their social network does not understand what their new caregiver role means (National Family Caregiver Association, 1994). This mismatch of communication may lead to decreased social support for the caregiver.

The social aspects of caregiving may also be dependent on the age of the caregiver. For example, caregivers providing care for patients with Motor Neuron Disease or Amyotrophic Lateral Sclerosis (MND or ALS) may find that they become caregivers in their middle ages, approximately 40-65 years of age. MND is a degenerative neurologic condition that affects 350,000 persons annually (Love, 2005). MND typically begins in the middle ages and progresses to the point where the person with MND requires care (Love, 2005). In contrast, the incidence of stroke increases after age 55, and thus many spousal caregivers find themselves providing care later in life (National Stroke Association, n.d.).

The age at which a person becomes a caregiver has an influence on the person's caregiving experience. Older caregivers tend to have their own health concerns that greatly influence their ability to provide care (Ekwall, 2006). It is estimated that 80% of people aged 65 and older have at least one chronic health condition, and 50% have at least two chronic health conditions (RCI, 2010). Older caregivers managing their own health may have difficulty coping with the potential burdens of caregiving especially if they have additional stressors (e.g., financial concerns prior to becoming a caregiver) (Ekwall, 2006). Middle age caregivers may have a caregiving experience that is distinct from the older caregiver.

Many middle age caregivers have family and social responsibilities that existed prior to becoming caregivers (Love, et al, 2005). The caregiver's social networks are also engaged in family and social responsibilities, which may limit the potential social support to the caregiver (Wilkinson & Bittman, 2001; Love, et al. 2005). Carol Abaya (n.d.), a journalist, has referred to people in this middle age group as the sandwich generation Abaya popularized this phrase after chronicling her own life as a caregiver to her children and aging parents in an article published in the New York Times by George James (1999).

People in the sandwich generation are males and females of middle age who find that they are providing care for children (or grandchildren) as well as aging parents (Abaya, n.d; James, 1999). The caregiver is caught, or "sandwiched," between two sets of care recipients, often with competing needs: the caregiver may be rearing children as well as responding to the changing needs of aging parents, with or without health ailments (Abaya, n.d.; James, 1999). The competing needs of the children and aging parents coupled with caring for someone with a neurologic health condition may increase the perception of burden in the caregiver. If caregivers are able to seek and receive support from their social network, they tend to cope much better with perceptions of caregiver burden even in the context of being in the sandwich generation (Waltrowicz et al., 1996).

Social support for the caregiver is a valuable caregiver intervention tool (Love et al., 2005). Caregivers with perception of increased burden often express a need for help with daily tasks; however, they may not always express a need for help with chores directly related to care of the patient (Garlo et al., 2010). Social support may be a safeguard to some caregivers (Grant et al., 2006), yet caregivers have a tendency to seek social support and distance themselves from that very support as time passes (Manne, 2003; Grant, 2006). Caregivers may perceive that they do not have support from non-primary caregivers or their social network, even though it is the caregiver who in effect is creating the distance (Mane, 2003; Grant, 2006; Shields et al., 2004). Family relationships can be affected by this distance causing the caregiver to feel as though they do not have support from their family members (Shields et al., 2004).

Caregiving can have potential negative consequences on family relationships (Shields et al., 2004). Sixty-six respondents to a survey reported decreased familial relationships in the context of caregiving (Shields et al., 2004). Caregivers who experienced familial relationship declines were at higher risk of mental health changes, including memory and behavior (Shields et al., 2004). Niyomthai et al. (2005) found that strong family bonds were positively correlated with caregiver well-being. Additionally, strong family bonds explained 31% of the variance with caregiver well-being (Niyomthai et al., 2005). Thus, caregivers' relationships with their families are a strong factor in caregiver well-being and influence in caregiver outcomes.

Difficulty with family relationships is not the only type of relationship that can be affected by caregiving. The marital strain of caregiving is well-documented in literature. This is particularly true for caregivers of spouses who have had strokes. Spousal caregivers to survivors of stroke and many other chronic neurological conditions are faced with caring for someone who's cognitive, social, and emotional skills; ability to complete activities of daily living; and physical abilities may be declined from their baseline (Dennis et al., 1998). Couples that have experienced a stroke are often more prepared for the life changes brought about by stroke; however, the first stroke generally comes without warning, and both the caregiver and the patient undergo many changes (Dennis et al., 1998). Caregivers typically feel as though they understand what to expect from the survivor of stroke in terms of health with proper patient and family education (Baumann et al., 2011). However, these same caregivers may not easily understand the influence that the stroke may have on familial and marital relations, especially in the context of a survivor with more subtle deficits (e.g., mental fatigue, emotional changes, and mildly decreased cognitive linguistic skills) (McCullagh et al., 2005). Caregivers report that these subtle deficits often have more of an impact on their social life, lifestyle, and marriage than do more pronounced deficits (Baumann et al., 2005).

Marital strain brought on by caregiving may be reflective of gender and social roles learned by men and women in childhood (Thompson et al., 2004). This idea is reflected in how men and women experience caregiver burden differently. For example, men typically report a feeling of "social injustice" when providing care, while women report more difficulty with the "physically demanding care provision tasks" (Baumann, et al., p.167, 2005). Women may also discuss the difficulties of the physical aspects of caregiving within the context of psychological or emotional realms (Sparks, 1998). This could explain why women exhibit more psychological or emotional strain (Sparks, 1998).

A person's gender identity affects how he or she provides care, irrespective of the relationship to the care recipient (Tiegs et al., 2006). When one member of the couple has a stroke, it forces an examination of each member's role (Pierce, 2004). Women account for approximately 64% of all caregivers and for a greater percentage of persons who report a perception of burden, at 80% (Center on Aging Society, 2005). In mainstream American culture, men are socialized to be more instrumental, whereas women are socialized to be more intuitive (Worden, 2009). Women typically define their social roles in terms of relationships (e.g., wife, mother, and daughter) (Miller, 1990). Interestingly, all of these roles reflect some type of caregiving (Miller, 1990).

Men may be expected to be more to be more managerial in their caregiving, while women may be expected to be more responsible for holding the family together (Carrol et al., 2008). Women in American society are typically responsible for the majority of caretaking roles, and therefore in the context of caregiving are expected to assume the role of spousal caregiver with ease (Collins & Jones, 1997). A study by Hagedoorn et al. (2002) looked at spousal caregivers of patients that survived cancer. While not specified if brain cancer was used as an inclusion category for participants, the study did find information about gender differences in caregiver burden. Hagedoorn et al. (2002) found that women who felt that their social identity was one of caregiver experienced more caregiving distress when they did not feel they were performing their caregiving duties well (Acitelli & Young, 1996). This was the same for male caregivers, although in general the female participants reported a higher degree of caregiver burden (Hagedoorn et al. 2002). Spouses reporting more perceived burden engaged in increased supportive behaviors to the loved one (Hagedoorn et al., 2002). Understanding gender roles occupied by the individual caregivers will be important in understanding the individual's caregiver role and perception of burden.

Finances

Financial considerations are identified as a potential factor in caregiver burden. Sixty percent of caregivers report that they continued outside employment while caring for a relative (Wales, 2007). Some of these caregivers chose to work, while others worked because of economic necessity. Approximately 10% of all caregivers who work outside of the home eventually had to scale back their hours to part time, and another 9% were forced to quit their jobs (Wales, 2007). Thirty-six percent of caregivers of survivors of stroke reduced their work hours or resigned secondary to the demands of caregiving (Ko et al., 2007). Thus, most caregivers who are employed prior to becoming caregivers will maintain some form of employment outside the home. The caregivers that continue to work are estimated to cost employers 33.6 billion dollars per year (Wales, 2007).

Ko et al. (2007) measured physical health, depression, fatigue, family functioning, and family conflict in a study aimed at examining how employment outside the home impacted caregivers. Ko et al. (2007) found that caregivers who were employed were at an increased risk of depression. However, these same caregivers were also more physically fit and had more assistance from others than their counterparts who were not employed outside the home.

A portion of long-term care expenditures for the care recipient is covered by various mixes of insurance, including Medicaid, Medicare, and private insurance (Center on Aging, 2004). However, many caregivers find that a great majority of the cost of caregiving will come out of pocket (Center on Aging Society, 2004). These costs include items not routinely covered by

insurance as well as the caregiver's own needs. Sixty percent of caregivers report that they have enough financial resources to provide care (Center on Aging Society, 2004). On average, caregivers have more economic resources than do their non-caregiver peers (Center on Aging Society, 2004). In 2000, it was estimated that adult children providing care to a parent had approximately $104,000 in total assets while non-caregiver children had approximately $77,500 (Center on Aging Society, 2004). The annual household income of an adult child caregiver was estimated at $54,000 while non-caregiving children had an estimated income of $55,000 (Center on Aging Georgetown University, 2004). Caregivers who reported lower incomes tended to have the highest rates of reported perceived burden (Center on Aging Georgetown University, 2004).

Employment can have both positive and negative impacts on the caregiver. Many studies report that caregivers employed full time may experience a myriad of negative consequences; however, these consequences are typically stated in terms of financial impacts and do not consider the impact on caregiver and care recipient (Scharlach, 1994). For example, negative aspects of being a caregiver who is employed full time can include increased potential for habitual absenteeism and tardiness, lack of promotability, and decreased job satisfaction (Anastas et al., 1987; Scharlach, 1994).

It is typically thought that caregivers who work will also be at an increased risk of caregiver burden; however, numerous studies show the potential benefits to caregivers working outside the home (Scharlach, 1994). These benefits include increased social support, respite, and feeling of satisfaction with completing something outside of caregiving (Goldstein et al. 1981; Scharlach, 1994).

Scharlach (1994) found that caregivers report both positive and negative aspects to being employed full time while providing care. These caregivers cited difficulty with managing time demands of multiple roles as the most difficult aspect of working and providing care (Scharlach, 1994). However, these same caregivers also indicated that they felt a sense of satisfaction in their ability to manage multiple roles (Scharlach, 1994). It is possible that working, even with its challenges to the caregiver, provides psychological well-being (Stoller & Pugliesi, 1989; Scharlach, 1994) and may act as a shield against many aspects of caregiver burden Goldstein et al., 1981; Scharlach, 1994).

Physical and Psychological Health

The physical and psychological/emotional aspects of caregiving are well-documented in the literature. On average, caregivers tend to be more physically fit than their non-caregiver counterparts (RCI, 2010). However, some caregivers report that they do not pay attention to their own health care as well as they should, thus placing themselves at an increased risk of chronic health conditions that impact their ability to provide care (Center on Aging Society, 2004). In a survey of caregivers in 2004 by Georgetown University's Center on Aging Society, 46% of caregivers reported having arthritis and another 39% of caregivers reported having hypertension. Other chronic health conditions reported included diabetes, cancer, chronic lung disease, heart conditions, and stroke (Center on Aging Society, 2004).

Caregivers who are able to manage their own health are also at risk for physical health changes. Thompson et al. (2004) looked at the emotional and biological responses of male and female spousal caregivers for persons with Alzheimer's disease. Thompson et al. (2004) found that even with no statistically significant differences in social support, coping mechanisms, or regulatory T cells (cells responsible for immunologic function), expression of physiologic stress tended to be higher in the female participants. Caregivers were also at increased risk of decreased immunity and response to vaccinations as well as increased reports of respiratory infections (Vitaliano et al., 1997).

In caring for a loved one with a neurologic impairment, the difficulty of managing one's own health may be a reflection of the care recipient's increased needs. For example, caregivers cited safety concerns, management of activities of daily living (ADLs), cognitive declines, and psychological/ behavioral changes as difficulties that they faced as caregivers during the first month post rehabilitation (Grant et al., 2004). These reported difficulties lead to caregivers' perceptions of loss of independence, fatigue, lack of time and energy, and decreased social outlets, all of which could have negative health consequences (Grant et al., 2004).

Heesacker et al. (2009) looked at caregiver mental health at one, six, and twelve months post stroke survivor discharge. Heesacker et al. (2009) found that at one-month post discharge, the biggest predictors of declines in caregiver mental health were a decreased sense of coherence, high perception of burden, experiencing depression, and a care recipient who required a significant amount of care. A care recipient who required a significant amount of care was one who demonstrated a significant memory or behavioral changes and/or significant motor impairments that led to decreased mental health functioning (Shields et al., 2004).

Depression is a major concern with regard to caregiving. Caregiver perception of burden may serve as a good predictor of caregiver depression with prediction of caregiver depression being made as early as one month after the care recipient has had a stroke (Berg et al., 2005). Berg et al. (2005) estimated that 30 to 33% of caregivers were found to be depressed at an 18-month follow-up using the Beck Depression scale. Severity of the stroke, age of the caregiver and care recipient, caregiver exhaustion (Berge et al., 2005), difficulty with problem solving on the part of the caregiver, lack of caregiver preparation to provide

care, decreased health and thus decreased social participation are correlated with increased caregiver depression (Weaver et al., 2004). Caregivers are also more likely than care recipients who have had strokes to exhibit depressive symptoms, and spousal caregivers were more likely to exhibit depressive symptoms than other familial caregivers (Berge et al., 2005). The literature shows that future caregiver depression can be predicted by caregiver burden. The ability to understand the ramifications of caregiver burden is important in designing caregiver interventions aimed at addressing the needs of the caregiver.

Caregiver Needs and Sense of Coherence

In discussing the needs of caregivers, a sense of coherence (SOC) may be one of the first places to begin (Ekwall, 2006). The idea of SOC appears in several caregiver studies, and the term was first coined by Antonovsky in 1987. Antonovsky was interested in understanding how some people, when faced with extremely stressful circumstances, remained healthy, while others, in less stressful circumstances, become sick (Antonovsky, 1987). SOC is thought to develop throughout childhood into adolescence and become more stable, and relatively unchangeable, in adulthood (Antonovsky, 1987). SOC is measured by the SOC scale developed by Antonovsky (Eriksson, 2006). Three components make up one's sense of coherence: comprehensibility, manageability, and meaningfulness (Antonovsky, 1987). A strong sense of coherence allows a person to be able to reflect on both internal and external resources and then use these resources to find solutions and increase their effective coping and reduce tension (Eriksson, 2006). It is thought that meaningfulness is the most important of the three components of SOC to understanding an individual's ability to cope (Ekwall, 2006).

A caregiver's perception of burden when providing care can be influenced by their SOC. Finding meaning in caregiving and a strong SOC were found to be highly correlated (Blume, 1999). Caregivers with a higher SOC tend to be less problem oriented, handle stress more effectively, and in turn solve problems more efficiently (Blume, 1999; Ekwall, 2006). Adult children caregivers with a strong SOC tend to exhibit low emotional arousal and higher perceived health (England, 1997). A person's SOC is useful as an internal strategy to handle crisis events (England, 1997). Allied health professionals should be aware of a person's SOC in facilitation of adult children to the role of caregiver to a parent (England, 1997).

SOC has emerged as an important aspect in caregiver wellbeing. Gallagher et al. (1994) found that the SOC of caregivers to patients with dementia was able to predict approximately 29% of the variance in role overload, or burden. A strong SOC is positively correlated with a positive perceived health status as well as health promoting behavior (Johnsen, 1992). Thus, caregivers with a higher SOC are more likely to perceive themselves as experiencing more joy from caregiving because they are better able to solve problems and engage in successful health promoting behaviors (Blume, 1999). This may be because caregivers with higher SOC have good health promotion skills prior to becoming caregivers (Johnsen, 1992). Taking into consideration how the caregiver is able to manage stressful situations is an important step in developing strategies and interventions to limit caregiver burden.

Strategies for Limiting Burden

In the current model of health care, the center of focus is typically on the patient. Typically, patients and families are looked at from the perspective of problems to be solved (Tedeschi & Kilmer, 2005). Families of adults with neurologic health conditions are often faced with the challenges of learning how to care for their loved ones with limited assistance (for review see Low, et al., 1999). Bakas et al. 2002 completed a study with African American and white caregivers to examine their perceived needs when providing care for a loved one who had a stroke. Bakas et al. (2002) found that there was more similarity amongst the African American and white respondents than might have been hypothesized. Caregivers reported needing education about strokes, assistance with managing behavior of the survivor of stroke, assistance with physical care, assistance with instrumental needs (e.g., transportation or finances), and assistance with coping with their own emotions (Bakas et al., 2002). All of the needs reported by the caregivers are supported by the literature as items that can increase perceived burden amongst caregivers as discussed earlier in this review

Caregivers would benefit from continuous education throughout the acute and rehabilitation phases of the hospitalization (Bakas, et al., 2002). Education could center on providing caregivers with information about the specifics on the condition and what they should expect at discharge. Caregivers reported that they were fearful of future strokes and that education about the warning signs of stroke helped alleviate some of the fears (Bakas et al., 2002). Additionally, providing caregiver counseling in the acute stages might be beneficial, as caregiver depression in the acute stages (early on in the hospitalization) may be a predictor of depression in the later stages post hospital discharge (Berg et al., 2005).

In the qualitative study by Bakas et al. (2002), caregivers suggested that having around the clock access to health professionals would be helpful. This idea is supported by the RCI as a way to help alleviate some of the burden perceived by caregivers. RCI also suggests that providing this continued access to health care providers should be reimbursable by government and third party insurers.

Helping the caregiver to establish a line of social support may also be beneficial (Bakas et al., 2002). Caregivers with increased

support were found to be at a decreased risk for reporting caregiver burden (Grant et al., 2006). Caregivers themselves recommend that other caregivers should be encouraged to seek support and express needs to other family members and friends that could offer assistance (Bakas et al., 2002) and that other caregivers engage in respite, have courage, be patient with themselves, have faith in God, and taking care of themselves physically (Bakas et al., 2002).

Perhaps one of the most helpful strategies to limit caregiver burden is in how allied health and medical professionals discuss the upcoming role as caregiver with the patient (Brenner & Brenner, 2011). It cannot be forgotten that caregiving does afford some positive aspects to both the caregiver and care recipient, despite the research focusing on negative consequences (Myer, 2003). Like other illnesses and disabling conditions, caregiving should not be framed in negative terms (Ramanathan, 2010), and words such as "caregiver burden" might be phrased differently with the caregiver. Instead of medical and allied health professionals discussing negative aspects of caregiving as "burden," the use of the word "challenges" might present the caregiver with a more positive view of caregiving. The difference in using positive versus negative language may potentially lead the caregiver into the new role with an upbeat attitude (Brenner & Brenner, 2011). The SOC literature states that when caregivers find their situations more manageable and feel that they will be able to meet any demands (Antonovsky, 1987), they tend to have an overall better caregiving experience, and in turn, the outcomes for the care recipient tend to be much better (Ekwall, 2006).

When caregivers are exposed to positive language from the allied health and medical professionals, they may be able to communicate better with the care recipient (Brenner & Brenner, 2011). Positive language is finding the strengths of the person with whom one is communicating (Tedeschi & Kilmer, 2005; Brenner & Brenner, 2011). Allied health professionals might model the use of positive language with the caregivers in an effort to have the caregiver do the same in response to the care recipient. The allied health professional would talk about what caregivers can do instead of what they cannot do. This positive communication between the caregiver and care recipient may lead to better caregiving, increased satisfaction, and overall improved caregiver and care recipient relationships (Brenner & Brenner, 2011).

Caregivers would also benefit from exploring the positive experiences that many other caregivers report (Myers, 2003). Exploring these positive experiences could come through the use of caregiver support groups or dialogue with medical and allied health professionals (Myers, 2003). Allied and medical health professionals should allow caregivers to not only express the challenges that they are facing but additionally explore what positive aspects the caregivers have gained by being caregivers (Myers, 2003). Caregivers might report experiencing personal growth, bettering of relationships, and feelings of pride and usefulness when providing care (Amirkhanyann & Wolf, 2003).

Approaching caregiving from a wellness or strengths based approach may help to empower caregivers and thereby lead them to engage in more health promoting activities (Myers, 2003). Wellness, as defined by Dunn (1961) in Meyers (2003) is "an integrated method of functioning which is oriented towards maximizing the potential of which the individual is capable" (p. 156). The idea of wellness ties in with strengths based approaches. In a strengths based approach the "focus is on client (whether a child, an adult, or a family) as bears of unique talents, skills, resources, life experiences, and unmet needs" (Tedeschi & Kilmer, p. 230, 2005). In the strengths based and wellness approaches, caregiver interventions are centered around assisting with effective decision making (for review see Lewis, et al., 2000), encouragement of leisure activities (Bedini & Phoenix, 1999; Hawkins & Kultgen, 1990), and encouragement of maintaining the caregivers own health (Rogers, 1999).

Although there are ways that individual medical and allied health professionals can help alleviate potential perceptions of burden expressed by caregivers, changes will also need to come through policy and the way caregivers are treated on a larger scale (RCI, 2010). The literature overwhelmingly suggests that one way to address caregiver burden is by increasing the amount of research conducted about the caregiving experience. Research is needed in the area of understanding caregiver burden for persons with specific neurologic health conditions. For example, it may be of benefit to look at caregiver burden in stroke versus Alzheimer's dementia. More research is also needed to understand the effects of caregiver burden on different minority groups including socio-economic status (RIC, 2010).

Research on long-term outcomes of caregiving is also needed (RCI, 2010). This research could help in further understanding the needs and meeting the needs of caregivers (RCI, 2010). The RCI on Caregiving suggests that monitoring the health of caregivers and reporting the trends in caregiver health to the Centers for Disease Control (CDC) may aide in prevention and treatment of negative aspects of caregiving. Additionally, monitoring of the caregiver experience and collection of data may lead to the framing of caregiving as a public health concern, thereby allowing for more evidenced based interventions and better outcomes for both the caregiver and care recipient (Talley & Crews, 2007).

The mechanics through which caregiver intervention is provided is another important aspect of caregiver interventions (RCI, 2010). As in other therapy interventions, interventions provided to caregivers are best provided in the most natural setting as possible with providers that are responsive to the caregivers

needs and who provide culturally competent care (RCI, 2010). The RCI on Caregiving suggests that caregiver interventions be provided to both the caregiver in environments like the doctor's office, the hospital where the primary medical services were received, churches, and at the caregiver's place of employment. The RCI suggests that caregivers are more likely to be successful at implementing these interventions when the interventions are provided in these more naturalistic settings.

CONCLUSION

Caregiving, whether provided or received, is an event that nearly every American will face. Some may become caregivers to aging parents, while others will become caregivers to spouses, partners, siblings, friends, or neighbors. The role of caregiver presents both challenges and rewards that are directly related to the outcomes of the care recipients. Medical and allied health professionals are charged with understanding the role of caregiver and responding to the individual needs of the caregivers and families that are served.

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ECHO: Journal of the National Black Association for Speech-Language and Hearing

DIALECT OR LANGUAGE SENSITIVE TESTS: WHICH ONE IS BEST FOR USE WITH HAITIAN CREOLE SPEAKERS – A LOOK AT THE BVAT AND THE DELV

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ABSTRACT

The purpose of this study was to investigate intra- group performance differences for speakers of Haitian Creole (HC) on the Bilingual Verbal Ability Test (BVAT) and the Diagnostic Evaluation of Language Variation (DELV). The BVAT is a language sensitive test, whereas, the DELV is a dialect sensitive test that eliminates the effects of features and rules of the particular variety of English spoken by the examinee. A total of 18 children who are HC speakers between the ages of 5;0 and 5;11 months participated in the study. The participants were administered the BVAT and DELV. Two tailed T-tests were conducted to analyze the data. No differences were found in the performance of HC speakers on the BVAT and DELV. Thus, it was concluded that both measures are appropriate with children who speak HC of this age group to evaluate language abilities.

KEY WORDS: dialect, dialect assessment, standard American English, African American English

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INTRODUCTION

The issue of culturally valid testing in determining the presence of a language difference versus a language disorder is one that has concerned professionals in the fields of education, psychology, and speech-language pathology for several decades. The American Speech Language-Hearing Association has developed several policy statements, technical reports, and professional issue statements to address the issue of language disorders versus differences as well as the clinical management of communicatively handicapped populations (ASHA, 1983; 1985; 2000; 2003). Professionals in these fields, rely heavily on the use of standardized assessment tools developed to diagnose the presence of disorders as well as determine language skills and cognitive abilities. Standardized measures are generally normed on Standard American English Speakers from limited geographic locations, thus, failing to represent the true cultural and linguistic composition of the United States. Researchers (Craig, Thompson, Washington, and Potter, 2004; Qi, Kaiser, Milan, Yzqierdo and Hancock, 2003; Hammer and Pennock-Roman, 2002; Peña, Iglesias, and Lidz, 2001; Restrepo and Silverman, 2001; Rhymer, Kelly, Brantley and Krueger, 1999; Roberts, Medley, Schwartzfager and Neebe, 1997; Peña and Quinn, 1997; Stockman, 1996; Rosebery-McKibbin, 1994; Cole and Taylor, 1990; and Reveron, 1986) amongst others have examined the performance of CLD groups and found that standardized tests unduly penalize populations whose language and/or dialect differs from SAE.

By nature, speech-language pathologists rely heavily on the use of tests to diagnose clients. While federal mandates such as the Education of All Handicapped Children Act of 1975 (PL 94-142); the Bilingual Education Act of 1976 (PL 95-561) Title VII of the Elementary and Secondary Education Act of 1965); Individuals with Disabilities Education Act 2004 (IDEA); and legal decisions such as Dianna vs. Board of Education (1973); Lau vs. Nichols (1974); Larry P. vs. Riles (1977); and the Martin Luther King Junior Elementary School Children vs. Ann Arbor School District Board (1979), as well as the professional practice statements from the American-Speech Language Hearing Association (ASHA, 1993, 2000, 2003, 2004), state that tests and other assessment procedures should not be linguistically or culturally discriminatory, the reliance upon standardized measures to determine eligibility criteria for speech-language therapy services continues to make this an impossible task for the multitude of languages and cultures represented in the United States. Historically, the United States has been and continues to be a country of immigrants, in which, in addition to learning English, immigrants are passionately retaining the languages they brought to this country as well as encouraging their children to learn, preserve, and feel proud of their heritage through the acquisition of the mother tongue of their ancestors. As a result, the English spoken by various groups consists of variants or mutually intelligible dialects rather than the Standard American English represented in assessment tools.

While the field of speech-language pathology has made tremendous gains in the assessment and diagnosis of culturally and linguistically diverse populations, these gains are progressing slowly when compared to the ever-growing population trends that make up our multicultural society. A review of the literature yields a vast amount of resources on AAE features and Spanish-influenced English/dialects, as well as emerging literature on other cultural groups, such as Asian and Pacific Islanders, and Native Americans. Yet, literature regarding the population of interest in the present discussion, Haitian Creole (HC), remains scarce.

The assessment of speakers of HC is further complicated because within the field of speech-language pathology documentation of the rules and features of the HC language is lacking. The lack of cultural and linguistic norms for HC, coupled with the use of assessments that have been standardized on mainstream speakers of SAE, is a great injustice to this population. As such, there is a need to assess the language skills of speakers of HC and determine what differences occur when using language and dialect sensitive tests.

Evaluation Tools

For the purpose of the present research, the tests used were placed on a continuum of sensitivity. Thus, the terms standardized tests, dialect sensitive tests, and language sensitive tests will be used to represent this continuum. Dialect sensitive tests are assessment tools that consider the features and rules of the variety of English spoken by the examinee. Dialect sensitive tests are usually criterion-referenced tests. Criterion-referenced tests are measures that are scored according to a pre-established criterion which determines the acceptable level of mastery. Unlike standardized measures that compare performance, criterion-referenced measures test the mastery of specifically defined skills.

Dialect Sensitive Tests which are operationally defined as language tests which consider the features and rules of the variety of English dialect spoken by the examinee. Dialect sensitive tests take dialect into account by removing linguistic expectations of SAE. Dialect sensitive tests have been accepted as being more appropriate for assessment of speakers of AAE, as they examine skill level rather than make a comparison to a SAE normative group. As such, these tests are likely to decrease the number of AAE speakers identified as language disordered due to language differences. While dialect sensitive tests are more appropriate for individuals who speak a dialect of English other than SAE, they may be inappropriate for use with individuals whose first language is not English, as neither standardized tests nor dialect sensitive measures are designed to account for the influences of other languages. Language sensitive tests consider the influences of a first language on English. As such they may be more appropriate for assessing HC speakers because bilingual language proficiency in both English and HC are tested. Therefore, it may be argued that language sensitive tests are best suited to detect language disorders in HC speakers. While this is a logical deduction, it has never been looked at empirically.

The BVAT and DELV Tests

For the present study, tests representing each of the two types of measures of language ability were used. The DELV is a dialect sensitive test which considers the features and rules of the variety of English spoken by the examinee. Unlike standardized measures that compare performance to SAE peers, the DELV assesses the mastery of specifically defined skills by using dialect neutral items. This test is considered more appropriate for use with speakers of AAE. The BVAT is a language sensitive test, which considers the influences of a first language on spoken English. These tests were selected because of their ability to assess language devoid of dialect or language bias.

The present study was thus undertaken to investigate the functional efficacy of the BVAT and the DELV in detecting the language abilities of speakers of HC. Specifically, the aim of this study was to determine if the two measures of language ability will account for performance differences in HC speakers due to levels of sensitivity of each instrument thus affecting the practical usefulness of each test with HC speakers.

The following research question was examined:

Are there significant differences in the scores of speakers of HC on the BVAT, a language sensitive test, and the DELV, a dialect sensitive test?

METHODS

Participants

The participants in the present study consisted of children who were speakers of HC. The total participant population was comprised 18 children (5 male and 13 females) ranging in age from 5; 0 to 5; 11 years. The participants were recruited from a daycare center located in Little Haiti, Florida which serves toddlers and preschoolers primarily of Haitian, African American, and Hispanic descent.

Criteria for inclusion in the study included: a) speakers of Haitian Creole, as determined by the investigator (a fluent Haitian Creole speaker), as reported by the center director, and via review of school records indicating the language spoken, b) chronological age ranging from 5;0 to 5;11, c) normal physical and cognitive development as determined by medical or school records, d) no previous history of special education services as determined by medical or school records, e) no history of language delay or disorder, and, f) no history of cognitive impairment as per the director of the school. Based on reports from the center director, school records, parents, and classroom teachers all of the participants were said to be using Haitian Creole in the home. Furthermore, their first exposure to standard American English was at school.

Setting

Testing was conducted at a Headstart daycare center in Little Haiti, Florida in a quiet room free from environmental and extraneous noise distractions. All testing was completed by the first author (ME), a native speaker of HC.

Materials

All participants were administered the BVAT and DELV. The BVAT (Munoz et al., 1998) is a diagnostic measure used to assess bilingual verbal ability and English language proficiency for children who have developed English after learning another language. The BVAT (Munoz-Sandoval et al. 1998) is a language sensitive test which considers the influences of the first language on spoken English. The Bilingual Verbal Ability Test (BVAT) is a diagnostic measure used to assess bilingual verbal ability and English language proficiency in individuals from the ages of five years up to the geriatric level. The BVAT is comprised three subtests, namely, picture vocabulary, oral vocabulary, and analogies. The Picture Vocabulary subtest measures the

ability to name familiar and unfamiliar pictured objects. The Oral Vocabulary subtest measures knowledge of word meaning. The Analogies subtest measures the ability to comprehend and complete verbal analogies. The BVAT, which is based on bilingual language development, assesses a bilingual individuals' language ability in both languages. The BVAT can be used to assess bilingual verbal academic ability, English cognitive academic language proficiency, and overall verbal academic ability. The BVAT can also be compared to the Woodcock Johnson test of achievement to determine if discrepancies exist between one's bilingual verbal ability and his or her academic achievement.

The DELV (Seymour et al., 2003) is a dialect sensitive test which considers the features and rules of the variety of English spoken by the examinee, such as AAE. Unlike standardized measures that compare performance to SAE peers, the DELV assesses the mastery of specifically defined skills by using dialect neutral items. The DELV consists of four subtests, referred to as domains, namely, the syntax, semantics, pragmatics, and phonology domains. The syntax domain includes three sub-domains: Wh Questions, Passives, and Articles. The Wh Questions sub-domain measures comprehension of complex questions. This task required the participant to answer questions based on both visual and verbal information. The Syntax domain is composed of four sub-domains: Verb Contrast, Preposition Contrast, Quantifiers, and Fast Mapping. The Verb Contrast sub-domain measures the comprehension of the relationship between verbs of similar meaning. The task required the participant to complete open ended sentences with a verb. The Preposition Contrast sub-domain measures the participants understanding of different types of prepositions. The task required the participant to complete open ended sentences with a preposition. The Quantifiers sub-domain measures the participants understanding of the meaning of "every" and what "every" modifies within sentence contexts. The task required the participant to answer questions and and/or point to pictures discussed. The Fast Mapping sub-domain measures the participant's ability to extract the meaning of new words within the sentence context. The task required the participant to extract the meaning from words in the sentence context. The pragmatics domain is composed of three sub-domains: Communicative-Role Taking, Short Narrative, and Short Narrative. The Communicative-Role Taking subdomain measures participant's comprehension of what someone should say in a particular communication situation and what speech act is needed. The task required the participant to answer questions pertaining to picture scenarios. The Short Narrative subdomain measures participant's ability to contrast characters, link events in time, and include references to the mental states of the characters when telling a simple story. The task required participants to generate a story about picture scenarios and answer questions. The Question Asking subdomain measures the participant's ability to ask the question needed to obtain specific information. The task required participants to ask a question about a missing item in a picture presented. Lastly, the phonology domain measures the production of consonant clusters in various word positions in sentences. All domains of the test items address potential linguistic and cultural bias by assessing only those linguistic behaviors that are considered to be common across all variations of English. The results of the DELV can be used to identify speech and language disorders in children (Seymour et al., 2003).

Procedures

The BVAT and the DELV were administered to each participant in the quiet area on subsequent days. Each test was administered as specified in the examiner's manual for the specific test. All subtests of the BVAT were initially administered in English with all incorrect items or responses re-administered in HC, as specified in the examiner's manual. The BVAT and DELV items were scored according to the criteria in each of the administration manuals. Results for the BVAT and DELV were adjusted to reveal the total number of correct items for each test. These values served to formulate the percent correct scores for each participant. The percent correct scores were used to conduct the intra-group statistical comparisons.

Reliability

Inter judge reliability was established by having a trained, certified, clinically competent, speech-language pathologist, who is not a speaker of HC, review the test responses for 25% of the total sample coded by the researcher. Out of 36 possible record forms (18 DELV, 18 BVAT) the judge reviewed 9 randomly selected forms. Reliability, point by point agreement, was established at 100%.

Data Analysis

For the research question posed pertaining to differences in the two measures, the BVAT and DELV, a two-tailed, pairwise t-test was conducted to analyze the difference in the scores. The following presents the results of this analysis.

RESULTS

The purpose of this study was to investigate whether differences exist in the performance of Haitian Creole speakers (HC) on the BVAT, a language sensitive test and the DELV, a dialect sensitive test. The DELV, and BVAT items were scored according to the criteria in each of the administration manuals as correct or incorrect. The number of items correct for each measure used were converted to percent correct scores as both tests are constructed and scored differently. The BVAT provides standard scores whereas the DELV provides criterion referenced scores. Thus, the percent scores were calculated for each test and these scores were used to complete the data analysis.

Results of the t-test comparisons indicated no significant difference in performance of speakers of HC on these two measures which suggests that the DELV is comparable to the BVAT in its ability to accurately identify language abilities in speakers of HC. The mean score for speakers of HC on the BVAT was 47.0 with a standard deviation of 12.02. The mean for the speakers of HC on the DELV was 48.4 with a standard deviation of 14.17. The paired samples t-test yielded a t value of .44 with an alpha value of 0.66. Since there was no significant difference in the performance of HC speakers on the BVAT, a language sensitive test, or the DELV, a dialect sensitive test, this indicates that the DELV is comparable to the BVAT in its ability to identify language abilities in children who speak HC.

Table 1. Performance of Speakers of HC on the BVAT and DELV

	BVAT	DELV
N	18	18
MEAN	47.03	48.42
SD	12.02	14.17
t(17)=.44	p=.66*	*Not significant because p>.05

Figure 1 shows the performance of speakers of HC on the DELV and BVAT. The percent correct scores obtained by the speakers of HC ranged 24% to 63% on the DELV; and 28% to 70% on the BVAT. The percent correct on the DELV and the BVAT was within 10% for all participants except for participants 4, 5, 6, 7, and 9.

DISCUSSION

No significant difference was found in the performance of speakers of HC on the BVAT and on the DELV which indicates the similarity between the two instruments in their abilities to evaluate language performance in children who are speakers of HC. The BVAT is a language sensitive test that considers the influence of the first language, in this case HC, on spoken English. Similarly, the DELV is a dialect sensitive test which neutralizes the effect of dialect on performance. Hence, the BVAT and the DELV are both devoid of cultural and linguistic bias when evaluating this population of children based on the present results. It can be further concluded that since the BVAT is a language sensitive test, its scores may be more indicative of the true performance of speakers of HC. Therefore, it is reasonable to predict that the results of the BVAT and the DELV would be more accurate and useful with speakers of HC. Since results of the BVAT and DELV were similar in the percent correct response score range for each test, it can also be concluded that the DELV can be used as an indicator of language ability for HC speakers. Assessing language ability with the absence of dialect and language bias is an essential step in achieving a nonbiased assessment.

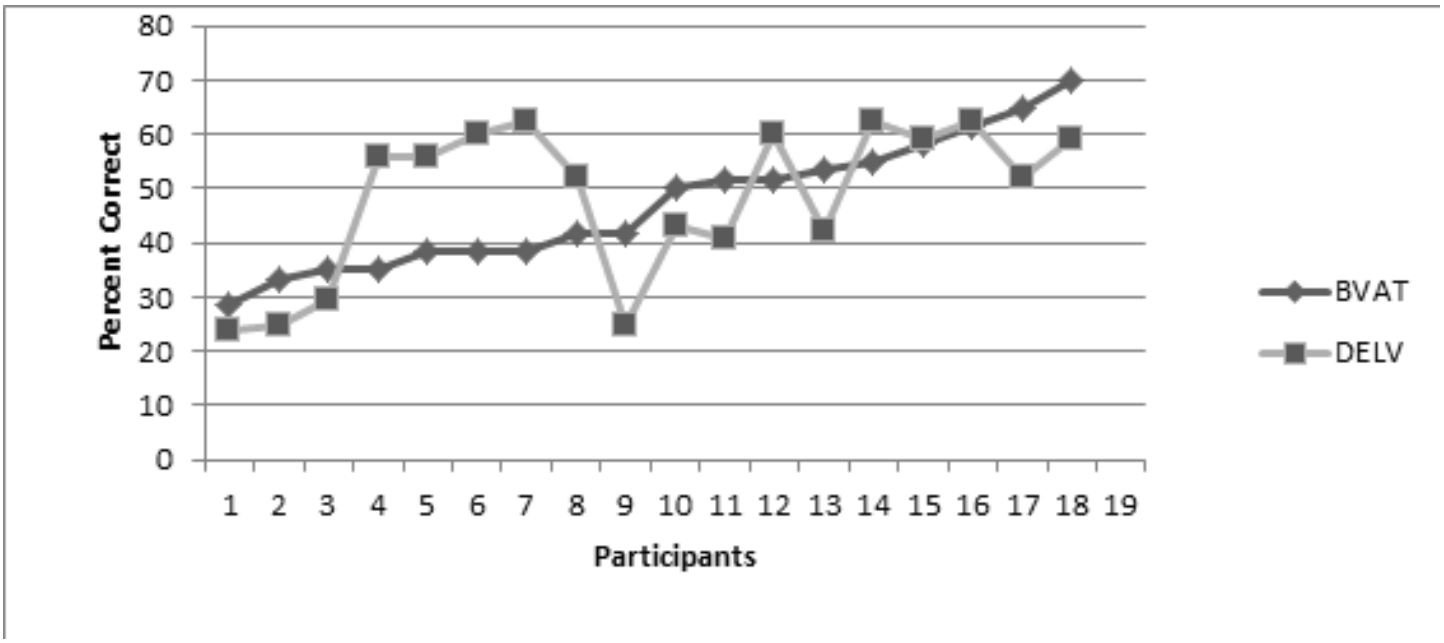

Figure 1. Scores of Speakers of HC on the DELV, and BVAT

Results of the present study indicate that dialect and language sensitive tests are more appropriate indicators of both, ability and disability for both speakers of HC. The language features of speakers of HC may influence their performance on language assessment instruments that have norms based on speakers of SAE. The rules that govern HC are quite distinct from those that govern SAE in all linguistic parameters. The salient features of HC include:

1. Nouns are not marked for gender or number;
2. Plurality is not indicated by a plural –s ending
3. Concepts of gender and plurality are expressed by using specific words or determiners;
4. Articles that have both a singular and plural form always follow the noun or the noun phrase;
5. Indefinite articles always precede the noun;
6. Singular form of the definite article is phonologically determined by the sound of the preceding word;
7. Plural definite has one invariant form;
8. Same pronoun form may be used to denote subject, object, and possession pronouns may occur in a full or contracted form;
9. Non-obligatory subject verb agreement and verb tenses;
10. System of markers or short particles, which precede the verb to indicate tense and aspect (i.e., te=past tense, ap=progressive, pral=future);
11. Verbs with no marker may be an indicator of present tense or immediate past tense.

The chart below provides a comparison of the features of HC to SAE.

HC		SAE	AAE
Rule/Feature	**Example***		
Absence of plural –s ending	Liv=book Kek liv=some books	Different Plural marker [s] is obligatory	Same Noun Plural marker [s] not obligatory
Tense marking is not attached to the verb.	Mwen pral lekòl I am going to school	Different	Different

Haitian Creole Rule/Feature	Example-These are not all literal translations	Standard English	African American English
Pronouns may occur after the noun of verb form.	Mwen/m'=I/me/my Se kay mwen. It's my house	Different	Different
The definite article has both singular and plural forms	la/yo tab la- the table tab yo-the tables	Different	Different
The definite article follows the noun or noun phrase.	tab la- the table tab yo-the tables timoun yo- the children	Different	Different
The singular definitive article is phonologically determined by the last sound of the preceding word.	radyo a- the radio biwo a- the desk	Different	Different
The indefinite article always precedes the noun.	yon mont- a watch yon tab- a table	Same	Same
The same form may denote subject, object, and possession.	L'ale travay He/she went to work	Different	Different
Verbs with no marker may indicate present or immediate past tense.	L' ale lekòl He is going to school (present tense) He went to school (past tense)	Different	Different

*** All are not literal translations**

The findings of the present study suggest that dialect and language sensitive tests are appropriate indicators of both, ability and disability for speakers of HC. In the absence of tests that contain scoring considerations for HC speakers, it is important that SLPs use language or dialect sensitive tests with HC speakers to truly assess their performance. Thus, results of the present study indicate that these two measures, BVAT and DELV, are appropriate for use with such children.

Future Research

Based on the results of the present study, future research is needed comparing results from the BVAT or DELV with standardized assessment tools utilized with SAE speakers such as the PLS-5 and the CELF-P:2. Additionally, language norms and scoring considerations need to be developed for HC speakers. Furthermore, futures studies should compare children with language disorders to their non–disordered peers.

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ECHO: Journal of the National Black Association for Speech-Language and Hearing

PHONOLOGICAL PROCESSES IN SPANISH-SPEAKING CHILDREN

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ABSTRACT

This study evaluated phonological processes in forty typically developing 3-5 year old children from a Salvadoran language background. The children were administered the Martinez Articulation Test for Spanish Speakers (MATSS), where they were asked to label pictures in order to assess their articulation abilities of words in the initial, middle, and final positions. Using General Standard (GSR) and Salvadoran (SR) Referents, collected data were analyzed. Phonological processes were identified and computed to determine if there were differences between the different assessment procedures. The children exhibited phonological processes consistent with those identified in the literature, but with significant differences across ages for some processes. Also, there were developmental trends with regard to presence and suppression of phonological processes – with many being suppressed by the age of five.

KEY WORDS: Phonological processes, Spanish, child language development, articulation testing

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INTRODUCTION

The Hispanic population in the United States comprises 16.3% of the entire population (U. S. Census Bureau, 2010), with Central Americans consisting of nearly 8%. While there are studies addressing Spanish phonological processes (Goldstein & Iglesias, 1995; Goldstein & Fabiano, 2005, Goldstein & Washington, 2001), there is a dearth of information about phonological processes in Central American children. This presents a challenge to clinicians as they attempt to address the needs of Spanish speaking clients while maintaining strict ethical and minimally biased assessment procedures. Therefore, research about typically-developing phonological skills of children with a Central American background is needed to determine whether Spanish speaking children exhibit phonological disorders or phonological differences.

Phonological Processes

Donegan and Stampe's (1979) theory of Natural Phonology describes phonological processes as "phonetic forces [that] are manifested through processes, as mental substitutions which systematically, but subconsciously, adapt our phonological intentions to our phonetic capacities, and which conversely, enables us to perceive in other's speech the intentions underlying these superficial phonetic adaptations" (p.126). Phonological processes are described by Oller (1975) as "the sorts of substitutions, deletions, and additions that occur in child language [that] are not merely random errors on the child's part, but are rather the result of a set of systematic tendencies" (p.299). Other researchers have defined phonological processes as simplifications of sounds in words that are a common and predictable part of phonological development, often recognized by parents as simple pronunciation errors (Goldstein & Iglesias, 1995; Bernthal & Bankson, 2004). Table 1 lists examples of phonological processes. In English, most phonological processes in Table 1 will have disappeared by the age of five, except for gliding and stopping (Grumwell, 1981). Also, apart from gauging developmental trends, phonological processes also provide the opportunity to compare adults' utterances and children's mistaken productions, or just describe phonological class errors in adults.

Table 1. Phonological Processes in English and Spanish

Process			Language	
			English	Spanish
Syllable Structure processes				
	Initial consonant deletion	ISD	bat → /æt/	bate → /tɛ/
	Final consonant deletion	FCD	book → /bʊ/	raton → /rɑtɔ/
	Syllable deletion	SD	potato → /teɪtoʊ/	cama → /mɑ/
	Syllable reduction	SR	bicycle → /bɑɪɪkəl/	bicicleta → /biiklɛtɑ/
	Cluster Reduction	CR	clock → /lɑk/	libro → /libɔ/
Assimilation Processes				
	Labial assimilation	LA	cap → /pæp/	caballo → /pɑpɑʤɔ/
	Alveolar assimilation	AA	top → /pɑp/	pelota → /pɛpɔpɑ/
	Velar assimilation	VA	cape → /keɪk/	gato → /gɑgɔ/
	Reduplication	RD	baby → /beɪbæ/	cuchara → /kukɑrɑ/
	Prevocalic voicing	PV	pop → /bʌp/	perro → /bɛrɔ/
Substitution Processes				
	Stopping	ST	sun → /tʌn/	sol → /tɔl/
	Velar fronting	VF	go → /doʊ/	gato → /dɑtɔ/
	Palatal fronting	PF	shop → /sʌp/	chocolate → /sɔkɔlɑtɛ/
	Interdentilization	ID	soap → /θoʊp/	se → /θɛ/
	Gliding	GL	run → /wʌn/	pera → /pɛwɑ/
	Backing	BK	tan → /kæn/	pan → /kɑn/

Dialectal Differences and Phonological Performance

The Hispanic population in the United States uses a wide spectrum of Spanish dialects originating in Latin America and Europe. In fact, the speech and language differences of the more than 17 million Spanish speakers in the United States comprises a representation of the twenty-two documented major Spanish dialects in the Americas and Europe, as well as sub varieties (Martinez, 2011). Several researchers (Anderson & Smith, 1987; Goldstein & Cintron, 2001; Martinez, 2011; Pandolfi & Herrera, 1990) have presented descriptions of dialectal features of phonology in the different Spanish dialects. These community dialectal features will be used by typically developing Spanish speakers by the age of 3.5 years (Anderson & Smith, 1987; Goldstein & Cintron, 2001; Pandolfi & Herrera, 1990). Nevertheless, most of the phonological data used by clinicians is from Mexicans and Puerto Ricans (Anderson & Smith, 1987; Goldstein, 1995; Goldstein, Fabiano, & Iglesias, 2004; Goldstein & Iglesias, 1991; Goldstein & Iglesias, 2001; Gonzalez, 1981; Meza, 1983). For example, phonological patterns in normally developing Puerto Rican children were described by Goldstein and Iglesias (1996). They revealed that in three and four year olds, cluster reduction and liquid simplification were the most common phonological processes, while stopping, weak syllable deletion, velar fronting, assimilation, and palatal fronting were the least common. In general, children from Spanish speaking backgrounds often exhibit moderate amounts of the phonological processes of cluster reduction, final consonant deletion, unstressed syllable deletion, and fronting (Goldstein & Iglesias, 1996; Anderson & Smith, 1987; Gonzalez, 1981), and to a lesser extent stopping and gliding of liquids (Grumwell, 1997). Spanish speakers suppress most phonological processes by the age of 5.0, except for stopping, cluster reduction, and gliding (Goldstein & Fabiano, 2005). Two of these, stopping and gliding, were observed by Grunwell (1981) to also transcend the five year mark in English speakers. Addressing disordered speech, Meza (1983) examined the incidence of phonological processes in twenty highly unintelligible preschool children of Mexican American descent using the Assessment of Phonological

Processes-Spanish (APP-S) (Hodson, 1986). The study revealed that cluster reduction, postvocalic singleton deletion, stridency deletion, velar deviations, and liquid deviations were highly frequent in this population. Nasal deviation and glide deviation were moderately frequent, and syllable reduction, and prevocalic singleton deletion were infrequent.

Since there is limited information about phonological processes in Central Americans, individuals may be wrongly identified as having a phonological disorder when using developmental norms and characteristics of one dialect to assess a the speaker of another dialect. This was concluded by Goldstein and Iglesias (2001) who examined the effect of dialect on phonological analyses in Puerto Rican children when using criteria of the General Spanish Referent (GSR) which comprises features characteristic of Mexican broadcasting dialect. When taking into account the Puerto Rican Referent (PRR), the number and percentage of occurrence of consonant and sound class errors decreased. Therefore, by using GSR, children could potentially be misidentified as having a phonological disorder. Goldstein and Washington (2001) also indicated that English developmental patterns cannot be used to diagnose Spanish speakers when they compared patterns in bilingual and monolingual children. They revealed no significant differences between English and Spanish performances; however, while the two groups may have demonstrated similar phonological processes such as final consonant deletion, the target sounds were different. For example, in English clown to /klou/, and in Spanish arroz /aro/.

The thrust of this study rests on the importance to describe developmental trends in different speech communities to enable clinicians to properly distinguish between phonological differences and disorders. To that aim, it is important to recognize that Salvadoran Spanish or the Salvadoran Referent (SR) does present with differences when compared to the General Spanish Referent (GSR). The GSR is typically identified with the Mexican referent mainly used for broadcasting at the international level. Some dialectal features of SR are the following (Martinez, 2011):

- Plosives: /p→k, b → β, d→ ð , g → ɣ, g → ŋ/
- Fricatives: /s → ɵ, s → h, x → , j → Ø/
- Affricates: /ʧ → tj/
- Nasals: /m → ŋ, n → ŋ, n → ɲ, n → m/

The main goal of the present study was to obtain developmental data with regard to phonological processes in Salvadoran Spanish speaking children and to investigate whether outcomes differed when using the General Spanish Referent (GSR) versus the Salvadoran Referent (SR) as criteria for identifying processes. The research questions were as follow:

1. Are there significant differences between the General Spanish Referent (GSR) and the Salvadoran Referent (SR) when identifying phonological processes?
2. What are the developmental trends of phonological processes in Salvadoran Spanish speaking children?

METHOD

Participants

Forty typically developing Spanish dominant children (ages 3.0 - 5.11) participated in this study. Of the 40 children, 29 were from Salvadoran only households, three were from Salvadoran/ Peruvian households, five were from Salvadoran/Mexican households, two were from Salvadoran/Nicaraguan households, and one was from a Salvadoran/Puerto Rican household. Spanish dominance was determined by teacher report and informal screening by one of the researchers, a bilingual Spanish/English speaking certified speech-language pathologist. All students included in the study had to pass a hearing screening at 20dBHL between 250 and 4000 Hz, and were found to have normal hearing sensitivity. All children in the study were typically developing according to parent and teacher reports. There were no obvious concerns about speech, language or cognitive development for any of the children.

As presented in Table 2, the three year old group consisted of fifteen children, ages 36 – 47 months (3.0 – 3.11 years) (M = 41.4; SD = 2.97; 8 males, 7 females). The four year old group consisted of twelve children, ages 49 – 59 months (4; 1- 4; 11 years) (M = 54.3; SD = 3.56; seven males, five females). The five year old group consisted of 13 children, ages 60 - 71 months (5.0 – 5.11 years) (M = 65.8; SD 3.44; six males and seven females).

Procedures

The Martinez Articulation Test for Spanish Speakers (MATSS)

Table 2. Demographic Profile by Age Group (N = 40)

Group	n	Gender		Age (months)			
		Males	Females	M	SD	Range	Median
3 year olds	15	8	7	41.4	2.97	36-47	41.0
4 year olds	12	7	5	54.3	3.57	49-59	53.0
5 year olds	13	6	7	65.8	3.44	60-71	66.0
Totals	40	21	19			36-71	

(Martinez, Unpublished) was used to assess the phonological performance of the participants. The MATSS is designed for Central Americans, and contains 53 words to gauge phoneme production in initial, medial and final positions.

The participants labeled pictures through imitation. The responses were phonetically recorded on a test protocol by word position and were also audio-recorded using Sony MZ-M100 Portable MD Recorder. Intra-judge reliability was completed by the first author when transcribing the samples two months apart. Intra-judge agreement was 93.4%.

Data Analysis

Sixteen phonological processes were analyzed: initial consonant deletion, reduplication, final consonant deletion, syllable deletion, stopping, backing, labial assimilation, alveolar assimilation, cluster reduction, velar fronting, palatal fronting, prevocalic voicing, gliding, substitution, velar assimilation, and syllable reduction (Table 1). A special phonological pattern was observed when no dialectal considerations were taken into account. This pattern was interdentalization which, for purposes of this study, will be viewed as a "phonological process."

The first analysis calculated the mean and standard deviations for the GSR and SR for each age group (Group 1: 3.0 – 3.11; Group 2: 4.0 – 4.11; Group 3: 5.0 – 5.11). The second analysis compared the percentages of phonological processes identified by group for both GSR and SR scoring. A multivariate analysis of variance (MANOVA) with group and scoring type as the independent variables, and phonological processes as the dependent variables was used. The third analysis was a post-hoc analysis comparing the individual age groups to determine whether there were significant differences between age groups using independent sample t-tests.

RESULTS

Three error classes containing sixteen phonological processes were analyzed (Table 1): syllable structure processes (initial consonant deletion, final consonant deletion, syllable deletion, syllable reduction, and cluster reduction); assimilation processes (labial assimilation, alveolar assimilation, velar assimilation, reduplication, and prevocalic voicing); and substitution processes (stopping, velar fronting, palatal fronting, interdentalization, gliding, and backing).

Referent Testing

Means and Standard Deviations for each phonological process by referent type (GSR and SR) are presented in Table 3. The General Spanish Referent (GSR) does not account for dialectal features and the Salvadoran Referent (SR) accounts for dialectal features. In general, the GSR means are higher than the SR means. For the three year old group, this was most apparent in all but two processes. Differences occurred in processes such as: initial consonant deletion (GSR M=3.88; SD M=5.27/SR M=2.22; SD=3.47), final consonant deletion (GSR M=14.66;SD=15.52/ SR M=12.00; SD=16.12), and syllable deletion (GSR M=2.81; SD=3.08/SR M=1.77; SD=2.93). For the four year olds mean differences were found in eight Assimilation and Substitution Processes. No mean differences were found in the Syllable Structure Processes. Examples of mean differences were found in processes such as alveolar assimilation (GSR M=1.55; SD=4.00/ SR M=0.97; SD=2.09), and velar fronting (GSR M=16.17; SD=7.15/SR M=3.08; SD=3.47). Finally, mean differences in the five year old group occurred in substitution processes such as velar fronting (GSR M=7.69; SD=4.41/SR M=0.56; SD=1.38) and interdentalization (GSR M=16.17;SD=7.15/SR M=3.08; SD=3.47). In this group, means for syllable structure processes and assimilation processes were almost the same.

To test for significance of differences between referents, a MANOVA was computed (Table 4). Overall, significant

Table 3. Means and Standard Deviations of Phonological Processes by Group and Referent Score

Phonological Process		Referent	Group		
			Three Year Olds M (SD)	Four Year Olds M (SD)	Five Year Olds M (SD)
Syllable Structure Processes					
Initial Consonant deletion	ISD	GSR	3.88 (5.27)	0.87 (1.39)	1.12 (2.49)
		SR	2.22 (3.47)	0.86 (1.39)	1.12 (2.49)
Final Consonant deletion	FCD	GSR	14.66 (15.52)	7.50 (9.65)	2.30 (4.38)
		SR	12.00 (16.12)	7.50 (9.65)	2.30 (4.38)
Syllable deletion	SD	GSR	2.81 (3.08)	0.74 (1.97)	0.34 (1.23)
		SR	1.77 (2.93)	0.74 (1.97)	0.34 (1.23)
Syllable Redution	SR	GSR	3.56 (5.33)	1.16 (1.21)	0.89 (2.02)
		SR	2.00 (2.70)	1.25 (1.30)	0.96 (2.17)
Cluster reduction	CR	GSR	25.83 (14.45)	11.80 (15.10)	8.65 (9.69)
		SR	20.83 (15.02)	11.80 (15.10)	8.65 (9.69)
Assimilation Processes					
Labial Assimilation	LA	GSR	0.00 (0.00)	0.19 (0.67)	0.00 (0.00)
		SR	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Alveolar assimilation	AA	GSR	2.79 (3.19)	1.55 (4.00)	0.53 (1.39)
		SR	0.00 (0.00)	0.97 (2.09)	0.53 (1.39)
Velar assimilation	VA	GSR	0.31 (1.20)	0.19 (0.67)	0.00 (0.00)
		SR	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Reduplication	RD	GSR	1.55 (1.68)	0.97 (1.55)	0.00 (0.00)
		SR	2.17 (3.10)	1.74 (2.82)	0.00 (0.00)
Prevocalic voicing	PV	GSR	1.25 (1.53)	0.31 (0.73)	0.00 (0.00)
		SR	0.88 (1.40)	0.31 (0.73)	0.00 (0.00)
Substitution Processes					
Stopping	ST	GSR	7.46 (11.09)	4.66 (10.20)	0.00 (0.00)
		SR	3.46 (5.82)	4.66 (10.2)	0.00 (0.00)
Velar fronting	VF	GSR	15.88 (10.72)	16.17 (7.15)	7.69 (4.41)
		SR	3.20 (4.39)	3.08 (3.47)	0.56 (1.38)
Palatal Fronting	PF	GSR	20.00 (30.34)	0.00 (0.00)	2.56 (9.24)
		SR	31.11 (32.03)	0.00 (0.00)	2.56 (9.24)
Interdentalization	ID	GSR	38.00 (25.96)	26.70 (17.20)	2.30 (4.38)
		SR	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Gliding	GL	GSR	10.33 (8.32)	3.41 (2.82)	2.44 (4.77)
		SR	9.69 (8.73)	3.41 (2.82	2.44 (4.77)
Substitution	SB	GSR	7.92 (4.95)	6.44 (3.89)	2.75 (1.46)
		SR	4.65 (4.66)	3.45 (3.30)	1.30 (1.78)
Backing	BK	GSR	4.09 (1.53)	3.59 (1.80)	2.62 (1.56)
		SR	1.21 (2.25)	0.18 (0.65)	0.87 (1.47)

differences were found in four phonological processes: Alveolar assimilation (F=4.4476, p= 0.038), velar fronting (F=62.26, p= 0.000), interdentalization (F=56.53, p=0.000), and backing (F=52.55, p=0.000). Further significance testing is illustrated in Table 5. A MANOVA was used to compare referent mean difference results for each age group. For the three year old group, significant differences between referents were found for alveolar assimilation (F=11.460, p=.002), velar fronting (F=17.955, P=.000), interdentalization (F=32.123, P=.000) and backing (F=16.721, p=.000). For the four year olds, significant differences between referents were found for velar fronting (F=32.544, p=.000), interdentalization (F=28.735, P=.000), and backing (F=37.834, p=.000). Finally, in the five year olds, the two phonological processes that tested significant were velar fronting (F=30.729, P=.000) and backing (F=8.559. P=.007).

Table 4. Comparison between the GSR and SR Referents for each Phonological Process (MANOVA).

Phonological Process		F	Sig.
Syllable Structure Processes			
Initial consonant deletion	ISD	0.603	0.440
Final Consonant Deletion	FCD	0.122	0.728
Syllable Deletion	SD	0.467	0.497
Syllable reduction	SR	0.51	0.478
Cluster Reduction	CR	0.306	0.582
Assimilation Processes			
Labial Assimilation	LA	1.235	0.270
Alveolar Assimilation	AA	4.476	0.038*
Velar Assimilation	VA	1.647	0.203
Reduplication	RD	1.099	0.298
Prevocalic Voicing	PV	0.32	0.573
Substitution Processes			
Stopping	ST	0.581	0.448
Velar Fronting	VF	62.26	0.000*
Palatal Fronting	PF	0.687	0.410
Interdentalization	ID	56.53	0.000*
Gliding	GL	0.022	0.883
Substitution	SB	9.702	0.003*
Backing	BK	52.55	0.000*

* p<.05; d.f.=2

Table 5. Comparison between GSR and SR Referents for each Phonological Process by Age (MANOVA)

Phonological Process		Group					
		Three Year Olds		Four Year Olds		Five Year Olds	
		F	Sig.	F	Sig.	F	Sig.
Syllable Structure Processes							
Initial Consonant deletion	ISD	1.044	0.316	0.000	1.000	0.000	1.000
Final Consonant deletion	FCD	0.213	0.648	0.000	1.000	0.000	1.000
Syllable deletion	SD	0.890	0.353	0.000	1.000	0.000	1.000
Syllable Reduction	SR	1.030	0.319	0.027	0.870	**	**
Cluster reduction	CR	0.863	0.361	0.000	1.000	0.000	1.000
Assimilation Processes							
Labial Assimilation	LA	N/A	N/A	1.000	0.328	**	**
Alveolar assimilation	AA	11.460	0.002*	0.198	0.661	0.000	1.000
Velar assimilation	VA	1.000	0.326	1.000	0.328	**	**
Reduplication	RD	0.462	0.502	0.693	0.414	**	**
Prevocalic voicing	PV	0.493	0.489	0.000	1.000	**	**
Substitution Processes							
Stopping	ST	1.528	0.227	0.000	1.000	**	**
Velar fronting	VF	17.955	0.000	32.544	0.000*	30.729	0.000*
Palatal Fronting	PF	0.951	0.338	**	**	0.000	1.000
Interdentalization	ID	32.123	0.000*	28.735	0.000*	3.600	0.070
Gliding	GL	0.038	0.847	0.000	1.000	0.000	1.000
Backing	BK	16.721	0.000*	37.834	0.000*	8.559	0.007*

* p<.05; d.f.=2; ** could not evaluate because Means were the same

Developmental Trends

The data analysis also served to describe developmental trends across age groups. Table 3 shows that the means of most phonological processes decreased by age group regardless of the scoring method used.

GSR Scoring. Using the GSR scoring, 13 of the 16 phonological processes showed a decrease in mean as the group age increased. The only phonological processes that did not decrease in mean as the group age increased using the GSR were initial consonant deletion (3 year olds= 3.88; 4 year olds=0.87; 5 year olds: 1.12), labial assimilation (3 year olds=0.00; 4 year olds=0.19; 5 year olds=0.00), and palatal fronting (3 year olds: 20.00; 4 year olds=0.00; 5 year olds: 2.56).

SR Scoring. With SR scoring, the only phonological processes that did not present mean decrease as the group age increased were initial consonant deletion (3 year olds= 2.22; 4 year olds=0.86; 5 year olds: 1.12), alveolar assimilation (3 year olds= 0.00; 4 year olds=0.97; 5 year olds: 0.53), stopping (3 year olds= 3.46; 4 year olds=4.66; 5 year olds: 0.00), palatal fronting (3 year olds= 31.11; 4 year olds=0.00; 5 year olds: 2.56), and backing (3 year olds= 1.21; 4 year olds=0.18; 5 year olds: 0.87). An interesting finding was that these processes did not follow a consistent drop in means. For example, palatal fronting was present in three year olds, but appeared to be suppressed in the four year olds, only to re-emerge in the five year olds.

Finally, the following processes were not present in any of the age groups using the SR scoring: labial assimilation, velar assimilation, and interdentalization.

Testing for significance across age groups for each phonological process using the SR was computed using a MANOVA (Table 6). Nine phonological processes were found to be significant across age groups: Syllable Structure Processes (final consonant deletion, F=4.320, p=0.021; syllable deletion F=4.745, p=0.015; cluster reduction F=6.68 p=0.003); Assimilation Processes (reduplication F=4.725, p=0.015; and prevocalic voicing F=5.721, p=0.007); and Substitution Processes (velar fronting F=4.681, p=0.015; palatal fronting F=4.398 p=0.019; interdentalization F=13.016, p=0.000; and gliding F=7.202, p=0.002). To identify phonological processes that differed

between specific age groups, t-tests for independent samples were calculated. Table 7 illustrates that the palatal fronting and gliding were significant between three and four year olds, and reduplication and velar fronting were significant between four and five year olds. Because many phonological processes were not present by the age of five, as expected, there were significant differences between the three and five year olds. The following phonological processes were identified: Initial consonant deletion, syllable deletion, cluster reduction, reduplication, stopping, velar fronting, palatal fronting, gliding, and backing.

The percentages of children using each phonological process by age are presented in Table 8 and illustrated in Figure 1. These helped to identify suppression patterns of phonological processes. For this purpose, the age of suppression was described as the age where phonological processes decrease by 90%, following Smit & Hand's (1997) definition. By the age of four, backing and palatal fronting are suppressed or in the process of being surpressed. Nevertheless, by the age of five, major production changes are evident with syllable deletion, aleveolar assimilation, reduplication, prevocalic voicing, stopping, velar fronting and palatal fronting.

Table 6. Comparison between the three age groups for each phonological process using the SR (MANOVA).

Phonological Process		F	Sig.
Syllable Structure Processes			
Initial consonant deletion	ISD	2.996	0.062
Final Consonant Deletion	FCD	4.320	0.021*
Syllable Deletion	SD	4.745	0.015*
Syllable reduction	SR	2.435	0.102
Cluster Reduction	CR	6.680	0.003*
Assimilation Processes			
Labial Assimilation	LA	1.177	0.319
Alveolar Assimilation	AA	1.928	0.160
Velar Assimilation	VA	0.497	0.612
Reduplication	RD	4.725	0.015*
Prevocalic Voicing	PV	5.721	0.007*
Substitution Processes			
Stopping	ST	2.526	0.094
Velar Fronting	VF	4.681	0.015*
Palatal Fronting	PF	4.398	0.019*
Interdentalization	ID	13.016	0.000*
Gliding	GL	7.202	0.002*
Backing	BK	2.885	0.069

* p<.05; d.f.=2

Table 7. Independent Sample t-tests Comparing Age Groups for Each Phonological Process Using the SR

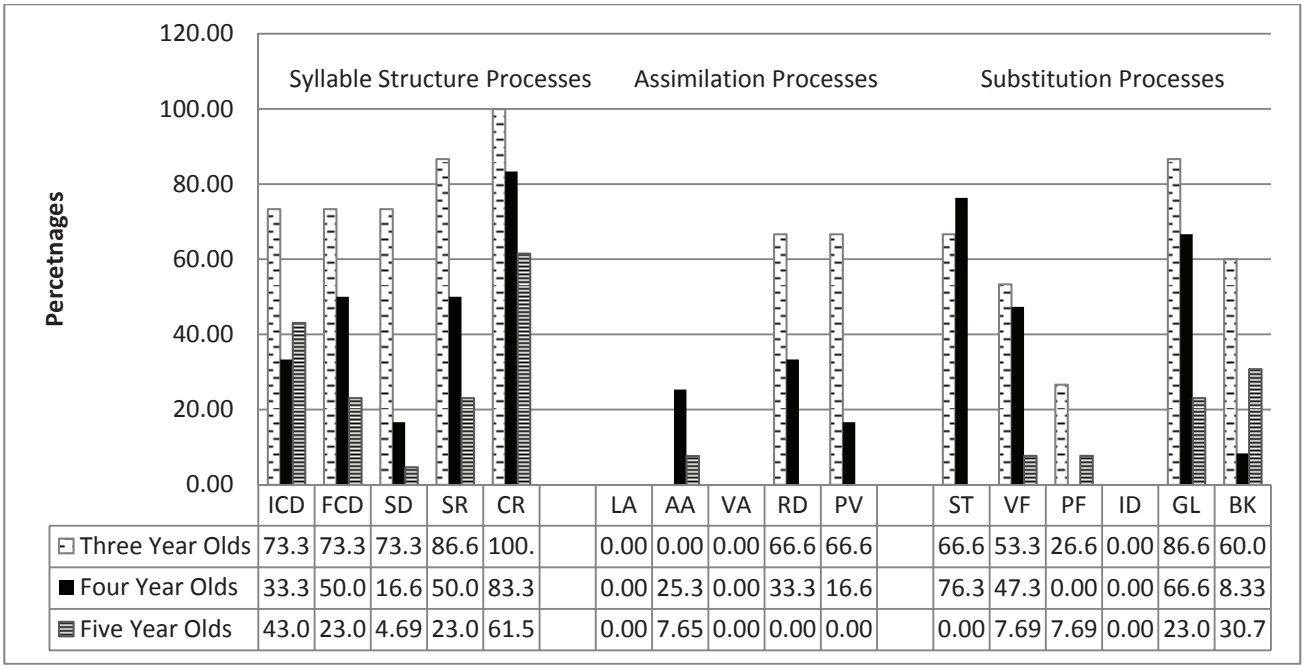
Phonological process		3 and 4 year olds t	df	sig.	4 and 5 year olds t	df	sig.	3 and 5 year olds t	df	sig.
Syllable Structure Processes										
Initial consonant deletion	ISD	1.388	19.203	0.184	-0.31	23.000	0.759	9.420	48.000	0.002*
Final Consonant Deletion	FCD	0.851	25.000	0.403	1.708	15.088	0.108		**	
Syllable Deletion	SD	1.047	25.000	0.305	0.612	23.000	0.546	4.470	48.000	0.000*
Syllable reduction	SR	0.879	25.000	0.388	0.398	23.000	0.694	1.510	48.000	0.140
Cluster Reduction	CR	1.550	25.000	0.134	0.627	23.000	0.537	3.930	48.000	0.000*
Assimilation Processes										
Labial Assimilation	LA		**			**			**	
Alveolar Assimilation	AA	-1.802	25.000	0.084	0.613	23.000	0.546		**	
Velar Assimilation	VA		**			**			**	
Reduplication	RD	0.369	25.000	0.715	2.139	11.000	0.056*	4.650	48.000	0.000*
Prevocalic Voicing	PV	1.348	21.983	0.191	1.483	11.000	0.166	1.610	48.000	0.110
Substitution Processes										
Stopping	ST	-0.385	25.000	0.704	1.583	11.000	0.142	4.990	48.000	0.000*
Velar Fronting	VF	0.080	25.000	0.937	2.343	14.209	0.034*	7.050	48.000	0.000*
Palatal Fronting	PF	3.761	14.000	0.002*	-1.000	12.000	0.337	2.850	48.000	0.000*
Interdentalization	IF		**			**			**	
Gliding	GL	2.620	17.520	0.018*	0.608	23.000	0.549	5.210	48.000	0.000*
Backing	BK	1.518	25.000	0.141	-1.474	23.000	0.154	5.100	48.000	0.000*

*p<.05: d.f=2; **phonological process not present in one of both age ranges

Table 8. Percentage of children producing syllable processes using the SR Referent.

		Three Year Olds	Four Year Olds	Five Year Olds
Syllable Structure Processes				
Initial consonant deletion	ICD	73.33	33.33	43.07
Final Consonant Deletion	FCD	73.33	50.00	23.07
Syllable Deletion	SD	73.33	16.66	4.69
Syllable reduction	SR	86.66	50.00	23.07
Cluster Reduction	CR	100.00	83.33	61.53
Assimilation Processes				
Labial Assimilation	LA	0.00	0.00	0.00
Alveolar Assimilation	AA	0.00	25.33	7.65
Velar Assimilation	VA	0.00	0.00	0.00
Reduplication	RD	66.66	33.33	0.00
Prevocalic Voicing	PV	66.66	16.66	0.00
Substitution Processes				
Stopping	ST	66.66	76.33	0.00
Velar Fronting	VF	53.33	47.33	7.69
Palatal Fronting	PF	26.66	0.00	7.69
Interdentalization	ID	0.00	0.00	0.00
Gliding	GL	86.66	66.66	23.07
Backing	BK	60.00	8.33	30.76

Graph 1. Percentage of children producing phonological processes using the SR referent.



	ICD	FCD	SD	SR	CR		LA	AA	VA	RD	PV		ST	VF	PF	ID	GL	BK
Three Year Olds	73.3	73.3	73.3	86.6	100.		0.00	0.00	0.00	66.6	66.6		66.6	53.3	26.6	0.00	86.6	60.0
Four Year Olds	33.3	50.0	16.6	50.0	83.3		0.00	25.3	0.00	33.3	16.6		76.3	47.3	0.00	0.00	66.6	8.33
Five Year Olds	43.0	23.0	4.69	23.0	61.5		0.00	7.65	0.00	0.00	0.00		0.00	7.69	7.69	0.00	23.0	30.7

DISCUSSION

The purpose of the present study was to describe sixteen phonological processes in children who are Spanish dominant speakers from Salvadorian households. More specifically, researchers sought to determine if there were differences when using two different dialectal referents when identifying phonological processes. The referents used in this study were the General Spanish Referent (GSR) and the Salvadoran Referent (SR). The General Spanish Referent (GSR) does not account for dialectal features and the Salvadoran Referent (SR) accounts for dialectal difference.

Referent Testing. Means and standard deviations were compared using the GSR and the SR. Results indicated that means and standard deviations were larger when using the GSR. The differences were mostly apparent in the three year old group, such as when measuring for initial consonant deletion, final consonant deletion, and syllable deletion. However, for the four and five year olds, means for most of the phonological processes using both referents (i.e. final consonant deletion, syllable deletion, and cluster reduction) did not fluctuate within the groups. They did, nevertheless, vary between age groups. With a multiple analysis of variance to identify significance of these mean differences, alveolar assimilation, velar fronting, interdentalization, and backing processes were significant. These were alveolar. Further analysis helped to identify specific ages where the significance was noted. In the three year old group, there was a difference between both referents in alveolar assimilation, and interdentalization (13% of processes measured). In the four year old group, velar fronting, interdentalization and backing (19% of processes measured) were significant when comparing between referents. And finally, velar fronting and backing (13% of processes measured) were significant in the five year old group.

The results of this study, with regard to referent testing, demonstrate the effect of considering dialectal differences when assessing Spanish speaking children. Using the standard referent may indeed falsely identify phonological processes. These results are consistent with similar studies by Goldstein and Iglesias (2001), Cole and Taylor (1990), and Washington and Craig (1992). Goldstein and Iglesias (2001) also examined the effect of dialect on phonological analyses in children who were Spanish-speaking and their results revealed that dialectal differences influenced percentage of incidence for phonological processes identified. Similar results were observed in the present study. Likewise, Cole and Taylor (1990), and Washington and Craig (1992) also revealed that when assessing African American English speaking children, overall scores in phonological processes were decreased when professionals took into account dialectal features. For the population of Salvadoran speaking children studied, using the SR for evaluation purposes would lead to a reduction in unnecessary intervention.

Developmental Trends

The data obtained in this study revealed that most phonological processes decreased by age in the subjects regardless of the scoring method used. In order to describe trends, the SR was used since it is the most sensitive to dialectal variations in this community, as mentioned in the previous discussion. Using this method, 10 of the 16 phonological processes decreased over time. This finding is comparable to the literature on phonological processes in children who are bilingual Spanish speaking but mostly of Mexican and Puerto Rican backgrounds (Goldstein, Fabiano, & Washington, 2005). There were some phonological processes did not exhibit a consistent decrease over time, and showed a decline in four year olds only to increase usage in five year olds: Initial consonant deletion, stopping, palatal fronting, backing, and alveolar assimilation. By comparison, labial assimilation, velar assimilation, and interdentalization did not occur in any of the three groups. When looking at significant differences between age groups, three and four year olds performed significantly different with regard to substitution processes (palatal fronting and gliding), while assimilation processes (reduplication) and substitution processes (velar fronting) were also found to be significant between four and five year olds. Finally, performance between three and five year olds was observed to be significant for syllable structure processes (initial consonant deletion, syllable deletion, cluster reduction), assimilation processes (reduplication), and substitution processes (stopping, velar fronting, palatal fronting, gliding and backing). In regards to phonological processes suppressed or in the process of being suppressed, substitution processes (backing and palatal fronting) were evident among the group of four year olds. By the age of five, all three types of processes pointed to suppression: syllable structure processes (syllable deletion), assimilation processes (alveolar assimilation, reduplication, prevocalic voicing), and substitution processes (stopping, velar fronting, palatal fronting).

Clinical Implications

This study has clinical implications to consider. First, the results of the present study are comparable to studies in the literature that showed some phonological processes exhibiting higher percentages of occurrence than others in children from Spanish-speaking backgrounds (i.e., cluster reduction, backing, final consonant deletion, and stopping) (Goldstein & Washington, 2001; Gildersteeve-Neumann and Davis, 1998). Second, it demonstrates that there are some phonological disorders which would be overdiagnosed if dialectal variations are not accounted for, for example, alveolar assimilation, velar fronting, interdentalization and substitution. Third, and as expected, there is a decline in the use of phonological processes in Spanish-speaking children. Table 9 summarizes the results to help clinicians make determinations when assessing children. Finally, the results indicate that speech-language pathologists should take dialectal features into account when evaluating children from Spanish-speaking backgrounds by using formal and informal measures. Because this study addressed those speaking a Salvadoran dialect, other studies should be replicated with other dialectal populations to facilitate the evaluation of children from other Spanish-speaking backgrounds.

Some of the limitations of the present study include the small number of participants. Only 40 children participated in this investigation. Nevertheless, most studies of this nature comprise similar numbers of participants. Further research is needed with a larger number of participants to replicate this study so that it can be generalized to a larger population.

Table 9. Presence and Suppression of Phonological Processes in Three Age Groups

			Present at least 50% of population	Present between 50 and 11 % of population	Present 10% or less of population	Not Present
Three Year Olds	Syllable Structure Processes					
	Initial consonant deletion	ICD	+			
	Final Consonant Deletion	FCD	+			
	Syllable Deletion	SD	+			
	Syllable reduction	SR	+			
	Cluster Reduction	CR	+			
	Assimilation Processes					
	Labial Assimilation	LA				+
	Alveolar Assimilation	AA				+
	Velar Assimilation	VA				+
	Reduplication	RD	+			
	Prevocalic Voicing	PV	+			
	Substitution Processes					
	Stopping	ST	+			
	Velar Fronting	VF	+			
	Palatal Fronting	PF		+		
	Interdentalization	ID				+
	Gliding	GL	+			
	Backing	BK	+			
Four Year Olds	Syllable Structure Processes					
	Initial consonant deletion	ICD		+		
	Final Consonant Deletion	FCD	+			
	Syllable Deletion	SD		+		
	Syllable reduction	SR	+			
	Cluster Reduction	CR	+			
	Assimilation Processes					
	Labial Assimilation	LA				+
	Alveolar Assimilation	AA		+		
	Velar Assimilation	VA				+
	Reduplication	RD		+		
	Prevocalic Voicing	PV		+		
	Substitution Processes					
	Stopping	ST	+			
	Velar Fronting	VF		+		
	Palatal Fronting	PF				+
	Interdentalization	ID				+
	Gliding	GL	+			
	Backing	BK			+	
Five Year Olds	Syllable Structure Processes					
	Initial consonant deletion	ICD		+		
	Final Consonant Deletion	FCD		+		
	Syllable Deletion	SD			+	
	Syllable reduction	SR		+		
	Cluster Reduction	CR	+			
	Assimilation Processes					
	Labial Assimilation	LA				+
	Alveolar Assimilation	AA			+	
	Velar Assimilation	VA				+
	Reduplication	RD				+
	Prevocalic Voicing	PV				+
	Substitution Processes					
	Stopping	ST				+
	Velar Fronting	VF			+	
	Palatal Fronting	PF			+	
	Interdentalization	ID				+
	Gliding	GL		+		
	Backing	BK		+		

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ECHO: Journal of the National Black Association for Speech-Language and Hearing

PREDICTORS OF EMERGENT LITERACY SKILLS AMONG TYPICALLY DEVELOPING AND LANGUAGE DISORDERED BILINGUAL PRESCHOOLERS

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ABSTRACT

The purpose of this study was to determine the effectiveness of acculturation and the home literacy environment of typically developing and language disordered Latino preschoolers in order to predict the variance in emergent literacy skills. Regression analyses suggest that the home literacy environment had a statistically significant relationship to letter identification in typically developing children. However, neither of the variables demonstrated a significant relationship to the scores of bilingual preschoolers diagnosed with language disorders.

KEY WORDS: childhood language disorders, acculturation, bilingual, emergent literacy

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INTRODUCTION

Certain demographic factors can affect reading achievement of English Language Learners (ELL). Some factors that may impact reading achievement include recent immigration, lower socioeconomic status, poor instruction, and disparities between the home and school cultures (Choy, 2003). With recent immigration to the United States, difficulties may arise when reading instruction is provided in English only regardless of the child's native language. If children exhibit limited proficiency in English and in their native language, they will struggle with comprehension of literacy concepts when those concepts are taught in English. On the other hand, cultural values and beliefs also have an effect on emergent literacy. Incorporating these cultural values and beliefs into learning environments will help the child learn and comprehend academic information (Choy, 2003). Since oral language impacts literacy and language is an important aspect of culture, it is important to investigate literacy development and how culture influences it.

Oral language is the foundation for literacy skills (Mather, Goldstein, Lynch, & Richards, 2001). This statement holds true across languages where oral language and the transfer of language skills from one language to another can facilitate reading development (Miller et al., 2006). As children acquire language, they learn prerequisite skills necessary to support the acquisition of literacy such as print knowledge, phonological awareness, writing, and oral language development. These are the four domains necessary for English-Language Learners to develop reading (Restrepo & Towle-Harmon, 2008). Reyes and Azura (2008) conducted three case studies addressing emergent biliteracy from an ecological model perspective. Their case studies illustrated the importance of accounting for various literacy exposure settings and experiences because of their impact on literacy development. Emerging literacy is very complex and requires an in-depth analysis for comprehension of where individuals stand on the literacy continuum.

According to a study conducted by Hammer, Rodriguez, Lawrence & Miccio (2007), mothers of Puerto Rican descent taught early literacy skills to their children four times a week. The frequency of weekly literacy activities varied based on the mothers' beliefs with regards to literacy attainment. This phenomenon can be seen across all cultures. Furthermore, parents expose children to language and literacy in a variety of methods such as when they acknowledge the environmental print and/or relate life experiences to book events. Discussing print material gives children one method of applying language skills for the development of literacy skills (Sonnenschein & Munsterman, 2002). When discussing the experiences involved in attaining literacy skills, it is important to understand how another language may influence the development of literacy in English. Hammer, Davison, Lawrence, and Miccio (2009) conducted a longitudinal study which analyzed the impact that Spanish and/or English spoken at home can have on receptive vocabulary for each language and on English emerging literacy of children attending head start and kindergarten. Overall their findings dismissed the idea of Spanish spoken at home negatively affecting English acquisition and reading abilities. Their results suggested that children whose home language shifted to English did not benefit or show quicker gains in L2 vocabulary growth or reading abilities when compared to children who continued to speak Spanish at home; however, Spanish vocabulary growth did decrease if the primary home language had shifted to English.

Bilingual literacy skills begin developing in similar ways to monolingual literacy skills in terms of establishing vocabulary, understanding language, gaining proficiency in the native language and second language, acquiring print concepts in each language, and awareness of phonemic concepts in both languages (Bialystok, 2002). Tabors, Páez, and López (2003) conducted a study that focused on Spanish-speaking children's oral language and early literacy skills in English and Spanish from pre-kindergarten through second grade. In their study, the researchers assessed phonological awareness, vocabulary skills, symbolic learning and letter identification skills, prewriting skills, and language recalling skills. The researchers categorized these skills into oral language abilities (phonological awareness, vocabulary skills, and recalling skills) and early literacy skills (symbolic learning, letter identification, and prewriting skills). Results from the pre-kindergarten group indicated that in both languages, early literacy task performance was better than oral language task performance. When vocabulary was tested, children scored higher in one language and lower in the other language. Tabors et al. (2003) suggested that a less extensive vocabulary impacts literacy acquisition across both languages. Results indicated that there was a significant relationship between language and early literacy skills in both English and Spanish. The study suggested that bilingual children are learning a variety of skills in two languages prior to formal schooling, and these skills will impact their learning process in the classroom and at home.

Since language development is an important foundation of literacy acquisition, understanding parental involvement in the development of language and literacy is necessary. Parents can take several different approaches in helping their children develop literacy skills. Literacy activities such as letter sound recognition that take place at home have proven to benefit children (Stephenson, Parrila, Georgiou, & Kirby, 2008). Thus, exposure to literacy in the home is important for learning; however, literacy skills for academic achievement are also introduced and taught in formal schooling. Researchers suggest that letter knowledge, vocabulary, phoneme/sound relation, and rhymes are variables that contribute to language growth for literacy acquisition and that phonological awareness is the most significant predictor to emerging literacy skills prior to entrance into formal educational programs (Muter & Diethelm, 2001; Stewart, 2004).

Overall, parent interaction is important in building the language skills necessary for reading and academic success across languages. Storybook reading helps with story comprehension and with orientation towards print. Sonnenschein and Munsterman (2002) conducted a study to analyze the effect that various types of utterances and the affective quality of reading had on early literacy development. Findings suggested that reading frequency between a child and his/her caregiver correlated with literacy abilities. Furthermore, the affective quality of reading interactions led to increased motivation to read. Thus, it becomes apparent that the desire to read and emergent literacy skills typically originate at home.

Although parent involvement is essential for reading development, understanding the influence of the family's culture on literacy practices in the home and school is also important. When working with culturally and linguistically diverse children, the parents' level of acculturation may influence literacy acquisition. Rodriquez and Olswang (2003) described acculturation as the degree to which an individual adopts customs, values, beliefs, and traditions from the distinct culture. Speech-language pathologists should consider the degree of acculturation because it can shape an individual's behavior, highlight individual differences, and does not undermine the family's beliefs and values relevant to intervention programs (Hammer et al. 2007; Rodriguez & Olswang, 2003). It is necessary to recognize how different cultures vary and that their characteristics may differ in their interactions, values, and beliefs when it comes to educational instruction. The case studies by Reyes and Azura (2008) illustrated how acculturated low-income families of Mexican descent took a more active role in their children's literacy development. Additionally, mothers of Puerto-Rican descent that moved inland exposed their children to English at home through reading, more than did mothers that believed English should be taught at school (Hammer et al., 2007). Level of acculturation can impact how parents interact with their children. For example, Mexican-American children are taught at a young age to respect and obey their elders and parents, which leads the children to remain quiet and the parents to communicate in a direct manner (Gillanders & Jiménez, 2004; Rodriguez & Olswang, 2003). This interaction style has also been observed in parent-child interactions among middle-income families before children enter school (Bennett, Weigel, & Martin, 2002; Hammer et al., 2007). Researchers have suggested that Mexican-American immigrant parents are unaware of the school practices that motivate parental involvement in academic situations because of the cultural differences between Anglo-American and Mexican-American academic instruction. Yet, According to Gillanders and Jiménez (2004) parents are willing to take an active role in their child's academic learning. Therefore, speech-language pathologists should consider the family's beliefs and culture when providing treatment and should educate the family on the school's culture and beliefs versus mainstreaming them (Hammer et al, 2007.). Typically, children are enrolled into academic schooling with the cultural belief that teachers and parents play separate roles; the teacher is the educator and the parent the care provider (Rodriquez & Olswang, 2003). As parents become more acculturated, they become more involved in their children's education. Recent Mexican immigrants experience a variety of characteristics that

affect child interaction. Those characteristics include country of origin, years of residency, community in which they have to co-exist, the amount of contact with their home country, and socioeconomic status (Orellana, 2003). As a result, it is likely that the changes due to acculturation will create a difference in the interaction between parents and their children. Furthermore, it has been observed that Latino children practice literacy skills when helping siblings with homework, teaching the family skills that were learned at school, and when assisting and/or translating reading material for the parents (Jiménez, 2001).

With a better understanding of effective predictors of literacy, researchers are given an opportunity to recommend strategies to better prepare children for the acquisition of literacy skills and identify data of at-risk children in order to prevent reading difficulties (Bishop, 2003; Catts, 2001; Haney & Hill, 2004). Important predictors of literacy outcome in typically developing monolingual English speaking children include phonological awareness and letter identification (Bishop, 2003; Mann & Foy, 2003; Young, 2003). Other predictors that appear to have a correlation to literacy include phonological sensitivity, phonological segmentation and home environment (Burgess, 2002; Muter & Diethelm, 2001; Roberts, Jurgens, & Burchinal, 2005). Furthermore, according to McGinty and Justice (2009), print knowledge is acquired prior to formal reading instruction. Specifically, they state that print knowledge is composed of the children's understanding of forms, features, and functions of print.

While numerous researchers have investigated the predictors of literacy in typically developing children (Bishop, 2003; Mann & Foy, 2003; Roberts et al., 2005; Young, 2003), they have also suggested similar predictors in children diagnosed with language disorders (Gallagher, Frith, & Snowling, 2000; Nathan, Stackhouse, Goulandris, & Snowing, 2004). Results suggest that non-developed literacy skills may be due to the effects of language and speech disorders on phonological awareness skills needed for literacy development (Gallagher et al., 2000; Nathan et al., 2004; Raitano, Pennington, Tunick, Boada, & Shriberg, 2004).

After reviewing studies that suggest a variety of predictors for literacy development in monolingual English speakers (Cramer, 2006; Raitano et al., 2004), it is essential to consider if similar predictors exist among bilingual Spanish/English speakers. Phonological processing is suggested to be a predictor of literacy in both monolingual English and bilingual children. Bialystok (2002) suggested that although bilingual children may have similar predictors of literacy as monolingual speakers, bilingual literacy skills may develop differently.

Goldstein and Washington (2001) conducted a study that compared the phonological patterns of bilingual English/Spanish speakers with monolingual speakers (English and Spanish). Results revealed that bilingual speakers had not developed the following phonological patterns as their monolingual English and Spanish counterparts: fricatives and affricates (English) and the flap and trill "r" (Spanish). The researchers further indicated that bilingual children displayed phonological processes similar to monolingual speakers. However, between both monolingual English/Spanish speakers, phonological processes that appeared were different. Monolingual English speakers exhibited phonological processes in stopping and final consonant deletion whereas monolingual Spanish speakers exhibited phonological processes in liquid simplification and cluster reduction.

Additionally, researchers suggested that bilingual children benefit from incorporating metalinguistic skills (Bialystok, 2002; Lesaux & Siegel, 2003) to comprehend phonological awareness similarities in their own language and relate similar phonemes when acquiring the second language (Bialystok, 2002). This will increase their phonological awareness, which is considered to be a predictor for literacy acquisition. Brice, R. and Brice, A. (2009) conducted a study to find if there would be a difference between phonemic awareness skills and phonic skills based on monolingual versus bilingual groups and high versus low reading levels. Results revealed a significant difference on phoneme and grapheme identification when comparing the two language groups and the two reading level groups. These findings further strengthen the importance of phonic skills and phonemic awareness for English-language-learning children.

A paucity of research exists concerning the predictors of emergent literacy in bilingual children diagnosed with a language disorder. A current study by Gonzales and Shanmugam (2006) found a significant difference in letter identification tasks between the Latino (a) preschool population who were either typically developing or language disordered. Since some researchers suggest that letter identification is a predictor of literacy skills (Bishop, 2003; Catts, Fey, Tomblin, & Zhang, 2002) and there is limited research on language disordered bilingual children, there is a need for research investigating the predictors of literacy skills with a bilingual population.

The purpose of this study was to determine variables predictive of emergent literacy skills in both typically developing and language disordered Latino preschoolers. The research questions are:

1. To what extent do the degree of acculturation and the home literacy environment contribute significantly to the variance in the emergent literacy skills of typically developing Latino (a) preschoolers?
2. To what extent do the degree of acculturation and the home literacy environment contribute significantly to the variance in the emergent literacy skills of language disordered Latino (a) preschoolers?

METHODOLOGY

Participants

The participants of this study included twenty-eight bilingual preschoolers who were part of a larger study by Gonzales and Shanmugam (2006) on the emergent literacy skills and the home and school literacy environments of preschoolers. Children and their families attending local Head Start Centers and preschool programs located in western Massachusetts were invited to participate in the study. Of the twenty-eight participants, eighteen were placed into a control group (typically developing) and 10 were placed into an experimental group (language disordered). The participants were of Puerto Rican descent and ranged from monolingual Spanish speakers to bilingual Spanish-English speakers. The dominant language was verified through a questionnaire, and all testing was completed in the dominant language and facilitated with the second language. Table 1 indicates the dominant language of both groups of participants, typically developing and language disordered. Most of the participants were speakers of both Spanish and English with the majority demonstrating greater proficiency in English than Spanish.

Table 1. Participants' Dominant Language.

Participants	Sample Size	Dominant Language
Typically Developing	*n* = 18	Spanish (*n* = 0)
		English (*n* = 3)
		*Span/Eng (*n* = 6)
		**Eng/Span (*n* = 9)
Language Disordered	*n* = 10	Spanish (*n* = 0)
		English (*n* = 3)
		*Span/Eng (*n* = 2)
		**Eng/Span (*n* = 5)

*Span/Eng refers to bilingual preschoolers where Spanish was the dominant language.

**Eng/Span refers to bilingual preschoolers where English was the dominant language.

Inclusionary criteria for the participants included preschool children between the ages of four years, zero months and four years, 11 months who were Spanish and/or bilingual (Spanish/English speakers) and of Puerto Rican descent. Children placed in the control group were required to pass a hearing and language screening to verify the absence of a language disorder. On the other hand, children placed in the experimental group were required to pass a hearing screening. Language assessments were administered to substantiate a language disorder as the children had already qualified for speech therapy services by other certified speech-language pathologists in head start centers or school districts.

2.2 Procedures

A speech and language screening was conducted to verify that the control group consisted of typically developing children without language delays/disorders. The Preschool Language Scale – 3 (PLS-3) (Zimmerman, Steiner, & Pond, 1992) was administered, and spontaneous language samples were obtained to verify that a language delay/disorder existed to qualify for the experimental group. The PLS-3 was administered in the dominant language and facilitated with the second language. After the absence and/or presence of a language disorder was verified, three measurements were administered to determine environmental print recognition, letter identification (Ezell, Gonzales, & Randolph, 2000) and comprehension of print concepts (Clay, 1979).

The Reading Environmental Print (Ezell et al., 2000) task was an expressive task where 20 cards with environmental print were presented to the child. The child was asked to label the environmental print (ex. pictures of common signs like a stop sign) on the card and a point was assigned for each correct response. When all points were assigned, they were totaled to obtain the overall total score. The second task administered was the Letter Identification Task (Ezell et al., 2000). In this task, letters found in the child's name and five additional letters were selected by the examiner. The letters were then arranged and displayed in random order and the child was instructed to identify the letters found in his/her first name. The letters selected were recorded and a point was assigned for each letter that was found in the child's name. The score for this task was obtained by adding the total possible letters and the total letters selected correctly. In order to generate the overall score, the total correct was divided by the total possible letters and multiplied by 100. Finally, the Concepts About Print (Clay, 1979) test was administered which required the child to demonstrate his/her emergent literacy skills such as: identifying the front book cover, reading left to right, word sequencing, word concepts, and punctuation.

Following the three measurements used to investigate emergent literacy skills, the Pediatric Acculturation Rating Scale (Cuéllar, Montgomery, Gonzales, & Gonzalez, 1997) was administered to determine the acculturation level of the participants through variables such as household income, parent occupation, parent educational levels, and parent self-identification (refer to Tables 2 and 3).

Table 2. Acculturation Rating Scale Characteristics of Typically Developing Participants.

Characteristics	Coding	Number	Percentage
	Control Group (Typically Developing) $N = 18$		
Maternal Generation Level	1st Generation	14	78%
	2nd Generation	4	22%
	3rd Generation	0	0%
	4th Generation	0	0%
	5th Generation	0	0%
Paternal Generation Level	1st Generation	11	61%
	2nd Generation	6	33%
	3rd Generation	1	5%
	4th Generation	0	0%
	5th Generation	0	0%
Maternal Ethnicity	Puerto Rican	14	78%
	Puerto Rican-American	2	11%
	Latina; Hispanic; Latin American	2	11%
	American	0	0%
Paternal Ethnicity	Puerto Rican	12	67%
	Puerto Rican-American	3	17%
	Latino; Hispanic; Latin American	2	11%
	American	0	0%
	Missing Data	1	6%
Preferred Language	Spanish	10	56%
	Both	5	28%
	English	3	17%
Maternal Education	0-3 years	0	0%
	4-6 years	0	0%
	7-9 years	2	11%
	10-12 years	7	39%
	College	9	50%
	Graduate School	0	0%
Paternal Education	0-3 years	0	0%
	4-6 years	1	6%
	7-9 years	2	11%
	10-12 years	10	56%
	College	3	17%
	Graduate School	0	0%
	Missing Data	2	11%
Family Yearly Income	0 – 12,500	7	39%
	12,501 – 25,000	5	28%
	25,001 – 37,500	3	17%
	37,501 – 50,000	2	11%
	50,001 – 62,500	1	6%
	Missing Data	0	0%

Table 3. Acculturation Rating Scale Characteristics of Participants Diagnosed with a Language Disorder.

Characteristics	Coding	Number	Percentage
	Experimental Group (Language Disordered) $N = 10$		
Maternal Generation Level	1st Generation	10	100%
	2nd Generation	0	0%
	3rd Generation	0	0%
	4th Generation	0	0%
	5th Generation	0	0%
Paternal Generation Level	1st Generation	7	70%
	2nd Generation	3	30%
	3rd Generation	0	0%
	4th Generation	0	0%
	5th Generation	0	0%
Maternal Ethnicity	Puerto Rican	8	80%
	Puerto Rican-American	1	10%
	Latina; Hispanic; Latin American	1	10%
	American	0	0%
Paternal Ethnicity	Puerto Rican	5	50%
	Puerto Rican-American	3	30%
	Latino; Hispanic; Latin American	2	20%
	American	0	0%
Preferred Language	Spanish	6	60%
	Both	3	30%
	English	1	10%
Maternal Education	0-3 years	0	0%
	4-6 years	2	20%
	7-9 years	1	10%
	10-12 years	4	40%
	College	3	30%
	Graduate School	0	0%
Paternal Education	0-3 years	0	0%
	4-6 years	2	20%
	7-9 years	2	20%
	10-12 years	5	50%
	College	0	0%
	Graduate School	0	0%
	Missing Data	1	10%
Family Yearly Income	0 – 12,500	4	40%
	12,501 – 25,000	3	30%
	25,001 – 37,500	2	20%
	37,501 – 50,000	0	0%
	50,001 – 62,500	0	0%
	Missing Data	1	10%

Overall results of the acculturation rating scale indicated that 70% of the typically developing participants were from first-generation parents as compared to 85% of the participants diagnosed with a language disorder. Approximately 50% of maternal education level for the typically developing group was college level. As for the maternal education level for the group diagnosed with a language disorder, 40% had completed 10-12 years of education. On the other hand, approximately 39% of the parents of both groups indicated having an income of $12,500 or less. Twenty-eight percent of the families reported incomes of $12,501 to $25,000. Only 17% reported incomes of $25,001 to $37,500. The rest of the families (17%) reported incomes of $37,501 to $62,500. Some of the occupational levels included proprietors of large businesses, homemakers and executives. The majority of typically developing families held an occupational level of semiskilled workers, business owners, and managers; whereas, families of children diagnosed with a language disorder consisted of homemakers and semiprofessionals (refer to Tables 2 and 3).

In addition to the acculturation scale, a home literacy parent questionnaire was administered to identify literacy opportunities in the home environment. Parents were asked about the exposure each child had to reading materials, the number of books the child had in the home, the child's access to books, the frequency of the child reading or looking at books, the child's curiosity about letters, words, or numbers, and the child's ability to read letters, words, or numbers. Responses were issued points and the points were totaled for a composite score. Each session was conducted at the preschool or in the home, depending on the participants' preference (Ezell et al., 2000).

RESULTS

The data were entered into a database using the Statistical Package of Social Sciences software version 13.0 (SPSS Inc., 2004). In order to ensure consistency of entries, the author reviewed the variables and scores from the three measurements, the acculturation rating scale (Cuéllar et al., 1997) and the parent questionnaire (Ezell et al., 2000) to compare it to the data entered. If any discrepancies were found between the entries, the first author reviewed the data and decided the correct score. This resulted in 100% agreement of data entry.

The data were analyzed using bi-variate forced entry regression procedures with SPSS version 13.0 (SPSS Inc., 2004) to compare the predictive variables of emergent literacy outcomes of the two preschool groups (typically developing and language disordered). The predictive (independent) variables consisted of the total scores of the Pediatric Acculturation Scale (Cuéllar et al., 1997) and the Parental Home Literacy questionnaire (Ezell et al., 2000). The emergent literacy outcome variables consisted of letter identification (Ezell et al., 2000), recognition of environmental print (Ezell et al., 2000), and Concepts about Print Test (Clay, 1979) scores. Parental level of acculturation and the home literacy environment were the predictive variables analyzed to determine their impact on the variability of the emergent literacy scores of typically developing preschoolers and children diagnosed with language disorders.

3.1 Descriptive Statistics

Means and standard deviations for the predictive variables and the three emergent literacy measurements of preschoolers who were typically developing and diagnosed with a language disorder are included in Table 4.

Table 4. Descriptive Statistics of the Variables and the Participants.

	Control Group Typically Developing (n=18)				Experimental Group Language Disordered (n=10)			
Variables	Mean	*SD*	Min.	Max.	Mean	*SD*	Min.	Max.
Environmental Print	6.5556	4.25955	1	15	6.4000	5.21110	1	15
Letter Identification	44.1667	30.48481	0	100	18.1000	27.56588	0	75
Concepts About Print	4.7222	2.60781	1	11	3.8000	1.75119	2	7
Acculturation Score	31.6667	8.60403	19	49.50	27.5500	8.41114	18.50	40.50
Parent Questionnaire	27.9444	4.22141	22	35	23.2000	6.40833	15	36

3.2 Correlation

The correlation matrix of the predictive variables and the emergent literacy skills of the bilingual preschoolers who are typically developing and diagnosed with a language disorder are presented in Table 5.

Table 5. Pearson's Correlations Among Variables of Bilingual Typically Developing and Language Disordered Participants.

	Environmental Print Score	Letter Identification Score	Concepts of Print Score	Acculturation Score	Parent Questionnaire Score
			Control Group (Typically Developing) (n=18)		
Environmental Print Score	1.000 ---	-.154 (.542)	.497 (.036)*	.156 (.536)	.021 (.933)
Letter Identification Score		1.000 ---	-.102 (.686)	.563 (.015)**	.783 (.000)**
Concepts of Print Score			1.000 ---	.048 (.850)	.170 (.501)
Acculturation Score				1.000 ---	.596 (.009)**
Parent Questionnaire Score					1.000 ---
			Experimental Group (Language Disordered) (n=10)		
Environmental Print Score	1.000 ---	-.023 (.950)	-.209 (.561)	.539 (.108)	.646 (.044)*
Letter Identification Score		1.000 ---	.452 (.190)	.518 (.125)	.069 (.850)
Concepts of Print Score			1.000 ---	.178 (.623)	.143 (.694)
Acculturation Score				1.000 ---	.252 (.482)
Parent Questionnaire Score					1.000 ---

* $p < .05$, two-tailed. ** $p < .01$, two-tailed

As can be seen in Table 5, of the typically developing bilingual preschoolers, the Parental Home Literacy Environment questionnaire (Ezell et al., 2000) and the Pediatric Acculturation Scale (Cuéllar et al., 1997) were both significantly correlated to letter identification (p = .000 and p = .015 respectively). However, no significant correlation was found between either predictive variable (Parental Home Literacy questionnaire and Pediatric Acculturation Scale) with environmental print (p = .933 and p = .536), and Concepts About Print scores (p = .501 and p = .850).

The correlation matrix of the language disordered bilingual preschoolers revealed that of the two predictive variables, the Parent Home Literacy questionnaire significantly correlated to environmental print (p = .044). However, no significant correlation was found with letter identification, (p = .850 and p = .125), and Concepts About Print, (p = .694 and p = .623).

3.3 Regression Analysis

The regression analyses revealed that when combined, the two predictive variables suggest a statistically significant relationship to letter identification in bilingual typically developing children (R = .792; p = .001) as they accounted for approximately 63% of the variance in the outcome measure. No significant relationship was found between the Parental Home Literacy questionnaire (Ezell et al., 2000) and Pediatric Acculturation Scale (Cuéllar et al., 1997) with environmental print recognition (F = 2.51; p = .781) or Concepts About Print (F = .257; p = .777) as seen in Table 6 and 7. Of the two predictive variables, only the Parental Home Literacy questionnaire score accounted for a statistically significant portion of the scores (p = .003) in the letter identification score of typically developing participants. When the predictive variables were analyzed individually, they neither accounted for a statistically significant relationship among environmental print and Concept About Print scores.

Table 6. Forced Regression Results of Typically Developing Participants.

n=18	Multiple *R*	R^2	Adj. R^2	R^2 Change	*F*	*p*
Environmental Print	.180	.032	-.097	.032	.251	.781
Letter Identification	.792**	.627	.577	.627	12.610	.001
Concepts About Print	.182	.033	-.096	.033	.257	.777

* $p < .05$, one-tailed. ** $p < .01$, one-tailed

Table 7. Variables in the Equation for Predictors of Outcome Scores of Typically Developing Participants.

Predictors (n=18)	*B*	*SE B*	B	*t*	*p*
			Environmental Print Score		
Acculturation Score	.110	.157	.223	.703	.493
Parent Questionnaire Score	-.112	.319	-.111	-.352	.730
			Letter Identification Score		
Acculturation Score	.532	.696	.150	.765	.456
Parent Questionnaire Score	5.005	1.418	.693	3.529	.003*
			Concepts About Print Score		
Acculturation Score	-.025	.096	-.082	-.260	.798
Parent Questionnaire Score	.135	.195	.219	.691	.500

3.4 Predictive Variables of Bilingual Language Disordered Preschoolers

Regression analyses between both predictive variables in bilingual language disordered preschoolers are shown in Table 8. Of the two predictive variables, neither variable accounted for a statistically significant portion of the scores of the language disordered participants in environmental print (F = 4.617; p = .053), letter identification (F = 1.312; p = .328), and Concepts About Print (F = .153; p = .861). When the predictive variables were analyzed individually, neither predictive variable accounted for enough of the environmental print, letter identification or Concepts About Print score variance to reveal a statistical significance (refer to tables 8 and 9).

Table 8. Forced Regression Results of Language Disordered Participants.

n=10	Multiple *R*	R^2	Adj. R^2	R^2 Change	*F*	*p*
Environmental Print	.754	.569	.446	.569	4.617	.053
Letter Identification	.522	.273	.065	.273	1.312	.328
Concepts About Print	.205	.042	-.232	.042	.153	.861

* $p < .05$, one-tailed. ** $p < .01$, one-tailed

Table 9. Variables in the Equation for Predictors of the Outcome Score of Participants Diagnosed with a Language Disorder.

Predictors (n=10)	*B*	*SE B*	B	*T*	*p*
			Environmental Print Score		
Acculturation Score	.249	.159	.402	1.567	.161
Parent Questionnaire Score	.443	.209	.545	2.124	.071
			Letter Identification Score		
Acculturation Score	1.753	1.092	.535	1.606	.152
Parent Questionnaire Score	-.283	1.433	-.066	-.198	.849
			Concepts About Print Score		
Acculturation Score	.032	.080	.152	.397	.703
Parent Questionnaire Score	.029	.104	.104	.273	.793

DISCUSSION

The purpose of this study was to determine the effectiveness of acculturation and the home literacy environment to predict the variance in the emergent literacy skills of typically developing and diagnosed with a language disorder Latino (a) preschoolers. Correlation analyses suggested that both predictive variables were correlated to letter identification. However, regression analyses indicated that of the two predictive variables, the home literacy environment revealed a statistically significant relationship to letter identification in typically developing Latino (a) preschoolers. The findings revealed that exposure to books, time allotted for reading and stories recited in the home, etc. had more of an influence on letter identification rather than the acculturation level among the bilingual typically developing participants. Neither of the predictive variables accounted for a significant portion of the variance among the three emergent literacy scores in language disordered bilingual preschoolers. Even though a positive correlation was found between environmental print and parent questionnaire in this population, the regression analysis did not reveal a significant relationship to environmental print when predictors were combined ($p = .053$) or analyzed separately ($p = .161$; $p = .071$). After a review of previous studies, researchers indicated that phonological awareness (Bialystok, 2002; Manis, Lindsey, & Bailey, 2004; Mann & Foy, 2003), letter knowledge, phonological segmentation and processing, vocabulary, print knowledge, and home environment activities (Bennett et al., 2002; Gottardo, 2002; Hammer, Miccio, & Wagstaff, 2003; Manis et al., 2004; Muter & Diethelm, 2001) are effective predictors of literacy skills in bilingual children. The results of this current study suggest that it was the home literacy environment that accounted for a significant portion of the variance of the emerging literacy skills in letter identification among the typically developing bilingual preschool population. Therefore, the current results would concur with previous findings (Bennett et al., 2002; Davison, 2009; Ezell et al., 2000; Reyes & Azura 2008; Stephenson et al. 2008; Sonnenschein & Munsterman, 2002) indicating that the home environment activities play an essential role in literacy acquisition. However, in this study no significant relationships were found between the predictors and the emergent literacy skills of preschoolers diagnosed with a language disorder.

The results of this study suggest that the impact of parent involvement in the home environment significantly affected letter identification. Previous research demonstrated that for third and fourth grade bilingual speakers, effective predictors were phonemic awareness, letter identification, and word reading when instructed in Spanish (August, Calderón, & Carlo, 2002). Therefore, the researchers indicated that letter identification is a strong predictor when analyzed individually. However, it is important to note that August et al. (2002) investigated second grade to third and fourth grade student performance when instructed in Spanish whereas this current study measured the performance of preschool children only.

Studies (Bennett et al., 2002; Hammer et al., 2003) indicated that exposure to literacy in the home and parent interaction is important for language and learning. This current study concurred that the home literacy environment was a significant predictor in the typically developing bilingual child's performance on letter identification, and according to some studies (Bishop, 2003; Mann & Foy, 2003; Tabors et al., 2003) letter identification is a contributing factor to literacy acquisition and achievement. According to a systematic literature review conducted by Hammer and Miccio (2006), bilingual children from low-income families have poorer phonological awareness and letter knowledge when compared to middle income families which can affect early language and reading development. Furthermore, their early language abilities predicted reading abilities whereas their home literacy environment did not. This current study suggested that the acculturation level, which included SES, was not predictive of emergent literacy skills. Socioeconomic status was not analyzed individually because it was one of many variables used to calculate the total acculturation score. Furthermore, the acculturation rating scale used in the current study included the education level of the parents and the results revealed that despite the parent's educational level, acculturation was still not a significant predictor. Again it is important to note that the acculturation score consisted of a combination of variables. Therefore, if the paternal and maternal education levels were singled out, then perhaps the education level itself would have been a significant predictor. Overall, this current study indicated that together, the parent's degree of acculturation, education, occupation and income did not account for the variance in emergent literacy skills of either typically developing or language disordered preschoolers. Rather the parent's involvement in literacy skills is what accounted for more of the variance in the scores in letter identification among typically developing children. Therefore, the child still has the opportunity to gain appropriate emergent literacy skills regardless of SES, parent's education, occupation, or income.

Tabors et al. (2003) indicated that letter-word identification and dictation subtest results were similar in bilingual English-Spanish- pre-kindergarten through second grade. To further support the impact of letter identification, Tabors et al. mentioned that letter identification was one of the contributing factors that indicated a relationship between language and early literacy skills in both languages. Similarly, the current findings revealed that the home literacy environment was an effective predictor for emergent literacy skills in letter identification among typically developing bilingual children. In addition, Bishop (2003) and Lesaux and Siegel (2003) concurred that letter identification was

also a predictor. However their study only supports this among monolingual English speakers.

A significant correlation was noted by Stephenson, et al. (2008) between parents' report of reading to their children and their kindergarten word reading and letter knowledge abilities. In this study, 90% of the parents who reported reading to their children also reported teaching the alphabet, its sounds, and/or how to read words. Therefore it was concluded that teaching activities and storybook reading might not be independent from one another. A later study by Catts et al. (2002) revealed that from kindergarten to fourth grade, the children with language impairments were experiencing difficulty with word recognition. Furthermore, Catts et al. also indicated that a significant predictor of literacy acquisition was letter identification.

The overall results of this current study may be explained from a language perspective. It is important to reiterate that oral language is the foundation for literacy. A child with a speech-language disorder is likely to have trouble with phonological awareness, reading, and spelling skills (Nathan et al., 2004). When children have a language impairment, it is difficult for them to understand the sound/symbol associations, word recognition, and the use of words. If a child has difficulty with acquiring the appropriate language skills needed for emergent literacy, then the child will show deficits or delays in literacy acquisition. Although children are influenced by literacy opportunities in the home and learning environment, the neurological deficit seems to override typical language stimulation and acquisition, which suggests that the disorder is a strong mitigating factor with the literacy acquisition process.

CONCLUSION

In conclusion, this study suggests that the home literacy environment is important to the acquisition of emergent literacy skills among typically developing bilingual preschool children. Prior to formal schooling, acquiring language and learning occurs in the home and it is important to enrich children's language skills who are both typically developing or diagnosed with a language disorder to allow the opportunity for early learning experiences in order to help with further language acquisition and emergent literacy skills. If the home environment provides opportunities for language acquisition and learning prior to formal education, the opportunity to teach and involve children in many experiences will allow for a more effective academic transition into school. However, further research is needed to examine additional predictors of the emergent literacy skills of bilingual preschoolers.

Acknowledgements

This research was supported by a Joseph P. Healey Endowment Grant from the University of Massachusetts at Amherst. The authors express gratitude to all participating families and personnel employed at the various preschool and Head Start Programs in western Massachusetts. Special thanks are extended to Aidelisa López Carrasco for her invaluable assistance in the collection of data as a graduate research assistant.

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ECHO: Journal of the National Black Association for Speech-Language and Hearing

PREPARING COLLEGE STUDENTS WHO STUTTER TO ENTER THE WORKING WORLD

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ABSTRACT

The purpose of this paper is to describe how speech-language pathologists (SLPs) can better prepare college students who stutter to become more confident and ready to handle job interviews and on-the-job responsibilities. We provide a review of research discussing stereotypes of persons who stutter, present a case example, and examine how SLPs can work collaboratively with the client and college career counselors to help prepare college students who stutter to enter the working world.

KEY WORDS: Stuttering, college students, employment

ECHO: Journal of the National Black Association for Speech-Language and Hearing

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INTRODUCTION

Finding a job can be stressful for any person. The task often involves multiple interviews with multiple companies and multiple people in several different situations. A job interview with just one company may be conducted over the phone, video chat, or in person. It may be with one person or the interviewee could face a group of people. The entire interview process may take place in the span of one 45-minute period or it may be spread out over hours, or days, and involve callback interviews with different members of the company.

For people who stutter (PWS), finding a job can be an arduous task. In addition to the anxiety and frustration that all applicants may feel while looking for a job, those emotions can be exacerbated for those who have a fluency disorder. For many PWS, any new situation can lead to concern over a moment of fluency failure (Fini, 2014). That, in addition to negative feelings and stereotypes that potential employers have towards PWS, can cause additional stress.

For college students who stutter, that stress can often be heightened by the fact that, for many, this is their first time finding employment in an area of their chosen career path. Be it an internship while still in college, or long-term employment following graduation, finding a job is a more serious and complex task at this stage in their lives than it might have been during their search for part-time work in high school or college. Potential employers look at many different factors when interviewing applicants, including relevant experience and character traits that are beneficial to the job. Moreover, employers are increasingly looking at the communication abilities of job seekers. In a recent survey on the skills and attributes that they look for on a candidate's resume, over 67% of employers chose verbal communication skills as an important quality (NACE, 2014).

Again, the job interview process can be difficult for people who stutter. But the anxiety that arises from stuttering does not stop once the interview process is over and a job has been obtained. Thereafter, on-the-job responsibilities that are required for many positions can also cause apprehension and uneasiness for PWS. In today's workforce, employees are required to constantly communicate verbally with new people in new situations. Communication is becoming increasingly important in different fields of employment (Ruben, 2000; Mayo, Mayo, Bridges, Grimsley, & Jones, 2007) and first impressions often have long term consequences. An initial encounter with a supervisor or colleague can forever alter perceptions of a person's professional skills and abilities. For many PWS, the fear of making a bad impression can lead to a lack of confidence and low self-esteem when preparing to enter the job market. In an effort to better prepare themselves for the interview and job process, many college students who stutter may seek additional help from different sources (Guitar, 2006). One of those sources may be speech-language pathologists (SLPs). As practitioners on the forefront of research-driven stuttering therapy, SLPs are in the unique position of helping college students who stutter in their quest for a successful job search.

The purpose of this paper is to describe how speech-language pathologists can better prepare college students approaching graduation and who also stutter to become more confident and prepared to handle both job interviews and on-the-job responsibilities. We will discuss negative stereotypes that many, including employers, have about people who stutter. We will also examine how SLPs can work with college students and prepare them for situations they may have to face during the interview process and on the job. Finally, we will discuss how SLPs can work directly with college career counselors to help prepare college students who stutter to enter the working world and present a case example.

Negative Stereotypes and their Effect on the Employability of Persons Who Stutter

A consistent theme throughout the literature has been the negative stereotypes purported about stuttering and PWS. As Manning (2010) noted, "the natural manner of humans to conceptualize any group of people by stereotyping them limits understanding as well as the ability to provide assistance" (p. 88). Despite the availability of research findings that have dispelled these stereotypes, they have persisted in the minds of the general public due in part to a type of 'false advertising' about stuttering and lack of knowledge by the public about stuttering and PWS. For example, the negative depictions of stuttering in the different streams of media have not helped dissipate many of these stereotypes. Television shows, movies, and cartoons have shown stuttering as a source of comic relief. In these portrayals, PWS are also often seen as less intelligent, less capable, shyer and less psychologically balanced than their more fluent peers (Benecken, 1995; Johnson, 2008). Another source of these stereotypes could be that normally fluent persons have limited personal experience with persons who stutter (Craig, Tran, & Craig, 2003; Manning, 2010) and therefore draw upon the above-mentioned media depictions of PWS or rely on past interactions, memories, or observations to formulate their beliefs about PWS. Also, persons who do not stutter may develop their stereotypes about PWS based on generalizations from their *own* experiences with normal disfluency and how *they* felt during those moments, i.e., embarrassed, anxious, or frustrated (MacKinnon, Hall, & Macintyre, 2007).

Deeper examination of three of these stereotypes: (a) *People who stutter are nervous, shy, and/or self-conscious,* (b) *Stuttering is caused by emotional trauma or psychological disorder*, and (c) *People who stutter are less competent or capable*, sheds factual light on these misconceptions and may be used to educate groups such as employers and college career counselors. First, while PWS may occasionally become more disfluent when they are nervous or under stress (as do people who do not stutter), nervousness is not the cause of stuttering (Guitar, 2006). Additionally, though it is true that some PWS may be hesitant to speak at times, they can be assertive and candid and can excel in leadership positions (National Stuttering Association, n.d.). For the majority of cases, the root cause of stuttering is not an emotionally traumatic event. Second, while some studies may suggest that trauma could trigger stuttering in a child who already is predisposed to it, most research shows that emotional trauma does not cause stuttering. Likewise, for psychological disorders (Bloodstein & Bernstein Ratner, 2007). Conditions such as social anxiety disorder (also known as 'social phobia') have been found to exist in higher levels in treatment-seeking persons who stutter than in persons who do not stutter (Iverach & Raper, 2014), but this appears to be a reaction to a lifelong experience with stuttering. Thus, emotional factors may be present in PWS, but stuttering is not primarily a psychological condition rooted in anxiety (Rice & Kroll, 1994). Third, with respect to the competence or capability of PWS in the work world, they have found success in every imaginable field, including education, science, engineering, and performing arts (Silverman & Paynter, 1990; Lewis, Neiders, Reeves, Roden, Steiner, & Van Der Berg, 2000). Furthermore, while Hurst and Cooper (1983) found that 75% of the 644 employers whom they surveyed believed that stuttering negatively impacts a person's employability, 58% stated that stuttering does not interfere with the manner in which a PWS performs his/her job (viz: competency or capability).

The clinician working with job-seeking college students who stutter should also be aware of more recent studies that have explored self-stereotyping or self-stigmatizing among PWS as a group and consider if and how this phenomenon may feed into their clients' concerns about interviewing and employment (Bricker-Katz, Lincoln, & Cumming, 2013). Studies have found that persons who stutter have themselves been found to harbor negative opinions of people exhibiting chronic fluency failure (Kalinowski, Lerman, & Watt, 1987; Lass, Ruscello, Pannbacker, Schmitt, Middleton, & Schweppenheiser, 1995). Elsewhere, Klein and Hood (2004) found that 70% of PWS agree that stuttering decreases one's chance of getting hired or promoted, over 33% of PWS feel stuttering interferes with their job performance, and 20% of PWS have turned down a job or promotion because of their stutter. Moreover, negative perceptions of PWS by employers and others and the internalization of these attitudes by the PWS can lead to occupational role entrapment or the pigeonholing of those who stutter into jobs that do not require much verbal communication and one of the insidious consequences of this phenomenon is that the PWS may *self-select* such low-communication, low-prestige, and low-paying positions due to their stuttering (Gabel, Blood, Tellis, & Althouse, 2004). Finally, one report on the perceptions of PWS about work experiences and discrimination they face noted that their employers had made negative judgments during job interviews and promotional opportunities due to stuttering (Palasik, Gabel, Hughes, & Rusnak, 2012).

These are some of the stereotypes, statistics, and ramifications that college students who stutter may have to deal with when it is time for them to interview for an internship or their first job post-graduation. Again, the interview process leading to professional employment can be daunting for any college student. An added disability can cause college students who stutter to feel even more overwhelmed and according to the World Health Organization's (WHO) International Classification of Functioning Disability and Health (ICF) (2001), stuttering can be considered a disability (Yaruss & Quesal, 2004). Thus, like many people with disabilities, PWS may need additional support and assistance in order to

achieve their goals and objectives in the workplace. College students who stutter will often be in need of additional assistance when preparing to interview for their first job or internship. Some may not only need therapy for their stuttering, they may also need help in dealing with the emotions that come both with the stuttering and with preparing for a job interview. SLPs are in unique positions to help college students who stutter as they ready themselves for internships and post-graduate employment. Because the bottom line is that stuttering alone should not prevent any person from being hired for a job for which they are qualified or completing any job tasks that are required.

The Speech-Language Pathologist as a Resource for Preparing the College Student Who Stutters for Entry to the Working World

SLPs are a valuable resource for college students who stutter as they strive to achieve their career goals. These professionals have had years of intense training and on-the-job experience assessing and treating disfluent individuals. In our opinion, stuttering therapy should be tailored to meet the needs of the individual client utilizing strategies which address his/her unique stuttering behavioral pattern, emotional or affective response to stuttering, and negative attitudes toward stuttering which can dictate what they think about themselves, their place in the world, and the risks they are willing to take. In this regard, for clients who are college students, SLPs can integrate stuttering strategies with job preparation strategies. In this way, the clients can become comfortable using their treatment strategies during the interview process (Brundage, Graap, Gibbons, Ferrer, & Brooks, 2006). Treatment is always preceded by assessment and some assessment areas and tools useful in evaluating job-seeking college students who stutter are described in Table 1.

When working with college students who stutter, it is important for SLPs to establish a person-centered therapy from the very first session (Sheehan, 2003). That way, the client is made aware that he/she is the main focus of therapy. This is important because it allows the SLP to start where the client is ready to

TABLE 1. Assessment Areas and Tools Useful in Working with Employment-Seeking College Students Who Stutter.

Area of Assessment	Assessment Tools
Disfluency analysis	Identify disfluency frequency and type
Determine stuttering severity	*Stuttering Severity Instrument (SSI)*
Assess the level of impairment, disability, or handicap imposed by the client's stuttering and perceived employment limitations.	*Overall Assessment of the Speaker's Experience of Stuttering-Adult (OASES-A)* (Yaruss & Quesal, 2008).
Determine client's assumption of responsibility for personal behavior or 'internality.' Internality has been found "to be predictive of progress within behavioral therapy and more specifically in fluency therapy." (Craig & Howie, 1982; Hohulin & Sawyer, 2010)	*Locus of Control Behavioral Scale* (Craig, Franklin, & Andrews, 1984)
Identify existing or potential occupational role entrapment issues and perceptions of employers regarding the suitability of PWS pursuing various careers.	*Vocational Advice Scale* (Gabel et al. 2004)
Evaluate the client's career search self-efficacy i.e., his/her "confidence in their ability to complete tasks related to all aspects of obtaining a job, including job searching, interviewing, networking, and exploring their own preferences for a career." (Corie et al. 2015)	*The Career Search Self-Efficacy Scale (CSES)* (Solberg et al., 1994)
Collaborate with college career counselor to determine the client's readiness for employment (defined as being able with little or no outside help, to get and keep an appropriate job as well as to be able to manage transitions to new jobs as needed).	Employment readiness scales and similar inventories

start, not where the SLP feels that the client should start. For example, a client may be fine with stuttering, but he/she wants to know how they can address their stuttering with others. If this is the case, then the SLP does not need to try to force the client to practice stutter-free speech strategies. That would waste both the SLP's time and the client's time, and it would signal to the client that the SLP is not listening to his/her wants and needs. When working with college students, the SLP should help the client feel comfortable enough to express his or her feelings with the SLP and to realize their potential for growth, development, and self-realization (Sheehan, 2003).

In helping college-aged clients to feel comfortable in fluency treatment sessions, it is important for SLPs to build therapeutic relationships with their clients. Building therapeutic relationships can be tricky, but it is important in establishing trust between the client and the SLP. First, the SLP must always be genuine (Manning, 2010). If the SLP has not had any personal experience with stuttering, then she does not need to pretend that she has. But she can still make a connection by practicing empathy and warmth with her client. For instance, if a client shares a personal, traumatic memory, the SLP can display compassion and say something along the lines of "That must have been hard for you." Another important consideration in developing the therapeutic relationship lies in the clinician's efforts to learn about the phenomenon of stuttering from those who stutter as they are in the best position to educate us about their stuttering. As Manning (2004) notes, there are benefits to be gained by the SLP relinquishing his/her role as the "expert," chief among these being that "we [SLPs] can learn enough so that we can begin to provide timely and necessary assistance that will help people begin to move forward with their speech and with their life." (p. 61).

SLPs can also connect with clients and build therapeutic relationships both by practicing active listening and by knowing when to stay silent. The SLP can paraphrase what the client has said so that the SLP fully understands what has been said and the client knows that what he is saying matters. The SLP should look for repeated statements (e.g., stories that have been repeated, situations where the client has felt the most tense) that may give a sense of potentially stressful situations. But the SLP should never interrupt or try to complete the client's sentences. This is a strategy that many try to use as a way to ease tension in PWS but may actually make the person feel worse (Guitar, 2006).

Regarding feelings, one of the most important parts of stuttering therapy is allowing the client to address his/her attitudes and emotions (Hohulin & Sawyer, 2010; Sheehan, 2003). With stuttering, there are the visible features (e.g., repetitions, blocks, eye blinking) that are obvious and observable. But there are also the feelings, beliefs, and emotions that lie below the surface and unseen by the casual observer (Fini, 2010). Some common emotions that are associated with stuttering are anxiety, anger, embarrassment, and fear. These four emotions are very likely to be felt by college students who stutter as they prepare for the job interview process. They may feel anxious when they have a phone interview with a potential employer or when they feel as though they are being rushed when speaking. They may feel anger that they have moments of stuttering and they cannot express themselves as freely as other, more fluent applicants. They may feel embarrassed when they stutter around a group of people or if someone makes a comment about their stuttering. And they may feel fear in any new situation, including meeting a potential employer or new co-workers (Fini, 2014; Guitar, Hohulin & Sawyer, 2010)

These emotions can lead to negative attitudes and hinder a client's preparations for job interviews. If a SLP feels as though the client is open to discussing his attitudes and emotions about his stuttering, then the clinician should consider having that be a main objective in therapy sessions. The SLP should always validate the client's emotions and concerns and let the client know that it is okay to feel the way that he/she feels (Fini, 2014; Sheehan, 2003). The SLP should also work on turning negative emotions into positive emotions. This may be done through use of positive feedback. For example, the SLP could talk about how she likes the way the client expresses himself. The SLP can also have the client focus on what the client does like about his communication skills (e.g., good grammar skills or a good memory) (Fini, 2014). As noted throughout this paper, interviewing for a job can already be an emotional process. Thus, for college students who stutter, there may be additional emotions that should be addressed.

Whether it is addressing emotions or learning stuttering strategies, every client has a goal that he/she wants to meet. That is why they have sought out speech therapy services. The SLP and the client should, together, determine the overall goals that need to be addressed during speech therapy. Goals can run the gamut from dealing with negative comments to addressing new co-workers. But by using the person-centered therapy approach mentioned earlier, the SLP and client can figure out what the focus of therapy should be. Some examples of goals that college students have may include: reducing anxiety during an interview, meeting and interacting with co-workers, addressing or deciding whether to address stuttering with interviewers and/or new co-workers, working on strategies to reduce stuttering, and working on negative, non-affirming thought processes.

If a college student wants to focus on stuttering strategies, the SLP needs to decide which stuttering therapy approach to use in working with the client. The three most common approaches are fluency shaping, stuttering modification, or an integrated approach that combines the two (Guitar, 2006). With the fluency shaping approach, the focus is on treating the overt, motoric stuttering behaviors and increasing fluent speech. This approach

may include techniques such as easy onsets, prolonging sounds or words, and pausing. The stuttering modification approach focuses on reducing the fear of stuttering, eliminating avoidance behaviors, and modifying moments of stuttering. An integrated approach to stuttering therapy combines different aspects of fluency shaping and stuttering modification, which can be determined by both the SLP and the client (Guitar, 2006). Once the goals have been determined, the SLP should work with the client on activities that address the goals. For example, in their study of the perceptions of the work experiences and work discrimination reported by 184 PWS, Palasik et al. (2012) stated that 56% agreed that their job interviews were negatively affected by their stuttering. Thus, in helping college students prepare for job interviews, the SLP may want to consider working on activities that allow the client to identify potential stressors and react to them appropriately. For instance, have the client identify his worst fears and work on strategies to help him react positively in that situation. One way to tackle this activity would be to have the client develop a job search-related fear hierarchy, starting with what he is least fearful of and ending with what he fears the most (Fini, 2012). A client may have 'Talking with recruiters at a job fair' listed as what he least fears and 'Stuttering during a face-to-face interview' as what he most fears. Once the client's fears have been identified, the SLP can work on role-playing interviews and activities with the client. The role-playing should involve different situations (e.g., an interview with a kind, nice interviewer but also an interview with an impatient interviewer) and with different people (e.g., new listeners or persons not previously worked with). The client should also participate in role playing situations several times before the interview (Fini, 2012).

During these sessions with college students, SLPs will not only be working on stuttering strategies and emotions, but they can also work with the client on general interview preparation (Mathieu, 2006). Before the client goes to his/her first interview, he/she and the SLP should discuss dressing in appropriate attire, researching the company, and interview questions. During these sessions, the SLP can suggest that the client research the company to learn the company's mission, learn the interviewer's name(s), and talk to current employees if possible. This research should help prepare the client to both ask and answer questions during the interview.

The SLP and client should review questions anticipated from the interviewer. These will vary depending on the company and the job. For instance, interview questions for a chemical engineering job will be different than questions for a graphic design job. Conversely, the client should have questions ready to ask the interviewer, because when the client does not ask questions, it can come across to the interviewer as the client being disinterested (Mathieu, 2006). The SLP can have the client practice asking and answering questions so he/she is more comfortable asking them during the interview. The client might also consider driving to the interview site a day or two before the meeting so that he/she knows exactly where to go for the interview as well as have an estimate of how long it may take to drive to the location. While many of these actions are non-speech related activities, they are still important preparations that need to be made and discussed before an interview.

Also before the interview, the SLP and the client should have a serious discussion about whether or not the client wishes to 'acknowledge' or 'disclose' his/her stuttering with the interviewer(s). This is an important decision to make. If the client does wish to acknowledge their stuttering, he and the SLP together need to develop a brief 'speech' about stuttering, highlighting how it does not impact intelligence or the client's ability to do the job (Fini, 2012; National Stuttering Association, 2014). While it is ultimately the client's decision to make, the SLP may want to suggest that directly addressing the stutter could alleviate fears and allow the client to continue with the interview with confidence. Also, research has shown that listeners and nonstutterers feel more relaxed when PWS acknowledge their stutter (Collins & Blood, 1990).

By the day of the interview, the client should feel well prepared. Again, the SLP can provide the client with non-speech related, but still very important, suggestions. The SLP should be sure that the client knows to arrive early, but not too early for his appointment. Many employers consider it appropriate to arrive 10 to 15 minutes before the scheduled interview (Mathieu, 2006). The client should also have a neat and professional appearance with little to no jewelry or cologne. And most important, the client should remain as calm as he/she can. He or she has prepared very well for this interview and should feel confident in their abilities.

It is important for the client to meet with the SLP shortly after the interview has taken place. During this post interview session, the client can go over what, in general, worked during the interview and what did not. During this time the client can reflect on how he/she felt when they answered the questions and how the interviewer(s) responded to their questions. The SLP can then move on to ask about possible stuttering episodes that may have occurred. Did the client stutter? If so, when was it? Also, how did the client handle it? If stuttering strategies were utilized in therapy, did the client use those strategies during the interview? This is a good way for the SLP to see if the client responds to one type of stuttering technique more than the others. This may also be a good time to once again allow the client to address his/her emotions. What were his overall feelings about the interview? During this session, the SLP should always try to provide positive feedback. This follow-up session will often determine if the client feels comfortable interviewing or if he wants to continue working on interviewing during his speech therapy. If he wants to continue therapy, the SLP and the client

should, together, map out new, possibly different directions that the therapy sessions can go. This may also be a good time to bring in different perspectives and additional resources from other, well-equipped professionals.

Collaboration Between SLPs and College Career Counselors

When working with college students who stutter, a great resource to which SLPs should always try to connect is the college career counselor. College career counselors help to facilitate internship opportunities and post-college employment for new graduates. Their job duties involve helping students to explore and identify possible career interests by assessing the students' skills, abilities, and personality traits (Schaub, 2012). College career counselors often have established relationships with different companies, recruiting agencies, and contractors in their town. They can use these relationships to help secure employment for those students who they feel would be a good fit for a particular working environment. Post-graduate job placements can occur through interviews that a career counselor has helped to set up or possibly through a career fair that career counselors have organized and arranged through the college career center (Schaub, 2012). College career counselors can be a valuable resource and asset for all new college graduates, including new college graduates who stutter.

A SLP can work with college career counselors in a variety of ways. If the client has not done so already, the SLP should strongly urge him/her to set up an appointment with the career center at his college or university and have a meeting with the career counselor. During that meeting, the client can discuss his career goals, including the area that he wants to work and possible companies that he may want to work for. During this session, the client should also disclose to the career counselor that he stutters and that he is or is not currently seeing a SLP for treatment. Once initial contact has been made between the career counselor and the client, the SLP, with the client's permission, can contact the career counselor. If the client has already met with and established a relationship with the career counselor before seeing the SLP, that is beneficial to all parties involved.

The SLP can serve as an advocate for the client by being in constant contact with both the client and the career counselor. The three of them can meet to discuss goals. These meetings do not have to take place in person. The meetings can take place over the phone or through video chat options, such as FaceTime, Hangout, Skype or others. The SLP and client should inform and review goals with the career counselor so that all three are working on the same objectives. Many career counselors prepare students by conducting role-playing situations and mock interviews. So, it may be helpful to have the career counselor, client, and the SLP participate in those role-playing activities so that the client can receive constructive feedback from different professionals (Schaub, 2012). Just as with other non-speech-language-related professions, many career counselors do not have much experience with stuttering and PWS. The SLP can offer to conduct an in-service or seminar to educate those employed at the college career center on stuttering and PWS. This is a great way for the SLP to establish a working relationship with the college or university in general and the career center specifically.

Once a productive, working relationship has been established, the SLP and the career counselor together can teach the client how to 'sell' himself/herself during job interviews. With the career counselor's knowledge, the SLP can advise the client on how to convey in the interview why he/she would be a great fit for the job. The client could describe how he/she fits with the culture of the company and list their professional and personal attributes that mesh with the job (e.g., organization, analytical skills). Many companies value experience, but most college students do not have that much on-the-job experience. Instead, they can list school accomplishments such as an exceptional grade point average, any awards that may have been received at the college level, and clubs or organizations that they have been a part of, particularly if they have served any type of leadership position in those organizations. Clients should also work with the career counselors and SLPs to make sure that they have the proper documents with them, including a hard copy of their resume, letters of recommendations from past employers or professors, and, in many instances, a portfolio of past work that will be relevant to the job for which they are applying.

Another way that SLPs can assist both career counselors and college students who stutter is by making sure both are educated and aware of laws and accommodations that employers are required to provide, within reason, under the Americans with Disabilities Act (ADA, 1990). These accommodations can range from providing a private room to make telephone calls to allowing for extra time for presentations to simply having patience when speaking with PWS. The trio of the client, SLP, and career counselor can also frankly and openly discuss occupational role entrapment to insure that the client will be less likely to be pigeonholed by an employer or himself/herself into jobs that demand little in the way of verbal communication and have little growth potential.

Another benefit of a strong SLP and college career counselor relationship is that the SLP can work directly with the career counselor on what to say to potential employers. By educating a career counselor on stuttering and proper ways to communicate with PWS, that career counselor now has knowledge that can be passed on to employers who may possibly be interviewing a college student who stutters. Knowledgeable career counselors can share the communication tips that they have learned from SLPs, including speaking normally in a relaxed manner and maintaining natural eye contact, even when the person is stuttering. Most

importantly, SLPs can teach college career counselors, who can then instruct employers, not to equate hesitant speech from an interviewee with lack of knowledge or uncertainty.

Case Example

'Tim' (not his real name) is a recent college graduate from a public university in North Carolina. He has stuttered for most of his life and has received speech therapy off-and-on during that time. His second semester in college, Tim decided to seek help for his stuttering from the university speech and hearing center which was located on campus. He initially sought treatment to learn new strategies and techniques that could increase his fluency. However, as he began to prepare for interviews for his first internship at the end of his junior year, he started to recognize the speech and hearing center as a valuable resource for assisting him in readying himself for job interviews upcoming during his last year of college.

"I had concerns," Tim says when discussing his feelings about interviewers and potential employers. "I didn't know if people would give me a chance with the stutter … would they look past it."

At the clinic, Tim worked with both professional SLPs and graduate student clinicians. He received speech therapy for 4 ½ years of his five-year matriculation at the university. During his junior year, he started using his speech therapy sessions and his clinicians to assist him with questions and concerns he may have had about interviewing for an internship and a job. He appreciates all of the ways that his speech therapy helped him prepare for the internship interviewing process, particularly the advice that he was given when deciding if, and when, to acknowledge his stutter.

"I always acknowledge my stuttering at the beginning of the interview. It makes me feel more at ease, and it helps them too," he says, stating that both the clinic and self-help books helped him to make that decision.

Tim also recognizes the important role that the speech clinicians played in helping him to address his emotions.

"One day was especially bad," he remembers. "But the entire staff was great, and they really helped me to deal with what I was feeling and how I was feeling." He says that through the entire process, both preparing for his internship interviews and working at the site of his interview, really showed him that people were generally nice. "I haven't had any trouble with my stuttering," he says proudly.

Tim recalls that preparation in his speech therapy sessions included mock interviews with his clinicians as well as a post-interview session to discuss what went well and what he feels he could have improved. In addition to his speech therapy, he also used his school's career counseling center.

"They also had me do some mock interviews, so I had a lot of practice. That helped." But while the career counseling center and the speech center did not collaborate, Tim believes that a partnership between the two could provide valuable assistance to college students who stutter who are preparing to interview for internships and post-graduation employment. So how much does Tim feel the speech sessions helped?

"I got the internship and I had a great time there, so the clinic really helped me," he says with a grin. And as he prepares to interview for his first job post-graduation, Tim remembers and applies the strategies that he learned at his university speech clinic.

Conclusion

Each year, millions of college students prepare to graduate and start their career journey. This rite of passage is filled with excitement, nervousness, and stress. For college students who stutter, this is a process that can also bring about anxiety and fear. But that does not need to be the case. SLPs can provide valuable expertise that can help future graduates to successfully complete the interview process and enter post-graduation employment with confidence and pride as they start the next chapter of their lives.

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ECHO: Journal of the National Black Association for Speech-Language and Hearing

PREVALENCE OF TRAUMATIC BRAIN INJURY IN POSTSECONDARY EDUCATION

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ABSTRACT

Purpose: To determine the prevalence of traumatic brain injury in a college population and to investigate the presence of resulting academic consequences. **Method:** Participants were 1043 students, enrolled in lower- and upper-division courses in a metropolitan, public university in Florida and were recruited from seven courses. Students completed the TBI Cognitive Screening Inventory developed for this project. **Conclusion:** Students who reported TBI had experienced loss of consciousness, scored higher on each of the four Cognitive Impairment factors on the Screening Inventory, as well as on the number of times dropped out/suspended/probation, and number of grade forgiveness usages, and lower on GPA. Failure to identify and assist college students with TBI elevates their risk for academic difficulty.

KEY WORDS: Traumatic brain injury, TBI, postsecondary education

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INTRODUCTION

Traumatic brain injury (TBI) is referred to as a "silent epidemic" (Savage, 1991). The persisting disability it produces is invisible to public scrutiny, often too subtle to be immediately apparent as brain impairment when viewed by role partners, family members, educators, and others, and it is refractory to self-awareness (Boll, 1982; Lehr, 1990). For this reason, attempts to determine the size of the problem must be based on formal epidemiological studies. Relatively few studies of the incidence or prevalence of these injuries have been published, especially at the post-secondary level, and those that have provide limited insight into the severity and academic consequences of the injuries, making them of limited value in performing a needs assessment.

Students who have sustained TBI are at risk for a variety of academic problems and typically face difficult educational barriers (Obrzut & Hynd, 1987). Selected functions that can be affected include attention to response selection, working memory, declarative and prospective memory, processing speed, pragmatic language, discourse processing and production, emotional regulation, self-control, decision-making, planning, and organization (Anderson, Catroppa, Morse, Haritou, & Rosenfield, 2005; Gioia, Isquith, Kenworthy, & Barton, 2002; Lord-Maes & Obrzut, 1996).

Several studies of prevalence among postsecondary students have found a rate of medically diagnosed brain injury that ranges between 4% and 5% while the rate of head trauma with loss of consciousness of at least 20 minutes was between 5% and 11% (Holmes & Buzzanga, 1991; Holmes, Kixmiller, Minor, Thomas, & Wurtz 1990; Powell & Holmes, 1995). Crovits, Horn, and Daniel (1983) found that the prevalence rate for head injury with loss of consciousness among male and female postsecondary students was 24% and 16%, respectively. On the other hand, Laforce and Martin-Macleod (2001) found a prevalence rate for head trauma with or without unconsciousness to be at 35% among postsecondary students in their study. Unfortunately, a number of methodological problems exist in previously conducted studies that have examined the incidence and prevalence of head injury in this population, making the interpretation of the findings a challenge. Most studies do not define the sequelae of these students' injuries clearly enough to specify which criterion for injury should be relied upon to identify risk for educational disability (Kraus & Chu, 2005; Savage, 1991).

Because of the greater academic demand of college in comparison with the demands of elementary and secondary grades, it can be assumed that a person who suffered a TBI in childhood or adolescence faces a higher likelihood of academic difficulty in college (Holmes, 1988; Beers Goldstein, & Katz, 1994). Due to the vast array of consequences following TBI, a student may need additional support to succeed in college. In fact, without professional evaluations and appropriate counseling, it is likely that they will not even realize they have injury-related academic disabilities (Prigatano, 1999).

The purpose of this study was to determine the prevalence of TBI in a college population and to investigate the presence of serious academic consequences associated with a TBI. It was hypothesized that (1) the rate of TBI would be similar to those found in previous conservatively-defined studies (Holmes et al., 1990; Holmes & Buzzanga, 1991; Powell & Holmes, 1995) (i.e., about 5%-15% of the sample having a TBI); and (2) the sequelae of TBI would be correlated with indications of academic difficulty.

METHOD

Participants were 1,043 students enrolled in a metropolitan, public university. Approximately 60% were female. About 67% were Caucasian. The average age was 20 (*SD* = 3) and most were freshmen (42%) followed by sophomore (25%), junior (17%), and senior (15%). The *TBI Cognitive Screening Inventory* developed and utilized by the authors contained four sections: (1) demographics, (2) college academic difficulty experiences, (3) comparison of participant's past to the present, and (4) medical information related to unconsciousness and head injury. Students were defined as having had a head injury if they responded "Yes" to the question, "Have you ever been knocked unconscious?"

Participants were recruited from seven undergraduate courses, with 87% coming from general education courses in order to approximate a sample that was representative of the whole student population. The general education classes included two introductory anthropology courses, two introductory philosophy courses, and two nutrition courses. The upper division course was a language development class.

RESULTS

Of the 1,043 participants, 18% reported having lost consciousness (LOC). Of that subgroup, 90% would be classified as a mild or moderate head injury, with coma duration of less than one hour, placing the prevalence of greater than moderate injury at 2%. Based on the student population of the university where this study was conducted, the TBI subpopulation is estimated at 7,200 students with mild head injury and 800 with greater than mild injury. Additionally, of the 186 reporting having been knocked unconscious, 36.0% reported having sought medical treatment for a head injury. This figure is higher than those reported in previous studies, but falls near the high end of that range (Holmes et al., 1990; Holmes & Buzzanga, 1991; Powell & Holmes, 1995; Triplett et al., 1996). Of the 186 reporting loss of consciousness, most were freshmen (45%), followed by sophomore (23%), senior (18%), junior (15%) and 'other' (0.5%). The age at which the TBI occurred ranged from 2 to 24 years, with an average age being 13.33 years (*SD* = 4), and most occurring at the age of 16 (12%).

There was a statistically significant relationship between loss of consciousness greater than one hour and questionnaire item *"When you get stressed, upset, or confused, does your mind go 'blank'?"* ($\square^2 = 4.79$, $p = .03$), with a small effect size ($\square = .16$, $p = .03$). This symptom, sometimes referred to as catastrophic reaction, is known to be a frequent consequence of TBI at all ages (Prigatano, 1999).

Exploratory factor analysis of the TBI inventory provided construct validity evidence. Unweighted least squares estimation with promax rotation was used to extract the factors. The four factor solution, representing 24% of the variance explained, was preferred due to theoretical support and a decrease in variance accounted when fewer factor structures were considered. The factors are: 1) Impaired Learning/Recall; 2) Inadequate Effort; 3) Impaired Self-Control; and 4) Expressive Impairment (see Table 1). Table 2 presents descriptive statistics and correlations.

Table 1
Factor Loadings and Communalities Based on Unweighted Least Squares (N = 1043)

Item	Factor** 1	2	3	4
1. Do you find that you can read a chapter again and again without learning all the important points?	.520			
2. No matter how well you think you've learned the material after studying, do you find that you have forgotten some of it when you take a test?	.476			
3. When you get stressed, upset, or confused, does your mind go 'blank?'	.445			
4. Do you 'run out of gas' before finals are over every semester?	.430			
5. Do you get confused when new theories or principles are introduced in class?	.421			
6. Do items you feel you are sure you got right on a test turn out to be wrong?	.405			
7. No matter how committed you are to keeping up with your studying, do you fall behind in class?	.363			
8. Are your class notes often incomplete?		.595		
9. On many occasions, have you failed to learn from your mistakes?		.586		
10. Are your books, papers, etc. so disorganized that you sometimes lose things you need to use?		.335		
11. Were you a more successful student in years past than you are now?		.323		
12. Do you have more of a problem finishing projects and assignments than you used to in years past?		.309		
13. Do you get into more arguments than you used to?			.723	
14. Do little things get you more upset and irritated than they used to?			.453	
15. Compared to when you were younger, do you find it harder to control your temper?*			.445	
16. Do you say and do things you later regret more than you used to?			.399	
17. Do people tend to misunderstand what you mean when you explain yourself?				.451
18. Do your instructors find your papers and essay exams hard to understand?				.367
19. Are you able to do two things at once as well as you used to in years past?*				.353
20. Do you believe there is something wrong with your memory?				.302
21. Do you find that you take longer to make decisions compared to when you were younger?				.251

**Reverse coded;*
***1: Impaired Learning/Recall; 2: Inadequate Effort; 3: Impaired Self-Control; 4: Expressive Impairment

Table 2

Descriptive Statistics for TBI Subscales and Bivariate Correlations between Factors, Dropout/Suspension/Probation, Grade Forgiveness, and GPA (N = 1,043)

	1	2	3	4	5	6
1. Impaired Learning/Recall[1]	--					
2. Inadequate Effort[2]	.407**					
3. Impaired Self-Control[3]	.250**	.209**				
4. Expressive Impairment[4]	.341**	.291**	.214**			
5. Number of times dropped out, academic suspension, or academic probation	.071*	.132**	-.028	.122**		
6. Number of times grade forgiveness used	.144**	.145**	.000	.078*	.263**	
7. GPA	-.113**	-.092**	-.013	-.058	.009	.008

*** Correlation is significant at the 0.01 level (2-tailed).*

** Correlation is significant at the 0.05 level (2-tailed).*

[1]*Number of items = 7; mean = .50; SD = .27; Cronbach's alpha = .65*

[2]*Number of items = 5; mean = .24; SD = .27; Cronbach's alpha = .61*

[3]*Number of items = 4; mean = .28; SD = .27; Cronbach's alpha = .58*

[4]*Number of items = 5; mean = .22; SD = .21; Cronbach's alpha = .41*

Each factor was correlated with (a) GPA, (b) number of times dropped out, academic suspension, or academic probation, and (c) number of times grade forgiveness was used. All three of these variables were significantly correlated with Factors 1 and 2 however the magnitude of the correlation coefficients suggested small effects. As expected, Impaired Self-Control, a non-academic construct, was not significantly correlated with GPA, number of times dropped out,/academic suspension/academic probation; or use of grade forgiveness.

DISCUSSION

This study extends the findings of previous research in indicating that the population of head injury survivors on a university campus is quite large (Laforce & Martin-Macleod, 2001; Triplett et al., 1996). Most of the students with injuries had suffered mild head injuries, as expected, and the rate of academic difficulties in those with the briefest loss of consciousness did not appear to differ from the rate of those students who had not suffered head injuries. It was also found that a sizable subgroup have had more serious injuries, experiencing the more frequent intrusion of cognitive impairment symptoms into their learning, classroom performance, studying, and test taking. They were more likely to have experienced academic difficulties or to have left school by choice or under the duress of an academic suspension, and their grades were lower than their non-TBI counterparts. Their performance is a cross-sectional "snapshot" of their difficulties at this one point in time, a hint of the possible long-term consequences of their injuries.

This study indicates that the students are experiencing academic difficulties secondary to self-reported problems with learning and recall, expressive language difficulties, and insufficient academic effort. The role of learning and recall deficits is consistent with previously reported findings for K-12 students (Anderson et al., 2005; Ewing-Cobbs et al., 2005 Schwartz et al, 2003) as well as college students (Triplett et al., 1996). This

finding is not surprising given the central role new learning plays in the educational process at all levels, and the relatively high susceptibility to new learning deficits after TBI even of mild magnitude (Bleiberg, Cope, & Spector, 1989; Boll, 1982; Lehr, 1990; Levin, Benton, & Grossman, 1982; Levin & Eisenberg, 1989; Malec, 1996; Savage & Woolcott, 1995). It was of interest to find that problems in expressive language, expected in severe TBI (Anderson et al., 2005) but rarely reported for the mildly injured population, pose a significant problem in the more advanced application required at the college level. Executive deficits are broadly disabling for adults (Cicerone et al., 2000), but the self-control factor did not correlate with any measures of academic difficulty in the present study. However, executive deficits also produce procrastination, inefficient use of time, and mismanagement of effort (Bleiberg et al., 1989; Malec, 1996), and insufficient effort is associated with academic failure after brain injury rehabilitation (Schutz & Schutz, 2000, 2005).

The present study demonstrates that students with TBI may be considered "at-risk" for academic disablement. Holmes (1988) concluded, the failure to identify and assist college students with TBI is exposing them to academic stress and failure. The current practice is to rely on students with academic disabilities to self-refer, but individuals in this population rarely self-refer for any form of treatment at any age. A drop-off in the percentage of students with TBI who are freshmen compared with every other level of academic standing was seen in this study, suggesting that some students with TBI do not matriculate because of their academic difficulties. Therefore, colleges and universities that wish to properly serve this at-risk population should not make its services available on a "self-referral" basis only. Screening all incoming students for their level of risk and alerting academic advisors, student disability services staff, and others to be on guard for the risk factors indicated by the screening instrument is important for identifying and providing appropriate academic accommodations and other services to this population. Conventional services appear to fall short of meeting their unique needs at the post-secondary level (Holmes, 1988). The provision of a note taker, a tutor, and an option to take tests in a quiet environment for an extended period of time do not provide meaningful help for students who (1) do not recognize or understand their injury and its sequelae, (2) cannot learn effectively from reading and studying, (3) cannot express their ideas clearly through their papers and test responses, (4) have difficulties in learning from their mistakes, and (5) struggle to devote sufficient time and effort to their studies as well as sufficient mental effort when taking tests (Schutz, Rivers, Schutz, & Proctor, 2008).

This study also indicates that a large university such as the one at which this study was conducted, or even universities of moderate size, have a student population with severe TBI that is large enough to justify a well-equipped educational support service. These students clearly need and can benefit from cognitive rehabilitation (Cohen, 1986; Schutz et al., 2010; Telzrow, 1987), which teaches them deficit recognition and compensation skills that permit academic progress and matriculation (Schutz & Schutz, 2000). Until cognitive rehabilitation and other appropriate academic support services are identified and implemented on college and university campuses, the barriers associated with brain injury will continue to block or curtail survivors' educational progress (Schutz & Schutz, 2000).

Limitations and Suggestions for Future Research

There are several limitations about the present study. First, the sample of the student body comprised only 7 classes representing 4 different courses where the instructor gave permission to proctor the survey during class. These classes are varied in the nature of the material they present, but do not fully represent the diversity of undergraduate courses offered at a university. However this is consistent with some published studies, which tend to only include a relatively low number of different types of courses (e.g. Ryan, et al., 1996). Few epidemiological studies take a sample from a wide variety of courses (e.g. Powell & Holmes, 1995).

Second, the low number of students with a TBI that would be classified as "severe" limited our capacity to explore the impact of severe brain injury on academic performance.

A third limitation was that we did not verify the factual basis for the self-reports, with correlates from academic transcripts such as their GPA or the number of classes they dropped. This was because the survey was conducted anonymously. As noted in the literature review, self-reports may not be the most ideal way to investigate these phenomena because of compromised awareness (Prigatano, 1999). As such, future studies should investigate how students with TBI perceive they are performing versus objective measures of performance, such as GPA. Those students who show no awareness may be at grave risk, in that they are likely to approach their academic responsibilities depending on their pre-injury study skills and strategies.

Future studies should follow groups of students with TBI to examine the course of their academic progress. Such studies should employ the TBI Cognitive Screening Inventory or a similar measure in order to quantify the definition of academic disablement. In turn, this will allow a definitive assessment of the prevalence of academic disability from traumatic injury.

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ECHO: Journal of the National Black Association for Speech-Language and Hearing

RATE OF SPEECH FOR ADULT FEMALE SPEAKERS WITH SOUTHERN (AMERICAN ENGLISH) DIALECT IN DIFFERENT STRUCTURED CONDITIONS

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ABSTRACT

The purpose of the study was to obtain values for rate of speech in terms of speaking rate for speakers with Southern (American English) dialect for structured conditions. Fifty young adult female speakers who spoke the Southern dialect from Mississippi served as participants. Speech samples were recorded from the participants for three different structured conditions: reading, monologue (narration), and conversation. The speaking rate was calculated in terms of number of words per minute (WPM) and number of syllables per minute (SPM) for each condition. The results indicated that the mean speaking rate was about 163 WPM (*SD*=34.76) or 224 SPM (*SD*=37.39) for reading, 158 WPM (*SD*=40.45) or 211 SPM (*SD*=55.80) for monologue, and 122 WPM (*SD*=60.50) or 158 SPM (*SD*=77.04) for conversation. Statistical analyses demonstrated a significant difference between the three conditions. The conversational rate was slower than the monologue or reading rates. The correlation between the two methods of measurement of speaking rate—WPM and SPM—was high and significant. The results of the study can have important applications in providing guidelines for clinicians in evaluating and treating young female adult clients who speak the Southern dialect with fluency and articulation disorders or differences.

KEY WORDS: Rate of speech; Speaking rate; Dialect; Southern American English; Words per minute; Syllables per minute

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INTRODUCTION

Rate of speech is an important measure in speech-language evaluation, especially in fluency and articulation disorders or differences. Rate of speech can be defined as the number of output units per unit of time (Tsao, Weismer, & Iqbal, 2006). There are three common measures of rate of speech: speaking rate, articulation rate, and phone rate. Speaking rate is based on the overall time used for communicating a message and is measured across continuous speech segments, which may include pauses, disfluencies, or repetitions (Howell, Au-Yeung, & Pilgrim, 1999; Sturm & Seery, 2007). It is also affected by a speaker's personality, mental/emotional state, and by speaking condition (Robb, Maclagan, & Chen, 2004). Articulation rate is measured as the number of syllables produced in speech segments, excluding pauses, disfluencies, or repetitions per unit of time (Hall, Amir, & Yairi, 1999; Howell et al., 1999; Jacewicz & Fox, 2010; Yaruss, 1997, 2000). Articulation rate is thought to reduce linguistic effects, and it is mainly viewed as representing articulatory motor control or as an estimate of actual speech execution time (Miller, Grosjean, & Lomanto 1984; Walker, Archibald, Cherniak, & Fish, 1992, Walker & Archibald, 2006). Phone rate is the number of phones spoken per unit of time, excluding pauses, disfluencies, or repetitions (Amir & Grinfeld, 2011; Hall et al., 1999; Walker et al., 1992). Phone rate is considered a direct index of the speed with which speech coordinations are managed (Perkins, Bell, Johnson, & Stocks, 1979).

The articulation and phone rates are considered as measures of oral-motor control and speech coordinations and are thought to reduce linguistic effects (Amir & Grinfeld, 2011; Sturm & Seery, 2007; Walker et al., 1992), whereas the speaking rate is based on the overall time used for communicating a message and is considered as a global measure of verbal output and language proficiency (Costello & Ingham, 1984; Sturm & Seery, 2007). Many current speech treatment approaches involve assessing and modifying the speaking rate. For example, among the fluency disorders, several stuttering treatment techniques attempt to slow the speaking rate and systematically increase it to achieve the normal speaking rate and reduce disfluencies (Amir & Grinfeld, 2011; Guitar, 2013; Hegde, 2008; Robb, Maclagan, & Chen, 2004). So identifying the normative rate for specific groups of speakers becomes an essential prerequisite for establishing treatment goals and for studying speech characteristics of people with various speech disorders (Amir & Grinfeld, 2011). Measurements of the articulation and phone rates are also more time consuming and less frequently performed than is measurement of the speaking rate in clinical work; hence, this study focused only on the measurement of the speaking rate.

The speaking rate can be measured as either words or syllables per minute, depending on the clinician's preference (Amir & Grinfeld, 2011; Guitar, 2013). Although the speaking rate is an important measure, few empirical guidelines and standardized or controlled procedures are available for the measurement and setting of clinical goals for the rate (Ingham & Cordes, 1997; Venkatagiri, 1999). There is also little evidence to establish what method of measurement-- counting syllables per minute (SPM) or words per minute (WPM)--is a more reliable measure of the speaking rate. Either method of measurement could provide an adequate estimation of the rate in clinical work (Venkatagiri, 1999). The values of approximately 150 WPM or 200 SPM are frequently used in the clinical work (Boberg & Kully, 1985; Perkins, 1973), but the great variability in the rate of speech in different people makes these values an inappropriate goal for many clients. Hence, it is "desirable to develop alternatives to this 'one size fits all' approach to rate management" (Venkatagiri, 1999, p. 211). The rate of speech has also been shown to vary not only across different people but also across regions and dialects (Byrd, 1994; Ray & Zahn, 1990).

Southern American English dialect is often referred to as Southern dialect in the United States of America (USA). It is

a group of dialects of English spoken across the southeastern and south-central region of the USA. This region includes the states of Alabama, Arkansas, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and most of Florida, Oklahoma, Texas, and West Virginia. Southern dialect is the most widely recognized regional dialect in American English. There are about 100-110 million speakers of the Southern dialect, which is approximately 30% of the population of the USA (American Varieties, 2005). The Southern dialect is characterized by the Southern Vowel Shift at the phonetic level, in which short front vowels move up and take on gliding properties of long vowels, long front vowels move down and backwards, and back vowels have a more forward placement. It is also characterized by insertion of the glide /j/ in short vowels, monophthongization of diphthongs, and prolongation of or lengthening out the sounds of speech in words (Allbritten, 2011; Becknal, 2012; Kendall, 2009, 2013; Labov, Ash, and Boberg, 2006; Wolfram & Schilling-Estes, 2006; Wolfram & Ward, 2006).

Several studies have been carried out in the Standard American English or other dialects, where the other dialects were not specified by their authors, for speaking rate (Duchin & Mysak, 1987; Lutz & Mallard, 1986; Venkatagiri, 1999; Yorkston & Beukelman, 1981). They measured the speaking rate for reading and narration or conversation conditions for adult speakers and found that the reading rate was faster than the speaking rate for narration and/or conversation.

A few studies have been carried out in the area of assessment of the rate of speech in the Southern dialect (Byrd, 1994; Clopper & Smiljanic, 2011; Jacewicz, Fox, & Wei, 2010; Kendall, 2013). Byrd (1994) assessed the speech rate of speakers from seven different geographical regions in the USA, which included New England, the Atlantic seaboard, the northern Midwest, the southern Midwest, the southeastern United States, New York City, the western United States, and "Army Brats," who were denoted as speakers unaffiliated to any particular region. Byrd found that the rate of speech for the dialects of the respective speakers varied from slowest to fastest in the following order: South, South Midland, New York City, North, West, North Midland, North East, and "Army Brats." The study provided extensive data and baseline measures of rates of speech for different dialects, but the study used the TIMIT database, which had its own limitations and shortcomings, according to Byrd. The limitations and shortcomings were the speech stimuli, which were not spontaneous but read from a script; the stimulus sentences were relatively short and usually declarative; and the dialect divisions were too broad for any detailed dialectal studies. Byrd warned that the dialect region effects reported in her study could possibly be due to differences in representation of the participants across the various dialects. Jacewicz, Fox, and O'Neill (2009) also reported that the TIMIT database had serious limitations and did not allow for a conclusive assessment of regionally defined differences in the rate of speech. Jacewicz et al. (2010) investigated the rate of speech in terms of articulation rate, excluding pauses, of two distinct varieties of American English: the northern variety and the southern variety. The study's participants, from Wisconsin representing the northern variety and from North Carolina representing the southern variety, read a set of sentences and produced a spontaneous, unconstrained talk. The authors found that the Wisconsin speakers spoke significantly faster and produced shorter phrases than did the North Carolina speakers; the speech rate changed across the lifespan, and men spoke faster than women. However, these speech rate effects were not related to the length of phrases produced by the participants. The study also found that the articulation rate in reading was slower than in speaking and the effects of gender and age differed in reading and spontaneous speech. Clopper and Smiljanic (2011) examined the prosodic variation in read speech in two regional varieties of American English: Southern and Midland. Ten speakers from central Indiana (n=9) and Missouri (n=1) represented the Midland variety and another ten speakers from Kentucky (n=5), North Carolina (n=1), South Carolina (n=1), Alabama (n=1), and Texas (n=2) represented the Southern variety. The investigators analyzed the prosodic dialect variation in terms of speaking rate and the phonetic expression of pitch movements associated with accented and phrase-final syllables. They found significant effects of regional dialect and gender on the distributions of pauses, pitch accents, and phrasal–boundary tone combinations, but they did not find speaking rate differences between the two dialects. In their study, Clopper and Smiljanic demonstrated that the regional and gender identity features were encoded in part through prosody and suggested the close examination of prosodic patterns across regional and social varieties of American English. Kendall (2013) conducted an extensive study on the speech rate, pause, and sociolinguistic variation. He examined variation in the speech rate and silent pause duration by American English speakers, including speakers of the Southern dialect from different regions in North Carolina. Based on a large amount of data extracted from a wide range of sociolinguistic interview recordings, he demonstrated that speech rate and pause exhibited meaningful variation at the social level and were constrained by cognitive and articulatory processes at the same time. Kendall specifically pointed out the great extent to which articulation rates were correlated with social factors of speakers, such as regional origin and gender, while pause durations were significantly less correlated with region and gender. Obtaining normative values for the rate of speech is necessary, as Kendall himself pointed out that the rate of speech is influenced by the regional origin of the speakers.

The review of the literature revealed that there were few studies done examining the rate of speech of speakers with the Southern

dialect in terms of speaking rate. So the purposes of this study were to: (1) expand on the earlier research carried out in the Southern dialect; (2) obtain values for the speaking rate for the Southern dialect for three different structured speech conditions such as reading, monologue (narration), and conversation; and (3) discuss the implications of the obtained values for the clinical work of a speech-language pathologist who is treating clients with speaking rate disorders or differences.

METHOD

Participants

Fifty adult females ranging in age from 18-35 years (M=22.66 yrs.) who spoke the Southern dialect were recruited as participants. They were from the state of Mississippi where the Southern dialect is also spoken. They were born and raised in Mississippi and were undergraduate and graduate students attending a university in Mississippi. The participants reported speaking the Southern dialect and opted-in for the study from various university classes. An informal assessment of the participants prior to the testing revealed that they had normal speech, language, and hearing abilities and exhibited some of the typical characteristics of the Southern dialect such as monophthongization of diphthongs and the Southern Vowel Shift. They were also rhotic. Since the focus of the study was initially obtaining the values to establish normative data for adult females for the different conditions of speaking rate, adult male participants were not recruited to investigate the gender differences.

Stimuli and Procedure

Although there are different procedures for the assessment of speaking rate, the procedure described by Shipley and McAfee (2009), in which a sample of connected speech is recorded for oral reading, conversation, or both, and the number of words is counted in a one-minute sample, was used for the study. Three conditions were used for collecting speech samples for this study, instead of one (reading or conversation) or two (reading and conversation) as described by Shipley and McAfee. The three conditions used in this study were reading, monologue (narration), and conversation, as activities involving these conditions are often used in clinical work. In the reading condition, the participants were asked to read the Rainbow Passage; in the monolog condition, they were asked to narrate a topic such as a hobby or sport of their choice for about five minutes; and in the conversation condition, they were asked to carry out a conversation with the investigator about the same topics they narrated for another five minutes in their normal manner. The investigator asked questions related to the topics spontaneously to elicit the conversation. Thus the speech samples were collected and recorded in a quiet room. To calculate the rate of speech, a one-minute sample from each sample of each participant for each condition was randomly selected. Then the recorded samples were played back and the number of words and the number of syllables in each sample were calculated manually.

RESULTS AND DISCUSSION

This study demonstrated that the mean rate of speech was about 163 WPM (SD=34.76) or 224 SPM (SD=37.39) for reading, 158 WPM (SD=40.45) or 211 SPM (SD=55.80) for monologue (narration), and 122 WPM (SD=60.50) or 158 SPM (SD=77.04) for conversation for the young adult females with the Southern dialect as spoken in Mississippi (see Table 1). Two separate analyses of variance (ANOVA) with repeated measures that were performed on the data suggested a significant main effect of conditions for WPM ($F(2,98)=18.10$, $P<.001$, $eta2=.27$) and a significant main effect of conditions for SPM ($F(2,98)=29.24$, $P<.001$, $eta2=.37$). The effect sizes were weak-moderate for WPM and moderate for SPM. Tukey's pairwise comparisons suggested that the rates of speech were significantly faster for reading and monologue than for conversation ($P<.001$), and the rates of speech for reading and monologue were similar for both WPM and SPM. The conversational speech rate was slower than the monologue and reading rates, probably because conversation is more spontaneous, is less structured, and involves more thought processing than does monologue or reading. These aspects of conversation might also explain the greater variability found in the number of words or syllables spoken in conversation (SD= 60.50 WPM, 77.04 SPM) than in monologue (SD= 40.45 WPM, 55.80 SPM) or reading (SD= 34.76 WPM, 37.39 SPM).

TABLE 1. Rate of Speech in Words per Minute (WPM) and Syllables per Minute (SPM) for Different Conditions.

WPM

N=50	Reading	Monologue (Narration)	Conversation
Mean	163.38	158.34	122.38
SD	34.76	40.45	60.50
ANOVA	$F(2,98)=18.10$, $P<.001$, $eta^2=.27$		

SPM

N=50	Reading	Monologue (Narration)	Conversation
Mean	223.88	210.73	157.73
SD	37.39	55.80	77.04
ANOVA	$F(2,98)=29.24$, $P<.001$, $eta^2=.37$		

There were similarities and differences between the results of this study and the other studies. The mean rates for reading reported by Venkatagiri (1999), Lutz and Mallard (1986), and Yorkston and Beukelman (1981) were 188 WPM (262 SPM), 198 WPM (254) SPM, and 190 WPM, respectively. The mean rates of talking or conversation reported by Venkatagiri (1999), Lutz and Mallard (1986), Duchin and Mysak (1987) were 143 WPM (195 SPM), 158.6 WPM (216.6 SPM), and 182.7 WPM (236.4 SPM), respectively. The results of this study were consistent with the studies carried out by the above investigators (Duchin and Mysak, 1987; Lutz and Mallard, 1986; Venkatagiri, 1999; Yorkston and Beukelman, 1981) in Standard American English or other unspecified dialects, which found faster reading rates than narrative and/or conversation rates. But the results of this study showed that all the rates--the reading, monologue (narration), and conversation rates--were slower than the rates reported in the above studies, suggesting that the reading, monologue (narration), and conversation rates of speakers with Southern dialect were slower than those of speakers with Standard American English or the other dialects unspecified by the authors. The characteristic of Southern dialect, such as the prolongation of or lengthening out the sounds of speech, which is referred to as the "Southern drawl," could be contributing to the slower speaking rate in the Southern dialect. Although the "drawl" is one of the most noticeable aspects of the Southern speech, few researchers have actually investigated the phonological, acoustic or perceptual characteristics specifically contributing to this complex, enigmatic, and stereotyped phenomenon. According to Allbritten (2011), the "drawl" refers to speech rate or pace, or a general pattern of elongated vowels. According to Thomas (2003), it is also usually associated with the prolongation of certain vowels and other characteristics such as wide intonational fluctuations and breaking of vowels and diphthongs into triphthongs. According to Habbic (1980), "drawling" is a type of tempo characterized by lengthened as opposed to shortened ("clipped") syllables, and can be described spectrographically in terms of three major features which may occur singly or in combination: lengthening, breaking (the addition of glides), and amplitude drop. According to Feagin (1987, 1996), the "drawl" is characterized by amplitude drop, extra lengthening (duration), and frequency change often of high to low nature, and a "drawled" vowel can have separate amplitude peaks, glide directions, length, and intonation. Thomas (2003) also analyzed the "drawl" in terms of the relationship between

duration and formant movement, specifically the relative extent of formant movement and the different trajectories of individual "drawled" vowels, and confirmed the characteristics of the "drawl" described by Feagin. Therefore, change in the duration, amplitude, and frequency, individually or in combination, could be a contributing factor to the slower speaking rate in the Southern dialect

Among the studies carried out on Southern dialect, Byrd (1994), who investigated rate of speech of speakers across different regions, found that speakers of the South took a longer time to read the sentences than speakers from the other regions of the USA such as New York City, North, West, North Midland, and North East. The results of this study could not be compared to Byrd's study, as the rate of speech was measured in duration (i.e. in milliseconds) in her study. Her study calculated the rate of speech for reading only and used only two short, declarative sentences for the calculation from the TIMIT database, which had its own shortcomings, whereas in this study, the speaking rate was calculated for monolog (narration) and conversation in addition to reading. Byrd's study also lacked detailed descriptions of the participants from the South and the other regions.

Jacewicz et al. (2010), who investigated speaker variation in speech tempo of two distinct varieties of American English, found that Wisconsin Speakers (northern variety) produced significantly more syllables per minute, leading to a faster reading rate, than North Carolina (southern variety) speakers. The mean articulation rates for reading were 198.6 SPM for Wisconsin and 187.8 SPM for North Carolina speakers. In spontaneous speech, Wisconsin speakers also produced significantly more syllables per minute than did North Carolina speakers. The mean articulation rates for spontaneous speech were 312.6 SPM for Wisconsin and 288 SPM for North Carolina speakers. The results of their study could not be compared with this study because of the differences in methodology. Their study investigated the rate of speech in terms of articulatory rate for the Southern dialect, whereas this study investigated the rate of speech in terms of speaking rate for the Southern dialect.

Clopper and Smiljanic (2011), who investigated speaking rate as a part of prosodic dialect variation in two regional varieties of American English (Southern and Midland), found that for read speech the mean speaking rate for female speakers with the Southern dialect was 330 SPM and the mean speaking rate for female speakers with the Midland dialect was 318 SPM. They did not find a significant difference in speaking rates between the two dialects. They reasoned that the lack of difference in speaking rate might have been due to the Midland and the Southern dialects not being the most strongly differentiated dialects of English, because of their geographical proximity and shared segmental properties such as back vowel fronting. However, their study dealt with the prosodic variation of the two dialects, including speaking rate with elimination of pauses more than 100 ms. This study focused on the speaking rate including the pauses. Also in their study, speech samples for speaking rate consisted of a combination of reading passages, isolated words, sentences, and interview speech, whereas in this study speaking rates were calculated for the three distinct conditions of reading, (monolog) narration, and conversation. The differences in methodologies between the studies can explain the discrepancy in the obtained speaking rates: Clopper and Smiljanic obtained a speaking rate of 330 SPM whereas this study obtained speaking rates of about 224 SPM for reading, 211 SPM for monologue, and158 SPM for conversation conditions.

Kendall (2013), who investigated speech rate and pause in the speakers of the Southern dialect from North Carolina, found that the speaking rate and the articulation rate for reading passages for North Carolina female speakers was 214.8 SPM and 259.8 SPM, respectively. The speaking rates were slower than the articulation rates because they represented the same number of syllables calculated over a longer time, as the pauses during speech were excluded in calculation of the articulation rate. Kendall observed that while these two measures, speaking and articulation rates were obviously related, but they were not always or necessarily directly correlated. The results of the speaking rate of this study for reading (223.88 SPM) are similar to the speaking rate of the North Carolina speakers. Kendall's study did not provide data for monologue (narration) or conversational rate for the Southern speakers, whereas the results of this study expanded on the research and provided normative data for monologue (narrative) and conversation conditions as well.

The correlation results of this study showed that there was a very high, positive, and significant correlation between reading WPM and SPM ($r(50)=.75$, $P<.001$), monologue WPM and SPM ($r(50)=.82$, $P<.001$), and conversation WPM and SPM ($r(50)=.97$, $P<.001$) (see Table 2). Since there was a very high and positive correlation between the methods of measurements of rate of speech, either one of the methods—WPM or SPM—could be used to calculate the rate of speech depending on the clinician's convenience. This finding supported the conclusion drawn by Venkatagiri (1999) that either measure would provide an adequate estimation of the rate in the clinical work.

TABLE 2. Correlation between Words per Minute (WPM) and Syllables per Minute (SPM) for Different Conditions.

N=50	Reading	Monologue (Narration)	Conversation
r	.75 (*P*<.001)	.82 (*P*<.001)	.97 (*P*<.001)

This study provided values for speaking rates in order to initially establish normative data for three different structured conditions: reading, monologue (narration), and conversation. The normative data are only for young adult female speakers of the Southern dialect, as several studies have indicated age, gender, and regional differences in the rate of speech (Byrd, 1994; Duchin and Mysak, 1987; Jacewicz et al., 2010; Kendall, 2013; Pindzola, Jenkins, and Loken, 1989; Ray and Zahn, 1990; Yuan, Cieri, and Liberman, 2006). The availability of the normative data can have important applications in providing guidelines for clinicians in the evaluation and treatment of young female adult clients who speak the Southern dialect and have fluency disorders (such as stuttering and cluttering) and articulation disorders (such as abnormally slow or labored rate of speech due to dysarthria). The availability of the normative data can also have important applications in providing guidelines for clinicians in the evaluation and treatment of the young female adult clients with differences in the rate of speech as a result of speaking English as a second language. With the availability of the normative data, the normal speaking rate can be targeted and achieved in a systematic way in the treatment of the young adult females with abnormal speaking rate disorders. The utility of normative rate data presented in this study must be interpreted cautiously when used as cut-off limits to evaluate clinical ranges of disorders in the rate of speech. The use of the ¬+ 2 standard deviations-from-the-mean method can misclassify many clients, as there is great variability in the rate of speech among people and for different conditions (Venkatagiri, 1999), and the rate of speech disorders may not follow the same distribution pattern as in other disorders.

Further research can be carried out to obtain the normative data for young adult male speakers with the Southern dialect for the three different conditions, as several studies have indicated gender differences in the speaking rate, with men speaking faster than women (Byrd, 1994; Clopper and Smiljanic, 2011; Jacewicz et al., 2009, 2010). The normative data can be useful in evaluation and treatment of young adult male clients with speaking rate disorders and/or differences; and obtain the normative data across age for males and female speakers with the Southern dialect, as some studies have indicated an effect of age on the speaking rate (Jacewicz et al., 2009, 2010). Further research can also be carried out to examine the effect of length of sentences on the speaking rate, as there are disparities in study results, as some studies have shown that shorter sentences result in faster speaking rate whereas other studies have shown that longer sentences resulting in a faster speaking rate (Jacewicz, et al, 2010; Quené, 2008); explore the relationship between speaking and articulation rates--though they are related but not always and directly related (Kendall, 2013); and obtain normative values for the speaking rate in unstructured conditions such as different reading, narrative, and conversational situations outside the clinical setting in daily life, which can assist in treating and generalizing the normal speaking rate achieved in the structured, clinical setting to the real life situations.

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