



# BETWEEN THE LIONS: Mississippi Literacy Initiative

## A Final Report to Mississippi Educational Television

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## Executive Summary

The purpose of this study was to investigate the effect of the BETWEEN THE LIONS series on the acquisition of early literacy skills of children in low-income communities and children who may speak English as a second language. Specifically, the present study examined whether viewing BETWEEN THE LIONS would have an effect on the early literacy skills of preschool, kindergarten, and first grade children as measured by the Test of Early Reading Ability (TERA-3), The Peabody Picture Vocabulary Test (PPVT-III), and the Dynamic Indicators of Basic Early Literacy Skills (DIBELS).

The participants for this study encompass two distinct groups—students living in the Mississippi Delta and students living on Mississippi Choctaw Indian Reservations. However, no comparisons are made between the two groups. Each group constitutes a different study.

*Delta participants.* The participants for the Delta portion of the study included 4-year-old pre-school children attending childcare centers in Sunflower, Bolivar, and Washington counties, and kindergarten and first grade children in the Sunflower County and Indianola School Districts. The experimental group (n=40) of preschool children consisted of 32 children from centers serving low-income families and 8 children from centers serving medium to high-income families. The control group (n=29) of preschool children consisted of 15 children attending centers serving low-income families and 14 children attending centers serving medium to high income families.

participate in this study as the experimental group. Kindergarten (n = 52, mean age = 5.2) and first grade (n = 47, mean age = 6.4) students from the Sunflower County School District, located in Sunflower County were randomly selected to participate in this study as the control group.

*Choctaw Indian Reservation Participants.* The participants for the Choctaw preschool portion of the study included 4-year-old children attending childcare and Head Start centers that are governed by the Mississippi Band of Choctaw Indians (MBCI) Division of Early Childhood. The preschool experimental group consisted of 45 preschool children (mean age = 4.2) from the Pearl River Reservation. The preschool control group consisted of 48 preschool children (mean age = 4.1) from seven smaller reservations under the auspices of MBCI. The majority of the children in both groups were from low-income families.

Kindergarten (n = 50, mean age = 5.2) and first grade (n = 50, mean age = 6.2) students from Pearl River Elementary, located in Neshoba county were randomly selected to participate in this study as the experimental group. The control group of kindergarten (n = 51, mean age = 5.2) and first grade (n = 52, mean age = 6.2) students were randomly selected from four elementary schools serving the Bogue Chitto, Conehatta, Standing Pine, and Tucker Reservations.

Prior to BTL viewing and instruction based on the viewing, baseline conditions for both the experimental and control groups were assessed through the administration of the TERA-3, PPVT, and the DIBELS. After all pre-testing was completed, the experimental group was exposed to the treatment.

The treatment consisted of the children viewing at least two episodes per week, reading a book related in some way to the episode viewed and then doing a hands-on activity that

reinforced the theme or skills stressed in that episode. The treatment phase of the project started October 1<sup>st</sup> and concluded April 30<sup>th</sup>. In addition to DIBELS pre-testing, the children were also assessed using the DIBELS during the course of the treatment in order to monitor their rate of progress. At the conclusion of treatment, all children, both in the control group and the experimental group were post tested using all three measures (the TERA-3, PPVT, and the DIBELS).

## Results

### *Delta Sample*

#### *TERA-3*

There was no significant main effect for condition on the TERA-3 Reading composite,  $F(1, 244) = .21$ ,  $MSE = 130.42$ ,  $p > .05$ , or significant condition by grade interaction,  $F(2, 244) = 2.62$ ,  $p > .05$ . Thus, there appeared to be no overall differences between conditions and grades in terms of overall reading ability as measured by the TERA-3.

Upon closer examination, however, there was a significant main effect for condition on one of the subtests that comprise the TERA- 3. Specifically, for the Alphabet subtest, there was a significant main effect for condition,  $F(1, 244) = 3.83$ ,  $MSE = 3.88$ ,  $p = .05$ , where participants in the experimental condition (i.e., viewed BTL) displayed significantly higher levels of knowledge and use of letters than their peers in the control condition. There was no significant condition by grade interaction,  $F(2, 244) = 1.99$ ,  $p > .05$ .

On the Conventions subtest, there was no significant main effect for condition,  $F(1, 244) = .01$ ,  $p > .05$ ; however, there was a significant condition by grade interaction,  $F(2, 244) =$

12.92,  $MSE = 6.59$ ,  $p < .001$ . According to a visual analysis, the interaction was disordinal in nature; that is, the effects of the condition reversed themselves across grade. To examine this interaction statistically, ANCOVAs were used to conduct simple main effects test by comparing the two groups (preschool/Head Start and kindergarten) at each grade level. At the preschool/Head Start level, there was a significant main effect for group,  $F(1, 56) = 13.79$ ,  $MSE = 5.65$ ,  $p < .001$ , where the control participants ( $M = 10.36$ ,  $N = 26$ ) displayed significantly better understanding of certain aspects of English print than their experimental peers ( $M = 7.91$ ,  $N = 35$ ). At the kindergarten, there was a significant main effect for group,  $F(1, 96) = 5.24$ ,  $MSE = 4.62$ ,  $p < .05$  in favor of the experimental participants. At this grade level, the experimental participants ( $M = 8.17$ ,  $N = 52$ ) outperformed the control participants ( $M = 6.31$ ,  $N = 49$ ) in terms of their understanding of certain conventions associated with English print. There were no significant differences between the conditions at the first grade level,  $F(1, 83) = 0.09$ ,  $MSE = 7.04$ ,  $p = .76$ .

On the final TERA-3 subtest, the Meanings subtest, there was no significant main effect for condition,  $F(1, 244) = .01$ ,  $p > .05$ , or significant condition by grade interaction,  $F(2, 244) = 2.31$ ,  $p > .05$ . Thus, there appeared to be no overall differences between the participants assigned to the two conditions from each grade level in terms of how they comprehended print.

#### PPVT-III

On the PPVT-III, there was no significant main effect for condition,  $F(1, 244) = .25$ ,  $p > .05$ , but there was a significant condition by grade interaction,  $F(2, 244) = 9.04$ ,  $MSE = 88.53$ ,  $p < .001$ . According to a visual analysis, the interaction was—similar to the previous

interaction—disordinal in nature; that is, the effects of the condition reversed themselves across grade. To examine this interaction statistically, ANCOVAs were used to conduct simple main effects tests by comparing the two groups at each grade level. The same pattern as before emerged. At the preschool/Head Start level, there was a significant main effect for group,  $F(1, 56) = 5.73, MSE = 592.49, p < .05$ , where the control participants ( $M = 90.20, N = 26$ ) outperformed the experimental participants ( $M = 84.27, N = 35$ ) in terms of their ability to listen and comprehend spoken Standard English. At the kindergarten, however, there was a significant main effect for group,  $F(1, 96) = 19.19, MSE = 91.22, p < .05$ , where the effect once again reversed itself. As was the case with the TERA-3 Conventions Subtest, at this grade level, the experimental participants ( $M = 91.28, N = 52$ ) outperformed the control participants ( $M = 84.21, N = 49$ ). No significant differences existed between the conditions at the first grade level,  $F(1, 83) = 0.29, MSE = 66.16, p = .59$ . There was no significant differences between the conditions at the first grade level,  $F(1, 83) = 0.29, MSE = 66.16, p = .59$ .

### *DIBELS*

The oral reading fluency subtest of the DIBELS was administered during waves three and four to first grade students. A one-way ANCOVA was used to analyze this data. The results of the one-way ANCOVA with condition as a factor indicated that there was no significant main effect for condition,  $F(1, 79) = 0.38, p = .54$ . For the analysis of the remaining four sections of the DIBELS (Initial Sound Fluency (ISF), Letter Naming Fluency (LNF), Phonemic Segmentation Fluency (PSF), and Nonsense Word Fluency(NWF), Hierarchical Linear Modeling (HLM) was employed.

When ISF scores were analyzed, overall, children in the viewing group started significantly below their non-viewing peers. However, they were able to overcome this difference and outperform their non-viewing peers by the end of the intervention. More specifically, preschool viewers outperformed preschool non-viewers (9.7 sounds vs. 6.7 sounds) and kindergarten viewers outperformed kindergarten non-viewers (16.1 sounds vs. 11.4 sounds). They were also growing at a significantly faster rate than their non-viewing counterparts.

When LNF scores were analyzed, children in the control group significantly outperformed their viewing counterparts at both the start and the end of the intervention. At the last wave, preschool non-viewers named 25.5 letters while viewers named 18.0 letters, kindergarten non-viewers named 53.8 letters while viewers named 46.3 letters, and first grade non-viewers named 82.1 letters while first grade viewers named 74.6 letters. It appears that viewing the BTL program did not have any effect on letter naming.

The analysis of the PSF scores revealed that children in the control group outperformed their viewing counterparts at the start of the intervention, throughout, and at the end of the intervention. All non-viewing children, regardless of grade, were growing at a faster rate (19.04 vs. 11.61), and were accelerating faster (i.e., gaining more sounds) at each wave (4.69 vs. 2.69) than their viewing counterparts. It appears that viewing the BTL program did not overcome the initial differences in favor of the control group.

No differences were found between the viewers and non-viewers at the start of the intervention on the NWF task. However, children in the viewing group outperformed their non-viewing peers at the end of the intervention. Kindergarten viewers identified 34.7 letter sounds



and were growing at a rate of 9.8 sounds per wave while their non-viewing counterparts identified 23.2 letter sounds and were growing at a rate of 6.1 sounds per wave. At the first grade level, viewers were able to identify 67 letter sounds and were growing at a rate of 12.8 sounds per wave while non-viewers identified 55.5 sounds in nonsense words and were growing at a rate of 9.2 sounds per wave. In view of these results, it appears that viewing BTL had a positive effect on letter/sound correspondence skills, as measured by the nonsense word fluency task of the DIBELS.

*Choctaw Sample*

*TERA-3*

On the TERA-3 Reading Composite, there was a significant main effect for condition,  $F(1, 243) = 5.95$ ,  $MSE = 123.25$ ,  $p < .05$ . Participants in the experimental condition outperformed their peers in the control condition. There was, however, no significant condition by grade interaction,  $F(2, 244) = 2.19$ ,  $p > .05$ .

Upon closer examination, there was no significant main effect for condition on the TERA-3 Alphabet subtest,  $F(1, 243) = .01$ ,  $MSE = 4.58$ ,  $p > .05$ , or significant condition by grade interaction on this measure,  $F(2, 244) = .10$ ,  $p > .05$ . There was, however, a significant main effect for condition on the Conventions subtest,  $F(1, 243) = 7.88$ ,  $MSE = 5.17$ ,  $p < .01$ . According to this analysis, the participants that viewed BTL displayed significantly better understanding of certain aspects of English print than their counterparts that did not view the show. There was no significant condition by grade interaction,  $F(2, 244) = .47$ ,  $p > .05$ , on this measure. Finally, on the Meaning subtest, there was no significant main effect for condition,  $F$

(1, 243) = 2.69,  $MSE = 6.06$ ,  $p > .05$ , or significant condition by grade interaction,  $F(2, 244) = 2.63$ ,  $p > .05$ .

#### *PPVT-III*

On the PPVT-III, there was no significant main effect for condition,  $F(1, 243) = 2.46$ ,  $MSE = 97.45$ ,  $p > .05$ , or significant condition by grade interaction,  $F(2, 244) = .60$ ,  $p > .05$ .

#### *DIBELS*

The oral reading fluency subtest of the DIBELS was only administered during waves 3 and 4 to first grade students. A one-way ANCOVA was used to analyze these data. The results of the one-way ANCOVA with condition as a factor indicated that there was no significant main effect for condition,  $F(1, 76) = 0.01$ ,  $p = .99$ . For the analysis of the remaining four sections of the DIBELS (ISF, LNF, PSF, and NWF) HLM was used.

When ISF scores were analyzed, the viewing and non-viewing groups did not differ at Wave 1. However, children's performance on initial sounds was decelerating faster at each wave for children who viewed the program when compared to their non-viewing counterparts. That is, their performance at each wave, although still growing, was growing at a slightly smaller level at each subsequent wave.

For LNF, children in the non-viewing group had initial letter naming scores that were higher than their viewing counterparts. All children, regardless of group, were growing in their ability to name letters. First grade children outperformed and were growing faster than kindergarten children who, in turn, outperformed preschool children (56.9 letters vs. 31.5 letters vs. 6.1 letters; 9.59 letters per wave vs. 5.36 letters vs. 1.1 letters).

For PSF, there were no differences at the start between viewers and non-viewers. All children, regardless of group, were growing in their phonemic awareness knowledge. Differences in performance were related only to grade; that is, first grade children outperformed and were growing faster than kindergarten children (30.4 sounds vs. 15.8 sounds; growing at 6.2 sounds per wave vs. 3.5 sounds).

No significant differences were noted for group at the start or end of the intervention period on the NWF task. Significant differences were found for grade level: first grade children outperformed kindergarten children (35.2 letter sounds vs. 18.5 letter sounds). Interestingly, kindergarten children were growing at a faster rate when compared to first graders (13.90 vs. 4.33 letter sounds). Kindergarten children were also accelerating in their growth at each wave when compared with first graders (3.08 letter sounds vs. -.36 letter sounds).

Although the program effects were not as dramatic or pervasive as the effects found by Linebarger (2000), the students did benefit from their exposure to the BTL program.

#### *Summary*

In conclusion, as previously stated, the results were not dramatic and pervasive, but the differences found were meaningful. The Delta children may have benefitted more from the intervention and viewing because they, initially, had higher literacy scores and subsequent literacy ability. Furthermore, both total populations have a demonstrated need for more intensive reading intervention. Based on the results of this study, it appears that the BTL series could be a meaningful part of the overall reading interventions. While differences were not found with every measure for each of the grade levels, the differences that were found can not be ignored. For the Delta population, it appears that

the BTL program is most beneficial for the kindergarten group. When considering the Choctaw population, this distinction is not warranted because it appears that all age groups received some benefit from viewing the program.

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**BETWEEN THE LIONS Mississippi Literacy Initiative**

**It had been startling and disappointing to me to find out that story books had been written by people, that books were not natural wonders, coming up of themselves like grass. Yet regardless of where they came from, I cannot remember a time when I was not in love with them- with the books themselves, cover and binding and the paper they were printed on, with their smell and their weight and with their possession in my arms, captured and carried off to myself. Still illiterate, I was ready for them, committed to all the reading I could give them.” Eudora Welty, *One Writer’s Beginnings* (pp. 5-6)**

**Learning to read is a lengthy process that begins well before children come to school. Children that have not developed some basic literacy skills prior to attending school are not only at risk for not becoming fluent readers, but also at risk of dropping out of school prior to high school graduation (Wilson, 2000). The notion that reading is fundamental to being successful is one that is widely accepted in this country. According to Bob Chase, President of the National Education Association, the relationship between literacy and becoming a productive member of society is so strong that certain states use reported grade level reading statistics as a projecting factor in prison construction (Fact Sheet on the Importance of Reading to Infants and Young Children.**

**Available:<http://www.publishers.org/abouta/camp/factsheet.htm>). Although most children will learn to read, there are still far too many children that fail to become fluent readers.**

According to the National Institute for Literacy (2001), more than 20% of adults in the United States read at or below the fifth grade level.

**As bleak as the situation is for the nation as a whole, with only 29% of fourth graders at the proficient reading level as defined by the National Assessment of Education Progress (NAEP), the situation is even more critical in the state of Mississippi.**

According to the NAEP 1998 national assessment, only 18% of Mississippi's fourth grade students read at the proficient level. Moreover, only 48% read at or above the basic level.

An examination of the 1998 NAEP report also reveals that only 3% of Mississippi's fourth graders read at the advanced level. In which case, nearly one-third (31%) of Mississippi's fourth grade students read at or below basic levels. As critical as these figures are, Wilson (2000) suggests that they should not come as a surprise for a state that has and continues to lead the nation in rates of illiteracy.

There are many variables that have an impact on children becoming fluent readers. However, research has revealed that one of the primary variables to becoming a fluent reader is the acquisition and application of emergent literacy skills in early childhood. Emergent literacy skills are defined by Whitehurst and Lonigan (1998) as the identification of verbal print language, rules of print, comprehension of letters, and phonological processing. Consequently, poverty is one variable that has been shown to have a negative impact on the acquisition of early literacy skills as well as on the overall academic achievement of students. Unfortunately, Mississippi has and continues to struggle with the effects of poverty. Based on 1999 data, Mississippi leads the nation in childhood poverty (Multi-year KIDS COUNT 2002 Data Book). Although an individual's socioeconomic status (SES) is a powerful predictor of school success and the ability to read, it is not as powerful as the SES of the school or community in predicting school achievement. Unfortunately, many of the schools and communities in Mississippi would be classified as being of low SES.

This study focused on two distinct populations in the state of Mississippi: children who reside in the Mississippi Delta and the children of the tribal schools of the Mississippi Band of

**Choctaw Indians. The counties in the Mississippi Delta of particular interest in this study were Sunflower, Bolivar, and Washington. In all three counties there is a high rate of childhood poverty. According to 2000 US Census Data (1997 model-based estimate), the percentage of children living below the poverty level is 37.7%, 30.8%, and 32.9% in Sunflower, Bolivar and Washington Counties, respectively. The tribal schools of the Mississippi Band of Choctaw Indians are located in five counties. The counties encompassing the reservation and their respective rates of childhood poverty are: Newton (22.6%) , Neshoba (22.6% ), Leake (26.8% ), Winston ( 25% ), and Jones ( 22.1% ). The rates of childhood poverty are even higher when only the Choctaw communities in these counties are examined. The following represents percentages of poverty in the Choctaw communities located in Neshoba County: Pearl River (31.3%), Bogue Chitto (36.3%), and Tucker (32.5%). The following represents percentages of poverty in the Choctaw communities located in Leake County: Red Water (34.1%) and Standing Pine (37.1%). The percentage of children living in poverty in the Conehatta Choctaw community, located in Newton county, is 40.1%. The percentage of children living in poverty in the Crystal Ridge Choctaw community, located in Winston county, is 37.5%. The percentage of children living in poverty in the Bogue Homa Choctaw community, located in Jones county, is 61.3% (1997 Choctaw Demographic Survey). In each instance, the Choctaw percentages of poverty are higher than the county-wide percentages of poverty. Although all of the previously mentioned counties are different in many aspects, they all have three common threads: (a) they are located in rural portions of the state, (b) they have high levels of childhood poverty, and (c) they all possess risk factors that have been shown to have a negative impact on literacy acquisition.**

**Notwithstanding, the literacy crisis facing Mississippi has not gone unnoticed. Jim Barksdale, former President and Chief Officer at Netscape Communications Corporation, and his wife Sally began researching the state of education in America and how they could best use their means to help solve problems. Through their research and reviewing of national data, the Barksdales became convinced that reading is the core competency every child needs. In response to this realization, they invested 100-million dollars to attack the problem of illiteracy in Mississippi by establishing the Barksdale Reading Institute in January 2000. The Institute is designed not only to teach students how to read but also to educate teachers to teach children to read ([misreads.org/j-barks.html](http://misreads.org/j-barks.html)). This effort is one example of the intervention strategies and programs that have been implemented over decades to address and prevent reading difficulties in young children. The development of the Barksdale Reading Institute, likewise, highlights the crisis of illiteracy in the state of Mississippi.**

**Given that the focus of this study is the examination of the impact of viewing a television program developed around research-based literacy components in pre-school, Head Start, kindergarten, and first grade classrooms, it is important to note research previously conducted on the topic. For over 30 years, researchers have examined and found that children's television can have a positive impact on academic achievement and skills associated with that achievement (Van Den Broek, 2001; Linebarger, 2000; Wan, 2000; Marsh, 1999; Fisch, Trugilo, and Cole; 1999). However, the literature in this area is void of research that focuses on the impact of television viewing as an intervention strategy for the teaching of early literacy skills to low and or moderate-income Native American pre-school**

children in rural settings and children living in similar circumstances in the Mississippi Delta.

**BETWEEN THE LIONS (BTL)**, a television series aimed at a pre-school/early elementary school-age audience, was created in the mid 1990s in response to the growing concern regarding the achievement gap between children in families with low-incomes and their counterparts in families with medium to high incomes (Rath, 2002). According to Rath, Curriculum Designer for the BTL series, the series was designed to align its curriculum with the current recommendations of the National Research Council as discussed in *Preventing Reading Difficulties in Young Children* and the National Reading Panel's report, *Teaching Children to Read: Reports of Subgroups*. Based on these recommendations, the show incorporates the whole-part-whole organizational approach in each episode to allow for skill building in the areas of phonemic awareness, phonics, fluency, and comprehension (Rath 2002).

#### Review of Related Literature

Much has been written on how young children learn to read. The information presented in this section includes not only information on how young children learn to read but also pertinent information that is specific to this study. This section is organized into five sections: (a) a brief discussion of early literacy acquisition in the context of current literature, (b) the relationship between rural demographics including poverty and acquisition of literacy skills, (c) the impact that English as a second language has on literacy skills acquisition, (d) a brief review of previous research on children's television programming, and (e) an examination of the components of the **BETWEEN THE LIONS**

**(BTL) program content in relationship to research on the characteristics of skilled readers and sound instructional strategies for young children.**

*Early Literacy Acquisition in the Context of Current Literature*

**Since the release of *Preventing Reading Difficulties in Young Children* by the National Research Council in 1998 and the subsequent release of the National Reading Panel's report *Teaching Children to Read: Reports of Subgroups* in 2000 by the National Institute of Child Health and Human Development, national attention has focused on early literacy. Specifically, attention has focused on defining early literacy in the context of what it is, what it is not, and how, when, and what children should and should not be taught. National attention has also focused on the roles that teachers and parents play in the process of acquiring early literacy skills. Numerous research studies have been reviewed and information gleaned that has resulted in specific skills being identified that, when acquired by young children, greatly enhance their success in becoming fluent readers. According to Snow, Burns, and Griffin (1998), in order for young children to develop into skilled readers, they need simultaneous access to knowledge of letter-sound relationships, a sight word vocabulary, and comprehension strategies. They further state that research has revealed that children's letter identification and concepts of print are also important factors in their reading achievement.**

**Adler and Fisher (2001) propose that effective, influential objective reading instruction from knowledgeable teachers would produce successful young readers. Often this reading instruction is based on emergent literacy, which Whitehurst and Lonigan (1998) defined as "characteristics of pre-readers that may relate to later reading and**

writing” (p. 849). In the same study, Whitehurst and Lonigan identified verbal language, rules of print, comprehension of letters, and phonological processing as components of emergent literacy skills, which eventually lead to future reading ability.

Lonigan, Burgess, and Anthony (2000) examined the components of future emergent literacy and reading skills: comprehension of letters, phonological processing, and rules of print. The sample consisted of two groups: 96 children who were monitored from early to late preschool and 97 children who were monitored from late preschool to kindergarten or first grade. There were two testing phrases; each group was given a number of tests focusing on each of the components. The results indicated that a large portion of a child’s reading development begins in preschool. Specifically, they found that comprehension of letters and phonological processing during preschool had high predictive relations for later reading ability. However, they found that rules of print during preschool did not appear to be related to later reading ability.

In reviewing the skills associated with becoming a fluent reader, the questions related to how children come to master those skills are posed. Almost 40 years ago, James Hymes, Jr. (1964) in his book, *Before the Child Reads*, reminds teachers and parents of the need that pre-schoolers and first graders have to read “real, honest” books. He states that 5- and 6-year-old children need fiction and non-fiction books, books that tell a story, and those that are action-packed. In 2000, the National Association for the Education of Young Children and the International Reading Association issued a position statement on learning to read and write and reemphasized the importance of reading aloud to children. According to research cited in the position statement, the single most important

activity for building understanding and essential skills for reading success appears to be reading aloud to children (pg.6). *Starting Out Right* (1999), a companion book to *Preventing Reading Difficulties in Young Children* (1998), published by the National Research Council, outlines strategies and activities that promote skilled reading. Three core elements are identified that, when mastered, will lead a child to success as a reader: (a) being able to identify printed words using sound and spelling connections and having a sight word repertoire, (b) being able to use previous knowledge, vocabulary, and comprehension strategies to read for meaning, and (c) fluency, being able to identify words swiftly so that what is read is understood and reading itself is enjoyable (p.7). The fact that reading is a multifaceted process requires that there be a variety of teaching methods employed to be effective for all children (NAEYC & IRA, 2000).

*The Relationship Between Rural Demographics, Poverty and Acquisition of Literacy Skills*

Recently research has revealed that there are several variables that attribute to fluent reading. The primary variable is the acquisition and application of literacy skills in early childhood. According to Adler and Fisher (2001), children who do not learn to read fluently during early childhood often do not achieve at the same level as their peers who achieve reading fluency during early childhood. Jim Barksdale, philanthropist of Mississippi's Barksdale Reading Institute, remarked that an individual's third grade reading level is of vital importance because it has been shown to be a valid predictor of whether or not that individual will graduate from high school (Wilson, 2000). In reviewing studies related to the acquisition of early reading skills among children living



in rural, economically disadvantaged settings, such as the participants in the study, information was limited.

The relationship between poverty and rural settings is one of vital importance for the present study because this relationship has been shown to have an impact on the acquisition of early literacy. A review of studies related to low SES students and the likelihood of their becoming poor readers was presented in *Preventing Reading Difficulties in Young Children* (1998). The outcome of these studies was that SES is an important risk marker, but its effects are strongest when it is used to indicate the status of a school or community, not the status of an individual. Group risk factors listed by Snow, Burns, and Griffin (1998) include children living in low-income families and in poor neighborhoods, those that have limited proficiency in spoken English, and those that speak a dialect of English that differs substantially from the one used in school. These factors are of primary interest because they represent the general populations of the present study.

Mississippi is a predominantly rural state with high rates of poverty. The Multi-year KIDS COUNT 2002 data book reports that Mississippi ranks last when childhood poverty rates are examined. Consequently, the data indicate that the percentage of poor children in the state of Mississippi surpasses all other states (KIDS COUNT 2002). In the state of Mississippi, 24.5% of children under the age of 18 live in poverty. The percentage of children residing in poverty in the counties involved in the present study are even greater. The following represents the counties involved in this study and the respective percentage of children living in poverty: Sunflower (37.7%), Washington (32.9%), Bolivar (30.8%) Winston (25%), Neshoba (22.6%), Newton (22.6%), Leake (26.8%), and Jones (22.1%) (U.S. Census

Bureau, 2002). Moreover, when specific Choctaw communities are examined, the percentages of poverty increase. The following represents the percentages of poverty for the eight Choctaw communities included in the present study: Pearl River (31.3%), Bogue Chitto (36.3%), Tucker (32.5%), Conehatta (40.1%), Red Water (34.1%), Standing Pine (37.1%), Crystal Ridge (37.5%), and Bogue Homa (61.3%) (1997 Choctaw Demographic Survey). In reviewing the previous statistics, too many children in the state of Mississippi are at-risk for reading difficulties.

Snow, Burns, and Griffin (1998) stated that children from poor, minority or non-English speaking families, and children who have innate predispositions for reading difficulties are at high-risk of having reading difficulties. The authors identified one characteristic of minority populations that may be an explanation for the higher risk of reading difficulties. That characteristic being the use of nonstandard varieties of English or limited proficiency in English. This finding concurs with those of Alder and Fisher (2001), who found that children of minority-language or dialect-speaking families are at higher risk of reading difficulties. Also, Alder and Fisher found that if those children attend a minimal-performing school, then their chances of having reading difficulties are even greater. Moreover, Alder and Fisher concluded that chances of these children learning to read by the end of the third grade are low.

McFalls, Schwanenflugel, and Stahl (1996) examined the impact of semantic variables related to concreteness on the development of reading vocabulary for African-American children. The participants for this study were African-American, low SES, second grade children. The researchers found that the children read abstract words with less accuracy than

concrete words on tasks of recognition and reading accuracy. They also found that the children's ability to remember the words and to learn to read them easily was dependent on the concreteness of the words.

Washington (2001) also researched the early literacy skills of African-American children. In his research, he found that African-American children, upon their entry to kindergarten, have literacy issues, such as oral language skills and home literacy practices that have an impact on early literacy skills acquisition. Washington identified six factors that may affect young African-American children's future reading abilities. Three of the factors identified—poverty, general oral language skills, and dialectal variations—are quite relative to the present study. Washington found that children living in poverty often come from unstable homes and as a result they often enter school with few pre-literacy occurrences and reduced world knowledge. This reduced world knowledge in turn affects language proficiency.

Dialectal variation is especially open for debate when focused on how or if it affects reading development. However, “the more the child's linguistic system diverges from Standard Classroom English (SCE) the more difficult his or her transition will be” (Washington, 2001, p. 216). In addition, good language and vocabulary skills vary in terms of a family's socioeconomic status (SES). For example, Hart and Risley (1995) found that professional parents presented more vocabulary, multiclausal sentences, past and future tense verb phrases, and declaratives to their children in an hour than welfare recipient parents presented to their children.

*The Impact English As A Second Language Has On Literacy Skills Acquisition*

Research surrounding literacy skills acquisition for children who are English as second language (ESL) learners highlights numerous challenges faced by both child and teacher. Research cited by Snow, Burns, and Griffin (1998) reported that if a young child's home language is not mainly English, the child is highly likely to have problems reading printed English, especially if this child has not obtained oral skills in English. The report continued by stating that one critical step to being literate in English is that young non-English speaking children should not be hurried into reading in English without ensuring adequate preparation has occurred. This includes to the greatest extent possible that non-English speaking children be given the opportunities to develop literacy skills in their home language as well as in English. As pointed out by Tabors (1997), to understand the challenges of acquiring a second language, the breakdown of the steps taken to acquire a primary language must be explored. Likening language acquisition to a puzzle with interlocking pieces, Tabors maintains that five pieces must "fit" for the language puzzle (any language puzzle) to be complete. The five pieces identified are: (a) phonology, or the sounds of the language; (b) vocabulary, or the words of the language; (c) grammar, or how the words are put together to make sentences in the language; (d) discourse, or how sentences are put together; and (e) pragmatics, or the rules about how to use the language (Tabors, 1997, p.7).

Guitierrez-Clellen (1999) focused on identifying the sources of differences in literacy skills among primarily Spanish-speaking children who used English as a second language. She found that literacy skills are related first to the alphabetic system followed by analogies, and strategies used to decode and spell new words. For some languages, the letters of a word typically specify how to articulate or read the word. Therefore, a reader of this type of alphabetic system

can possibly read words they have never seen before. However, not all languages are based on this type of alphabetic system. Some languages, such as Chinese, require an individual to associate the meaning of a particular written word to its phonological form (Guitierrez-Clellen, 1999). Under these circumstances, it is harder for an individual to articulate or read a word they have never seen before. Moreover, for some languages, analogies are used to enunciate irregular words more often than they are in other languages. For example, the English language requires more usage of analogies than the Spanish and Italian languages.

McEachern (1990) in his review of ways to support emerging literacy among young American Indian students stressed the development of reading comprehension skills in conjunction with successful experiences in listening comprehension. He concluded his review by emphasizing that language arts programs for young Indian students must incorporate the linguistic background, prior knowledge, and experiences of the Indian students to support the key function of comprehension. This view is supported by the position statement developed by the International Reading Association and the National Association for the Education for Young Children cited in the publication *Learning to Read and Write: Developmentally Appropriate Practices for Young Children* (2000) in that teachers of non-English or limited English young learners need to respect the child's home language and culture and use it as a base on which to build and extend children's language and literacy experiences.

In addition, there are other risk factors that are usually associated with limited English proficiency as pointed out by the National Research Council in *Preventing Reading Difficulties in Young Children* (1998). The research cited focused primarily on Hispanic children and found

that the majority of Hispanic children with limited English proficiency had poorly educated parents, were from families with low-incomes, and attended low quality schools. Therefore, the Council's report concluded that for the majority of these children, both limited English proficient and poor, were at risk for reading difficulties.

*Research on Children's Television Programming Related to Early Literacy Skill Acquisition*

For a number of years, traditional instructional methods delivered by teachers in school settings were the only vehicles that children could use to reach the top of the emergent literacy ladder. Recent research findings, however, suggest that television can be an effective tool for students to use on their road to reading success. Fisch, Trugilo, and Cole (1999) reviewed 30 years of research regarding the impression that *Sesame Street* has had on preschool children. *Sesame Street* was one of the first children's television shows whose major goal was to simultaneously educate and entertain children. Initially, the show was targeted towards preschoolers from minority and or economically deprived families as a means of getting them ready for school.

In the 1970s Educational Testing Service (ETS), along with other researchers, conducted several studies to assess the effectiveness of *Sesame Street*. One 1971 study, occurring over a period of 26 weeks, wanted to assess the cognitive skills of students who watched the show versus children who did not watch the show. The results indicated that the children who watched *Sesame Street* had the greatest gains between pretest and posttest especially in the areas of letter recognition. In a longitudinal study conducted by Wright and Huston (as cited in Fisch, Trugilo, & Cole, 1999), a sample of 250 low-income children was used to examine the effect of watching *Sesame Street* on school readiness.

The researchers found that children who watched *Sesame Street* spent more time reading and engaged in educational activities than their peers who did not watch *Sesame Street*.

According to Wan (2000), most children's television shows encourage children's emergent literacy skills. Wan examined emergent literacy skills in relation to the children's television show *Barney and Friends* and focused on two research questions: "What are the literacy learning environment and opportunities offered by *Barney and Friends*?" and "How do the literacy messages conveyed by *Barney and Friends* reflect emergent literacy perspective?" (p. 7). A content analysis was conducted using 25 randomly selected episodes of the show. Wan found that the show produced a positive setting for emergent literacy development by focusing on two essential sections of child literacy development—listening and dialogue chances. That is, *Barney and Friends* always gave children the opportunity to listen and speak through doodling on paper. Moreover, each episode viewed provided children opportunities to understand ecological print.

Van den Broek (2001), having identified television as an important medium in most children's lives, examined how early television viewing impacts future reading ability. The study sample consisted of 28 preschoolers and 95 first graders. The children were required to watch the children's television show *The Rugrats*. After viewing the show, the children completed a battery of tests, which primarily measured memory and comprehension, two basic elements of early literacy. The results indicated that children who were good at remembering and comprehending material presented through a media outlet (television) were also good at remembering and comprehending material presented orally.

Crawley, Anderson, Wilder, Williams, and Santomero (1999) explored whether repetitive exposure to a particular episode of a children's program would increase comprehension. The researchers randomly assigned 108, 3- to 5- year-olds to one of three groups: one group viewed a single episode of *Blue's Clues*, one group viewed five consecutive episodes of *Blue's Clues*, and one group viewed a single episode of *Busy World* children's show. The groups that viewed only one episode, either *Blue's Clues* or *Busy World*, were given a comprehension test immediately after the viewing. The group that viewed the one episode five times was given their test after viewing the last episode. Results indicated that the group who had repeated exposure to a single episode performed higher than the groups who viewed a single episode one time.

Marsh (1999) used the children's show *Teletubbies* to examine if popular shows encouraged literacy in early age children. The sample for the study consisted of 3- and 4- year-olds attending two childcare centers. The majority of the children were from working-class families; however, there were some children from families with severe economic challenges. For a period of 10 weeks, the children were introduced to literacy activities related to the *Teletubbies'* television show. The researcher found that the *Teletubbies'* television show encouraged reading and writing in children who usually did not participate in literacy based tasks.

Dunn (1970) examined the effectiveness of teaching reading skills with videotaped presentations to children ages 2 through 4. The experimental group viewed videotaped presentations of selected reading skills for 12 weeks while the control group were exposed to traditional teaching methods. Both groups were given a standardized pretest and posttest. In



addition to the standardized tests, other instruments that measure knowledge of alphabet, alphabet sounds, basic vocabulary were used. The results indicated that the experimental group's gains in selected reading skills (alphabet, alphabet sounds, and basic vocabulary) were significantly higher than the control group's gains in the selected reading skills. Dunn also examined the socioeconomic rank of the children and found that it was also related to the gain in reading skills. In the analysis of the results, Dunn reported that the children in the lowest socioeconomic rank benefitted the most from the treatment as evidenced by their higher gains in reading skills.

Not all research conducted on the impact of television and literacy skills has been positive. Mates and Strommen (1995) conducted an analysis of 10 *Sesame Street* episodes. They found only nine instances where individuals were actually seen reading or writing in a 10-hour period. The focal points of the *Sesame Street* literacy lessons were only letters and their sounds and not reading. The characters engaged in various activities, but rarely did any of those activities involve meaningful reading and writing. The researchers mentioned that *Sesame Street* literacy goals are moving towards an awareness of up-and-coming literacy research, but there was no evidence of this new research being presented in the 10 episodes the researcher viewed.

Linebarger (2000) investigated whether or not abilities linked to emergent literacy could be influenced by the viewing of the children's television show *BETWEEN THE LIONS*. One hundred sixty-four kindergartners and first graders were used as the sample. The experimental group viewed 17 episodes of the show. The children were assessed prior to viewing the show, after viewing eight episodes, and after viewing all 17 episodes. Several

measures were used including demographic questionnaires, children interviews, teacher reports, and learning outcomes, which were measured by two standardized tests. Overall, the kindergartners viewing the show scored significantly higher on all of the learning outcomes (e.g., letter naming category, phonemic segmentation fluency category, & nonsense word fluency category) than the kindergartners who did not watch the show.

*Examination of BETWEEN THE LIONS Curriculum*

The creation of BETWEEN THE LIONS (BTL) in the mid 1990s was in response to concerns surrounding an achievement gap between families with low-incomes and other children. The creators from WGBH and Sirius Thinking, Ltd., of New York, through their experiences in developing *The Electric Company*, *The Muppets*, *Sesame Street*, *Zoom*, and *Arthur*, had a successful track record in developing shows for 4-to-7 year-olds that would be appealing and educational. To gain knowledge in early literacy development, the creators from WGBH and Sirius Thinking, Ltd. met with nationally known experts in the field and asked for specifics on how young children learn to read. These conversations as well as the examination of the joint position paper on learning to read and write issued in 1998 by the International Reading Association and the National Association for the Education of Young Children, the National Research Council's compilation of research found in *Preventing Reading Difficulties in Young Children* (1998), and information reported in the *National Reading Panel Report: Teaching Children to Read, Reports of Subgroups* (2000) guided the curriculum design for BTL. The evidence-based recommendations gleaned from these reports divided into five main categories, phonemic awareness, phonics, fluency, vocabulary, and text comprehension serve as the backbone for content development of each episode (Rath 2002). According to the BTL

curriculum team, specific program segments were developed that related to evidence-based recommendations generated from the research previously cited. The categories used in defining the research related content were taken from the *National Reading Panel Report: Teaching Children to Read, Reports of the Subgroups* (2000). This information is provided on Table 1.

According to Rath (2002), the BTL curriculum is aligned with current recommendations for developmentally appropriate practices for early literacy. A review of the *BETWEEN THE LIONS Teacher's Handbook* reveals a curriculum content by episode section as well as sections listing additional books for teacher and class use per episode (see Appendix 1), teacher follow-up activities, an explanation and copies of various extension activities found on the web site for teacher use, and a section containing information for parents. The whole-part-whole organizational approach of the episodes described by Rath (2002) allows for skill-building segments in the areas substantiated in the research quoted in this review: phonemic awareness, phonics, fluency, and vocabulary. The show also models several reasons for reading, such as reading for enjoyment, information, and for aid in doing a task (Strickland & Rath,2000).

Snow, Burns, and Griffin (1998) confirmed that children who are most likely to have problems in learning to read in the primary grades are those who begin school with less prior knowledge and skill in letter knowledge, phonological sensitivity, familiarity with the basic purposes and mechanisms of reading and language ability. As indicated in the curriculum content by episode guide (see Table 1), BTL addresses all of the areas named that can be troublesome for children that are experiencing difficulty in learning to read.

**Table 1**

***BETWEEN THE LIONS/Evidence-Based Practices for Primary Grades***

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**Evidence-Based Recommendation\***                      **BETWEEN THE LIONS Curriculum Content**

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**Phonemic Awareness**

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<b>Rhymes and wordplay in songs and oral language</b>	<b>Segments demonstrate phonological structure of words and the alphabetic principle: <i>Fred</i>, songs, limericks, tongue twisters, poems, family wordplay.</b>
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<b>Blending onset and rime</b>	<b><i>Gawain’s Word</i></b>
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<b>Segmenting and blending phonemes</b>	<b><i>Fred</i>, <i>golf announcer</i>, word morphs</b>
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**Phonics**

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<b>Letter naming</b>	<b><i>Vowel Boot Camp</i>, <i>golf announcer</i>, <i>Moby Duck</i>, limericks, songs</b>
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<b>Letter-sound correspondence</b>	<b><i>Fred</i>, <i>Gawain’s Word</i>, <i>Vowelles</i>, word morphs, limericks, songs</b>
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<b>Well-planned sequence</b>	<b>Key words, common rimes, word families short vowels</b>
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<b>Direct instruction</b>	<b><i>Vowelles</i>, <i>Fred</i>, <i>Dr. Ruth</i>, <i>Vowel Boot Camp</i>, songs</b>
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Table 1 (continued)

<b>Evidence-Based Recommendation*</b>	<b>BETWEEN THE LIONS Curriculum Content</b>
Spelling patterns	<i>Arty Smartpants, Dr. Nitwhite, Gawain’s Word, un &amp; re People</i> , limericks, songs, word morphs
Applying skills to purposeful reading and writing	<i>Chicken Jane, Cliff Hanger, Sam Spud, Smarmy Marmy, What’s Cooking?</i>
<hr/> <b>Fluency</b> <hr/>	
Guided repeated oral reading	Dynamic highlighting demonstrates fluent pacing and phrasing  Repetition of predictable, rhythmic, and rhyming text inspires viewers to read along:  <i>Chicken Jane, Cliff Hanger, songs</i>
Independent silent reading	Featured stories posted on Web site
<hr/> <b>Vocabulary</b> <hr/>	
Direct instruction	Targeted new vocabulary words appear in
Specific word instruction	every episode; <i>Heath</i> and others explain word meanings, give synonyms  Word parts (affixes) are featured in songs and skits: <i>Arty Smartypants, un People</i>

**Table 1 (continued)**

<u>Evidence-Based Recommendation*</u>	<u>BETWEEN THE LIONS Curriculum</u>
<b>Word-learning instruction</b>	<b>Cubs ask questions about words. <i>Heath</i> is resident “Word Wizard”</b>
<b>Repetition and multiple exposures</b>	<b>Words can be revisited in repeated views</b>
<b>Indirect instruction</b>	<b>Featured words in segments are illustrated or dramatized: <i>Fred, Gawain’s Word, Cliff Hanger, Dr. Ruth</i></b> <b>A wide variety of contexts is presented</b> <b>Sophisticated oral language is often explained</b>
<hr/> <b>Text Comprehension</b> <hr/>	
<b>Active, purposeful reading</b>	<b>Lion family engages in purposeful, active reading, showing the many reasons to read and write</b> <b>Lion puppets enter books to question characters, and characters come out books for discussion and character development</b> <b>A variety of text structures and genres is presented: mysteries, nonfiction, fables, myths, serials, easy readers, poetry, recipes</b>

Table 1 (continued)

<u>Evidence-Based Recommendation*</u>	<u>BETWEEN THE LIONS Curriculum Content</u>
Comprehension strategies	Lion club (and other characters) demonstrate comprehension strategies: self-monitoring, predicting, summarizing, questioning, rereading, connecting text to life experience
Self-monitoring	Segments model self-monitoring and fix-up strategies: <i>Sam Spud, Lone Rearranger</i>

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\*From the National Reading Panel Report, 2001<sup>1</sup> and Put Reading First, 2001<sup>2</sup>

<sup>1</sup>Teaching Children to Read: An Evidence-Based Assessments. Washington, DC: NCHD.

<sup>2</sup>The Research Building Blocks for Teaching Children to Read. CIERA and NIFL.

### Summary

The research studies reviewed represent those that have a direct relationship to the research study conducted. The number of research studies concerned with early literacy grows daily. The work represented in this review of literature represents the most pertinent and scientifically rigorous on the topic.

The purpose of this study was to investigate the effect of the BTL series on the acquisition of early literacy skills of children in low-income communities and children who may speak English as a second language. The acquisition of early literacy skills is paramount to reading success. Early literacy skills are defined by Whitehurst and

**Lonigan (1998) as “characteristics of pre-readers that may relate to later reading and writing” (p.849). They further defined the characteristics as verbal language, rules of print, comprehension of letters, and phonological processing. Specifically, the present study examined whether viewing BETWEEN THE LIONS would have an effect on the early literacy skills of preschool, kindergarten, and first grade children as measured by the Test of Early Reading Ability (TERA-3), The Peabody Picture Vocabulary Test (PPVT-III), and the Dynamic Indicators of Basic Early Literacy Skills (DIBELS).**



## **Method**

### ***Participants***

#### ***Selection of Research Participants***

Prior to the initiation of the research project, the production staff of WGBH, the producers of BETWEEN THE LIONS identified the target population and experimental groups for the research project. Criteria used by WGBH for choosing the sites included:

- 1. Reaching schools with a primarily (but not exclusively) African American population.**
- 2. Working with a community in the Delta region of the state.**
- 3. Working in a small, self-contained, non-urban community that was large enough to support multiple K-1 classrooms (ideally in more than one elementary school), Head Start classrooms, childcare centers, and with its own public library.**
- 4. A community that had a real town center, and where children were not bused significant distances from multiple communities to attend school.**
- 5. Reaching a low-income population with low reading scores.**
- 6. Working in a community that was relatively stable and where the school and head start administrators would be open to undertaking the project.**
- 7. Avoiding communities that were recipients of the Barksdale Reading Institute grants for new reading initiatives.**

In addition to the previously mentioned criteria, the inclusion of the Choctaw Indian Reservations added an additional dimension to the research project in that many children on the reservation spoke English as a second language.

Therefore, the participants for this study encompass two distinct groups – students living in the Mississippi Delta and students living on Mississippi Choctaw Indian Reservations. However, no comparisons are made between the two groups. Each group constitutes a different study. In which case, the population will be discussed separately.

*Delta participants.* The participants for the Delta portion of the study included 4-year-old pre-school children attending childcare centers in Sunflower, Bolivar, and Washington counties. Due to the small number of 4-year-old children attending childcare centers in these counties, the total population of children was used. The majority of the children in this group were from low-income families.

Due to the nature of the Mississippi Delta and the fact that the majority of 4-year-old children in these counties attended Head Start, obtaining an acceptable sample size presented a problem. In order to obtain a sufficient sample size, several childcare centers were used to obtain an experimental and control group. With the exception of two childcare centers (one control and one experimental) all of the childcare centers were located in rural areas serving children from low-income families. The two childcare centers that were not located in extremely rural areas served children from families with medium to upper incomes. However, in an effort to counterbalance the two groups, one center was randomly assigned to the experimental group and the other to the control group. The experimental group (n = 40 mean age = 3.9) consisted of 32 children from

centers serving low-income families and 8 children from centers serving medium to high-income families. The control group (n = 29 mean age = 4.1) consisted of 15 children attending centers serving low-income families and 14 children attending centers serving medium to high income families.

In addition to preschool children, kindergarten (n = 55, mean age = 5.2) and first grade (n = 45, mean age = 6.3) students from the Indianola School District, located in Sunflower County were randomly selected to participate in this study as the experimental group. The Indianola School District has an enrollment of approximately 3,000 students. Ninety-four percent of the student population is African American and 6% of the student population is Anglo-American. Eighty-two percent of the students in the district participate in the free and reduced lunch program. Achievement test scores indicate that 37.7% of the students in grade 4 (grade in which reading scores are first obtained) scored in the bottom quartile on the Iowa Test of Basic Skills (ITBS) (Mississippi Report card, 1999).

Kindergarten (n = 52, mean age = 5.2) and first grade (n = 47, mean age = 6.4) students from the Sunflower County School District, located in Sunflower County were randomly selected to participate in this study as the control group. The Sunflower County School District has an enrollment of approximately 2,000 students. The population for this district is very similar to that of the Indianola School District in that it is also predominately African American (97%) with a small population of Anglo-American (2%) and Hispanic Americans (1%). The district also has a high percentage (87%) of its students participating in the free and reduced lunch program. Achievement

test scores indicate that 37.4% of the students in grade 4 (grade in which reading scores are first obtained) scored in the bottom quartile on the Iowa Test of Basic Skills (ITBS) (Mississippi Report card, 1999).

*Choctaw Indian Reservation Participants.* The participants for the Choctaw preschool portion of the study include 4-year-old children attending childcare and Head Start centers that are governed by the Mississippi Band of Choctaw Indians (MBCI) Division of Early Childhood. Both childcare and Head Start centers use the same early childhood curriculum that was developed by MBCI Division of Early Childhood. The preschool experimental group consisted of 45 preschool children (mean age = 4.2) from the Pearl River Reservation. The preschool control group consisted of 48 preschool children (mean age = 4.1) from seven smaller reservations under the auspices of MBCI. The majority of the children in both groups were from low-income families.

Kindergarten (n = 50, mean age = 5.2) and first grade (n = 50, mean age = 6.2) students from Pearl River Elementary, located in Neshoba county were randomly selected to participate in this study as the experimental group. The control group of kindergarten (n = 51, mean age = 5.2) and first grade (n = 52, mean age = 6.2) students were randomly selected from four elementary schools serving the Bogue Chitto, Conehatta, Standing Pine, and Tucker Reservations. Although the schools are located on different reservations, and in many cases different counties, they are still governed by the MBCI Tribal School Board.

*Procedures*

After several informational meetings with childcare and school district personnel detailing the intent and specifics of the project and upon their subsequent agreement to participate, application was made the Mississippi State University Institutional Review Board (IRB) to conduct the research. After receiving approval from the IRB to conduct the research, training sessions were conducted for teachers and childcare personnel of the experimental group, and for individuals that would be responsible for administering the selected tests.

*Training for Teachers of the Experimental Group*

Prior to the start of the treatment phase of the project, WGBH personnel, along with Mississippi ETV Learning Services staff directed day-long workshops at each of the experimental school sites, as well as with experimental childcare and Head Start personnel. The training consisted of an overview of the series and its goals and objectives and instructions on using the *BETWEEN THE LIONS in the Classroom: A Handbook for Teachers*. The *BETWEEN THE LIONS in the Classroom: A Handbook for Teachers* handbook was specifically designed to help teachers: “understand the BETWEEN THE LIONS curriculum, plan classroom lessons using BETWEEN THE LIONS, engaged students in active viewing, and conduct lively, hands-on activities with students that reinforce key reading skills and promote a love of books” (WGBH, 2002. p.1). Included in the handbook was a curriculum content by episode guide (see Appendix 1) based on the BTL series. Included in this guide were descriptions of each episode, list related books, lists of key words, and lists of vowel sounds. The trainers stressed to the teachers that although the episodes were numbered, it was not

necessary or important to view them in sequential order. However, what was important was that the teachers coordinate specific episode viewing with their specific curriculum goals.

Another integral part of the training was the demonstration of several learning activities that could be used to complement different episodes of the show. Teachers were shown an entire episode so that they could begin to appreciate some of the “pieces” of the program and come to understand how the show was put together. Then as the workshop progressed, different segments were “pulled out” to do hands-on activities so teachers could see how they could do similar things with their classes. Books were also read aloud to demonstrate several ways of accomplishing that part of the process. The training concluded with the teachers developing a lesson based on the episode that was viewed during the session and with instructions on completing the weekly teacher logs.

The teacher logs were created as a means of monitoring the viewing of BTL and activities generated by the viewing of the series. The logs gathered information such as episodes viewed, children present during the viewing, activities conducted after viewing, and teacher comments (see Appendix 2). The logs were to be completed and turned in to ETV personnel monthly.

During the school year, monthly meetings were held between the teachers and Mississippi ETV Learning Services staff to make sure everyone was on track, to get feedback on what was working, answer questions, talk about upcoming events and to provide the teachers with additional strategies they could use. Materials provided to the teachers included a set of video tapes, a handbook providing indexes to the videos in various formats, a classroom set of books, and posters for their classrooms.

### *Training of the Evaluators*

Deborah Linebarger of the University of Kansas conducted a two-day training session on the proper administration of the DIBELS, TERA-3, and the PPVT. The first day consisted of a brief introduction of each instrument detailing the purposes of each instrument, and instructions in administering each evaluation. In addition to the instruction provided by Linebarger, the participants of this training session viewed a video of an actual testing session conducted by Linebarger. Following the video demonstration, Linebarger demonstrated the administration of the instruments with a child of a faculty member. After a period of questions and answers, the participants practiced administering each instrument with a peer.

The second day of the training entailed going to actual childcare centers and administering the instruments to children. Each evaluator administered each test to a child. As the test was being administered, Linebarger observed the evaluators and made anecdotal notes on the test administrations. After all testing was complete, a debriefing session was held in which participants were able to ask questions regarding the administration of the instruments and receive feedback on their performance.

### *Treatment*

After receiving IRB approval, consent forms were distributed to the parents of potential participants of both the experimental and control groups. Participants were then randomly selected from the group of returned consent forms. Prior to BTL viewing and instruction based on the viewing, baseline conditions for both the experimental and control groups were assessed through the administration of the TERA-3, PPVT, and the

**DIBELS. After all pre-testing was completed, the experimental group was exposed to the treatment.**

**The treatment consisted of the children viewing at least two episodes per week, reading a book related in some way to the episode viewed and then doing a hands-on activity that reinforced the theme or skills stressed in that episode. However, it is important to note that the BTL viewing and subsequent activities were in addition to their regular reading instructions and not a replacement of that instruction. The treatment phase of the project started October 1<sup>st</sup> and concluded April 30<sup>th</sup>. In addition to DIBELS pre-testing, the children were also assessed using the DIBELS during the course of the treatment in order to monitor their rate of progress. At the conclusion of treatment, all children, both in the control group and the experimental group were post tested using all three measures (the TERA-3, PPVT, and the DIBELS).**

### ***Instrumentation***

**This study utilized three instruments to measure the gain in early reading ability. The first instrument used as both a pre and posttest was the Peabody Picture Vocabulary Test –III (PPVT- III). The PPVT-III was selected for several reasons. Due to the positive relationship between vocabulary acquisition and literacy, the PPVT-III was selected first and foremost because it has been shown to be a highly reliable instrument in assessing the vocabulary acquisition of young children. Another important factor in the selection of the PPVT-III was its ability to assess the English language proficiency of children that use English as a second language. Another compelling reason for using the PPVT-III was the availability of alternate forms that could be used for post testing measures.**



The PPVT-III is an individually administered, normed referenced test which consist of 204 test items grouped into set of 12 (Maddux, 1998-1999). Each test item consists of a group of four, black and white pictures, to which the person being assessed must select one based on the verbal stimulus presented by the examiner. The average time of testing for this instrument ranges from 10-11 minutes.

The PPVT-III has been shown to be an instrument that is both reliable and valid. The reported reliability of the PPVT-III is very high. Maddux (1998-1999) reports the test-retest coefficients at .91 to .94, alternate-form coefficients at .88 to .96, internal consistency alpha coefficients at .92 to .98 and split-half coefficients at .86 to .97. According to a review conducted by Bessai's (2001), although difficult to measure, the PPVT-III appears to have both content and construct validity. However, the criterion validity coefficients reported for the PPVT-III are quite acceptable. When correlated with the Wechsler Intelligence Scale for Children-Third Edition (WISC-III), Kaufman Adolescent and Adult Intelligence Test (KAIT), and Kaufman Brief Intelligence Test (K-BIT) the criterion validity coefficients range from .82 to .92 for WISC-III, .76 to .91 for KAIT, and .62 to .82 for K-BIT.

The second instrument used in the present study was Dynamic Indicators of Basic Early Literacy Skills or commonly known as DIBELS (Kaminski & Good, 2001). The DIBELS was used both pre and post treatment and at two intermediate times. The DIBELS are a set of standardized, individually administered, timed test designed to measure early literacy development. It was developed based on literacy domains discussed in the reports of both the National Reading Panel (2000) and the National Research

Council (1998). The intended purpose of the DIBELS is to assess three of the five components of early literacy: Phonological Awareness, Alphabetic Principle, and Fluency with Connected Text. These components are assessed through the use for five sub-tests: Measures of phonological awareness with the Initial Sounds Fluency (ISF) and Phonemic Segmentation Fluency (PSF) tests. Measures of alphabetic principle are assessed through the use of the Nonsense Word Fluency (NWF) and Letter Naming Fluency (LNF) tests while measures of fluency with connected text are assessed with the Oral Reading Fluency tests (Wallin, 2000. Available: <http://dibels.uoregon.edu/>).

The DIBELS test of initial sounds fluency is generally used with preschool aged children through the middle of their kindergarten year. This test consists of the examiner showing and identifying four pictures to the child then asking the child to point to the picture that begins with the sound that is orally presented by the examiner. In addition, this test also requires the child to orally produce the beginning sound of a word depicted by a picture that is orally presented by the examiner. This sub-test usually takes about 3 minutes to administer (Kaminski & Good, 2001).

The DIBELS test of nonsense word fluency is generally used during the middle of the kindergarten year through the end of the first grade. This test consists of presenting the child with a page of nonsense words with random ordered vowel- consonant and consonant- vowel- consonant combinations and asking the child to pronounce as many of the nonsense words as possible in one minute (Kaminski & Good, 2001).

The DIBELS test of letter naming fluency is generally used during the middle of the kindergarten year through the end of the first grade. This test consists of presenting

the child with a page of upper and lower case letters and asking the child to name as many letters as possible in one minute (Kaminski & Good, 2001).

The DIBELS test of phonemic segmentation fluency is generally used during the middle of the kindergarten year through the end of the first grade. This task consists of the examiner orally presenting words with three to four phonemes and requiring the child verbally produce the individual phonemes. This test usually requires two minutes to complete (Kaminski & Good, 2001).

The DIBELS test of oral reading fluency is generally used during the middle of the first grade year through the end of the third grade year. This task consists of having the child read a passage that has been calibrated for grade level for one minute and calculating the errors made. Words omitted, substituted and hesitations of more than 3 seconds are counted as errors (Kaminski & Good, 2001).

According to Elliott, Lee, and Tollefson (2001) test-retest reliability coefficients for the DIBELS were found to be .90 for letter naming fluency, .83 for nonsense word fluency, .74 for initial sound fluency, and .85 for phoneme segmentation fluency.

The final instrument used was the Test of Early Reading Ability-3 (TERA-3) (Reid, Hersko, & Hammill, 2001). According to the examiner's manual TERA-3 has five purposes:

- (a) to identify those children who are significantly below their peers in reading development and thus may be candidates for early intervention,
- (b) to identify strengths and weaknesses of individual children,
- (c) to document children's progress as a consequence of early reading intervention programs,
- (d) to serve as a

measure in research studying reading development in young children, and (e) to accompany other assessment techniques. (p. 8).

According to the examiner's manual, reliability is quite high with average coefficient alphas for the subtests and reading quotient. For form A, alphabet subtest = 91, conventions subtest = 83, meaning subtest = 90, and reading quotient = 95. For form B, alphabet subtest = 90, conventions subtest = 83, meaning subtest = 90, and reading quotient = 95. Content validity was established through five methods "review of research & curriculum materials, comparison of existing lists of emergent reading behaviors, examination of items by experts, conventional item analysis, and differential item functioning analysis" (Reid, Hersko, & Hammill, 2001, p. 56). The correlation of the TERA-3 with TERA-2, SAT-9, and WRMT-R-NU established criterion-prediction validity. Construct validity was tested and established through seven constructs, age differentiation, group differentiation, subtest interrelationships, measures of school achievement, intelligence tests, confirmatory factor analysis, correlation between subtest items and total subtest score .

### *Design*

This study utilized a quasi-experimental design, although true experimental designs provide the strongest evidence for a causal relationship, a true experimental design was not feasible for this particular study due to two main factors. The first being that the initiators of the project, WGBH staff, made commitments to the selected experimental groups prior to the start of the research project. In which case, random assignment to experimental and control conditions was not possible. The second being

the small populations of the involved districts. Therefore, in the absence of random assignment, this study would have to be described as quasi-experimental.

While not a true experimental design, the pretest/posttest comparison group quasi-experimental design controls for many extraneous variables that pose a threat to the internal validity of a study. However, this design does not control for the threat of selection due to the lack of randomization. In other words, differences found in the two groups may have been preexisting. In an effort to control for this possible threat, sites were matched as evenly as possible and covariates were used in the statistical analysis. The pretest/posttest comparison group quasi-experimental design is graphically represented as:

**Table 2**

**Quasi-experimental Design**

**O X<sub>1</sub> O**

---

**O X<sub>2</sub> O**

**O = Test, pretest or posttest**

**X<sub>1</sub> = Reading program plus BTL viewing**

**X<sub>2</sub> = Reading program**

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### Analytical Approach

For each respective sample (Delta and Choctaw), two sets of analyses were conducted according to the type of dependent measure under consideration; that is, the TERA-3 Reading Composite and the three subtests that comprise it, PPVT-III, and the various DIBELS tasks. First, analysis of covariance (ANCOVA) was used to explore for differences across several measures, including the TERA-3, PPVT-III, and the DIBELS oral reading fluency measure. For each of these measures, ANCOVA was used to statistically control for initial group differences captured by several “nuisance” variables. Specifically, for the TERA-3 and PPVT-III, the analysis consisted of factorial ANCOVAs—with grade (preschool/Head Start, kindergarten, and first grade) and condition (control and experimental) as factors—relying on the first assessment point (wave) of each measure as the covariate. In addition, the DIBELS letter naming fluency and phonemic segmentation fluency scores from the first wave were used as covariates. Since the DIBELS oral reading fluency measure was only collected for first graders during the third and fourth assessment waves, the analysis consisted of a one-way ANCOVA—with condition (control and experimental) as a factor—relying on data collected during the third assessment wave as the covariate. The DIBELS letter naming fluency and phonemic segmentation fluency scores were also used as a covariate in this analysis. Each analysis was conducted at  $\alpha = .05$ .

To examine outcomes associated with individual reading as measured by the DIBELS collected across the four waves, Hierarchical Linear Modeling ([HLM] HLM: Bryk & Raudenbusch, 1992; Bryk, Raudenbush, & Congdon, 1996) was used. The HLM procedure is able to explore growth trajectories over time. Growth trajectories are able to summarize information on the rate of change on essential early literacy skills. HLM – Level 2 analyses were

used to model growth as a function of condition (control, experimental) and grade (preschool/Head Start, kindergarten, and first grade). A unique advantage of HLM analysis, termed centering, is the ability to compute a group mean or test for mean differences between groups at a single point in time. Unless otherwise indicated, the analysis was centered at the posttest in order to evaluate any group differences at the end of exposure to BTL.

## Results

### *Delta Sample*

#### *TERA-3*

The sample means and standard deviations—as well as the adjusted means—for the Delta sample are reported for the TERA-3 and each of its three subtests as well as the PPVT-III in Table 3. There was no significant main effect for condition on the TERA-3 Reading composite,  $F(1, 244) = .21$ ,  $MSE = 130.42$ ,  $p > .05$ , or significant condition by grade interaction,  $F(2, 244) = 2.62$ ,  $p > .05$ . Thus, there appeared to be no overall differences between conditions and grades in terms of overall reading ability as measured by the TERA-3.

Upon closer examination, however, there was a significant main effect for condition on one of the subtests that comprise the TERA-3. Specifically, for the Alphabet subtest, there was a significant main effect for condition,  $F(1, 244) = 3.83$ ,  $MSE = 3.88$ ,  $p = .05$ , where participants in the experimental condition (i.e., viewed BTL) displayed significantly higher levels of knowledge and use of letters than their peers in the control condition. There was no significant condition by grade interaction,  $F(2, 244) = 1.99$ ,  $p > .05$ .

On the Conventions subtest, there was no significant main effect for condition,  $F(1, 244) = .01$ ,  $p > .05$ ; however, there was a significant condition by grade interaction,  $F(2, 244) = 12.92$ ,

$MSE = 6.59, p < .001$ . According to a visual analysis, the interaction was disordinal in nature; that is, the effects of the condition reversed themselves across grade (see Figure 1).

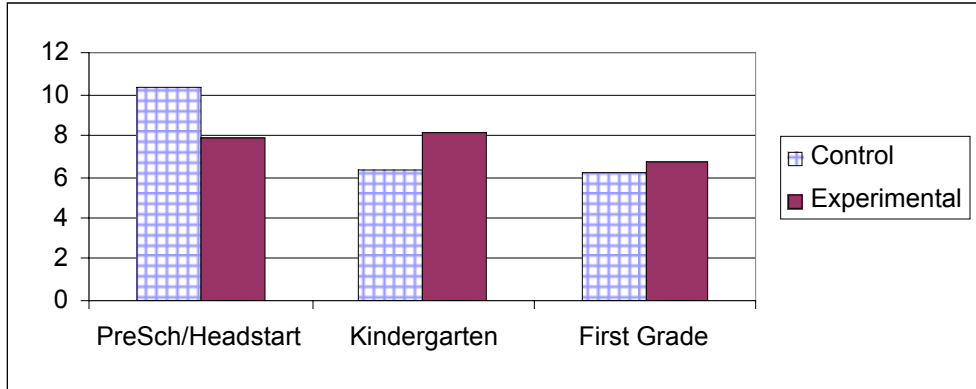


Figure 1. Wave 4 TERA-3 Conventions Subtest Scores



Table 3 / Delta Data

	Control						Experimental					
	Pre			Post			Pre			Post		
	M	SD	Adj. M	M	SD	Adj. M	M	SD	Adj. M	M	SD	Adj. M
<b>Preschool/Head Start</b>												
TERA-3 Reading Composite	94.34	12.07	93.11	97.73	16.87	93.11	88.55	11.67	88.29	14.61	87.54	
TERA-3 Alphabet Subtest	9.48	2.61	9.80	10.19	3.43	9.80	8.30	2.64	9.63	3.38	9.95	
TERA-3 Conventions Subtest	12.24	20.80	10.36	9.54	3.21	10.36	7.90	1.82	6.91	2.08	7.91	
TERA-3 Meaning Subtest	9.45	2.68	9.28	9.58	2.16	9.28	8.42	2.43	8.00	2.85	8.25	
PPVT-III	91.41	13.62	90.20	94.73	18.08	90.20	90.70	12.85	87.94	15.88	84.27	
<b>Kindergarten</b>												
TERA-3 Reading Composite	76.29	11.96	85.68	80.29	13.99	85.68	82.87	13.26	87.37	15.36	88.88	
TERA-3 Alphabet Subtest	7.44	2.54	10.15	9.51	2.62	10.15	7.62	2.64	10.79	1.85	11.35	
TERA-3 Conventions Subtest	5.63	1.80	6.31	6.06	2.70	6.31	6.35	2.44	7.56	2.56	8.17	
TERA-3 Meaning Subtest	5.88	2.38	5.97	5.20	20.09	5.97	8.04	2.31	6.35	2.55	6.36	
PPVT-III	80.81	15.04	84.21	79.86	13.11	84.21	83.45	15.51	89.75	14.80	91.28	
<b>First Grade</b>												
TERA-3 Reading Composite	79.68	18.32	84.50	85.84	17.29	84.50	83.13	13.70	87.34	12.61	84.67	
TERA-3 Alphabet Subtest	8.55	2.68	8.86	9.49	2.12	8.86	8.84	2.38	9.77	1.92	9.07	
TERA-3 Conventions Subtest	7.04	9.04	6.21	7.56	3.17	6.21	7.22	2.70	7.61	2.20	6.71	
TERA-3 Meaning Subtest	5.89	3.43	5.82	6.31	3.67	5.82	6.07	2.73	6.73	3.19	6.43	
PPVT-III	81.33	12.33	81.28	79.13	13.28	81.28	87.98	11.82	85.11	14.43	82.05	

To examine this interaction statistically, ANCOVAs were used to conduct simple main effects test by comparing the two groups (experimental and control) at each grade level. At the preschool/Head Start level, there was a significant main effect for group,  $F(1, 56) = 13.79$ ,  $MSE = 5.65$ ,  $p < .001$ , where the control participants ( $M = 10.36$ ,  $N = 26$ ) displayed significantly better understanding of certain aspects of English print than their experimental peers ( $M = 7.91$ ,  $N = 35$ ). At the kindergarten level, there was a significant main effect for group,  $F(1, 96) = 5.24$ ,  $MSE = 4.62$ ,  $p < .05$  in favor of the experimental participants. At this grade level, the experimental participants ( $M = 8.17$ ,  $N = 52$ ) outperformed the control participants ( $M = 6.31$ ,  $N = 49$ ) in terms of their understanding of certain conventions associated with English print. There were no significant differences between the conditions at the first grade level,  $F(1, 83) = 0.09$ ,  $MSE = 7.04$ ,  $p = .76$ .

On the final TERA-3 subtest, the Meanings subtest, there was no significant main effect for condition,  $F(1, 244) = .01$ ,  $p > .05$ , or significant condition by grade interaction,  $F(2, 244) = 2.31$ ,  $p > .05$ . Thus, there appeared to be no overall differences between the participants assigned to the two conditions from each grade level in terms of how they comprehended print.

### ***PPVT-III***

On the PPVT-III, there was no significant main effect for condition,  $F(1, 244) = .25$ ,  $p > .05$ , but there was a significant condition by grade interaction,  $F(2, 244) = 9.04$ ,  $MSE = 88.53$ ,  $p < .001$ . According to a visual analysis, the interaction was, similar to the previous interaction, disordinal in nature; that is, the effects of the condition reversed themselves across grade (see Figure 2). To examine this interaction statistically, ANCOVAs were used to conduct simple main effects tests by comparing the two groups at each grade level. The same pattern as before

emerged. At the preschool/Head Start level, there was a significant main effect for group,  $F(1, 56) = 5.73, MSE = 592.49, p < .05$ , where the control participants ( $M = 90.20, N = 26$ ) outperformed the experimental participants ( $M = 84.27, N = 35$ ) in terms of their ability to listen and comprehend spoken Standard English. At the kindergarten level, however, there was a significant main effect for group,  $F(1, 96) = 19.19, MSE = 91.22, p < .05$ , where the effect once again reversed itself. As was the case with the TERA-3 Conventions Subtest, at this grade level, the experimental participants ( $M = 91.28, N = 52$ ) outperformed the control participants ( $M = 84.21, N = 49$ ). No significant differences existed between the conditions at the first grade level,  $F(1, 83) = 0.29, MSE = 66.16, p = .59$ . There was no significant differences between the conditions at the first grade level,  $F(1, 83) = 0.29, MSE = 66.16, p = .59$ .

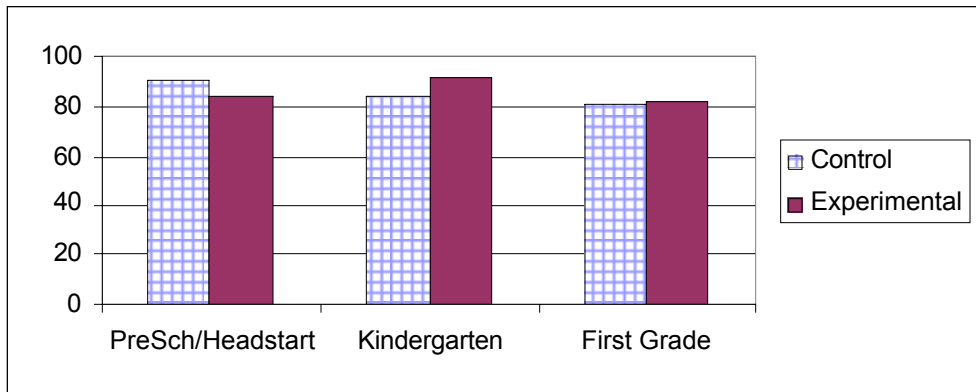


Figure 2. Wave 4 PPVT Scores

*DIBELS*

The following information was gathered from the analysis of the scores derived from the DIBELS instrument. The oral reading fluency subtest of the DIBELS was only administered during waves three and four to first grade students. A one-way ANCOVA was used to analyze

this data. The results of the one-way ANCOVA with condition as a factor indicated that there was no significant main effect for condition,  $F(1, 79) = 0.38, p = .54$ . For the analysis of the remaining four sections of the DIBELS (Initial Sound Fluency [ISF], Letter Naming Fluency [LNF], Phonemic Segmentation Fluency [PSF], and Nonsense Word Fluency [NWF]) HLM was employed. Percentages of children considered at risk for reading difficulties as measured by the phonemic segmentation tasks are reported in table 4.

Table 4

Delta Phonemic Segmentation Risk Status

<i>Risk Status</i> Grade	At-Risk		Not At-Risk		Benchmark
	<u>Mean</u>	%	<u>Mean</u>	%	
Preschool	3.07	100%	None		None Listed
Kindergarten	5.77	100%	None		35 +
1 <sup>st</sup> Grade	14.96	74%	43.21	26%	35 +

When ISF scores were analyzed, overall, children in the viewing group started significantly below their non-viewing peers. However, they were able to overcome this difference and outperform their non-viewing peers by the end of the intervention. More specifically, preschool viewers outperformed preschool non-viewers (9.7 sounds vs. 6.7 sounds) and kindergarten viewers outperformed kindergarten non-viewers (16.1 sounds vs. 11.4 sounds).

They were also growing at a significantly faster rate than their non-viewing counterparts. That is, preschool viewers were growing at 1.96 sounds per wave, preschool non-viewers were growing at .37 sounds per wave, kindergarten viewers were growing at 2.55 sounds per wave and kindergarten non-viewers were growing at .96 sounds. Viewing BTL appeared to have a positive effect on the children’s ability to identify initial sounds in words (see Figure 3).

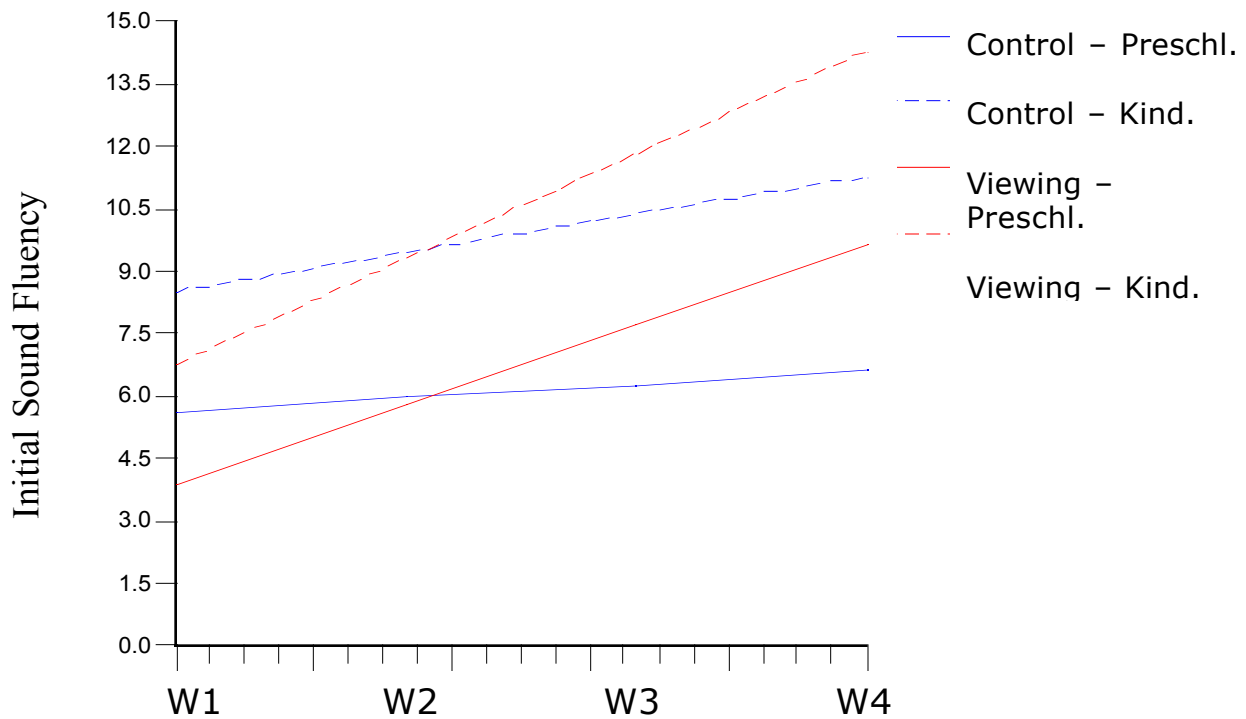


Figure 3. Initial Sound Fluency

When LNF scores were analyzed, children in the control group significantly outperformed their viewing counterparts at both the start and the end of the intervention. At the last wave, preschool non-viewers named 25.5 letters while viewers named 18.0 letters, kindergarten non-viewers named 53.8 letters while viewers named 46.3 letters, and first grade non-viewers named 82.1 letters while first grade viewers named 74.6 letters. It appears that viewing the BTL program did not have any effect on letter naming (see Figure 4).

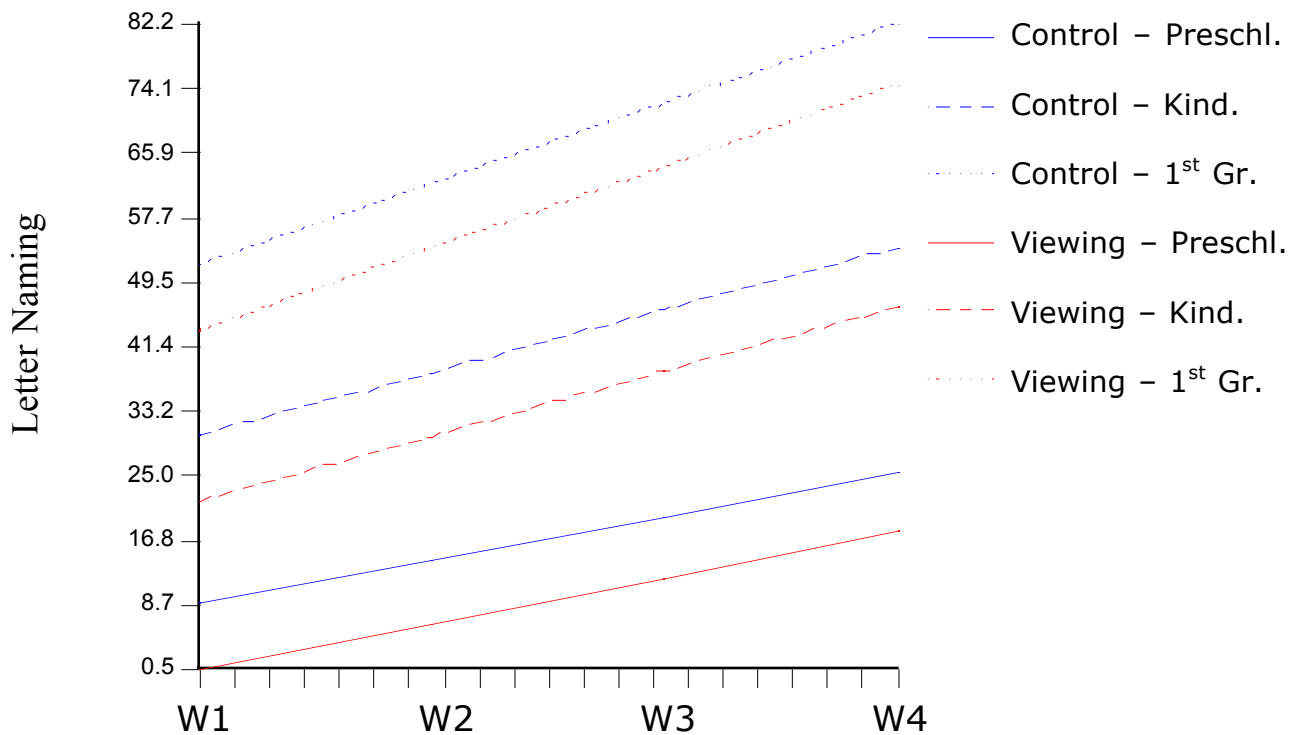


Figure 4. Letter Naming Fluency

The analysis of the PSF scores revealed that children in the control group outperformed their viewing counterparts at the start of the intervention, throughout, and at the end of the intervention. All non-viewing children, regardless of grade, were growing at a faster rate (19.04 vs. 11.61), and were accelerating faster (i.e., gaining more sounds) at each wave (4.69 vs. 2.69) than their viewing counterparts. It appears that viewing the BTL program did not overcome the initial differences in favor of the control group (see Figure 5).

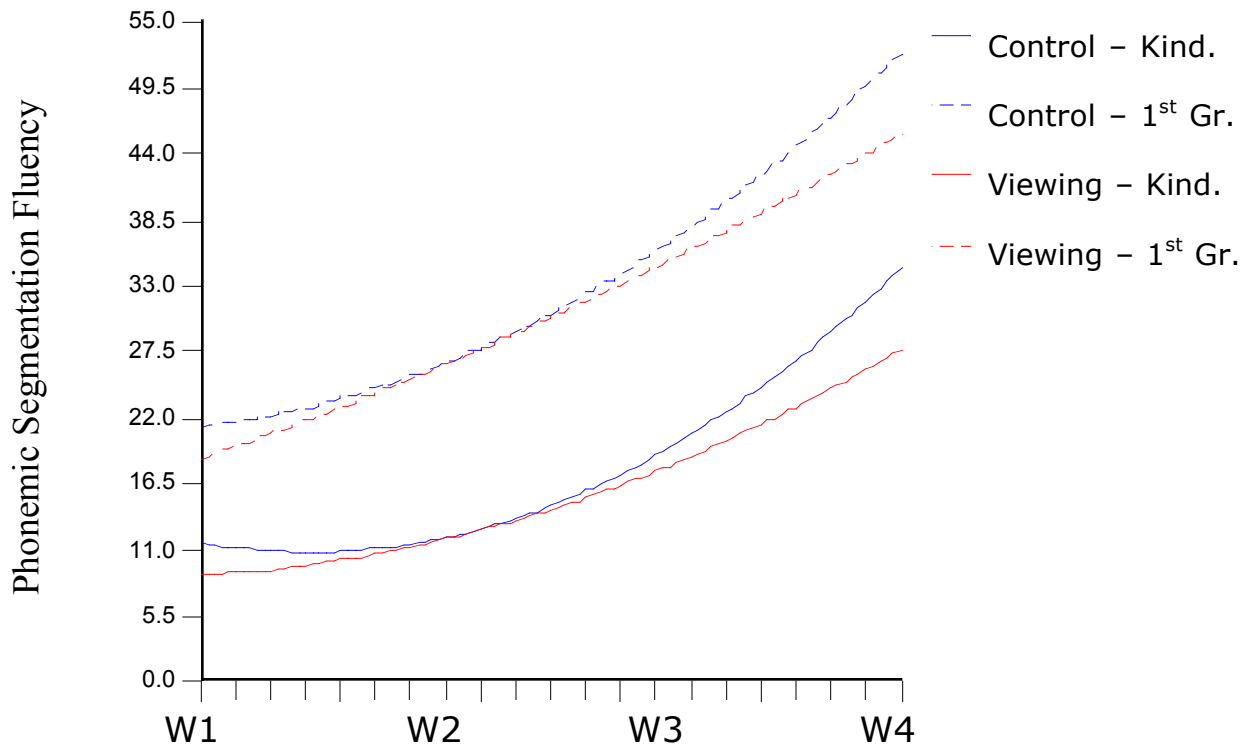


Figure 5. Phonemic Segmentation Fluency

No differences were found between the viewers and non-viewers at the start of the intervention on the NWF task. However, children in the viewing group outperformed their non-viewing peers at the end of the intervention. Kindergarten viewers identified 34.7 letter sounds and were growing at a rate of 9.8 sounds per wave while their non-viewing counterparts identified 23.2 letter sounds and were growing at a rate of 6.1 sounds per wave. At the first grade level, viewers were able to identify 67 letter sounds and were growing at a rate of 12.8 sounds per wave while non-viewers identified 55.5 sounds in nonsense words and were growing at a rate of 9.2 sounds per wave. In view of these results, it appears that viewing BTL had a positive effect on letter/sound correspondence skills, as measured by the nonsense word fluency task of the DIBELS (see Figure 6).



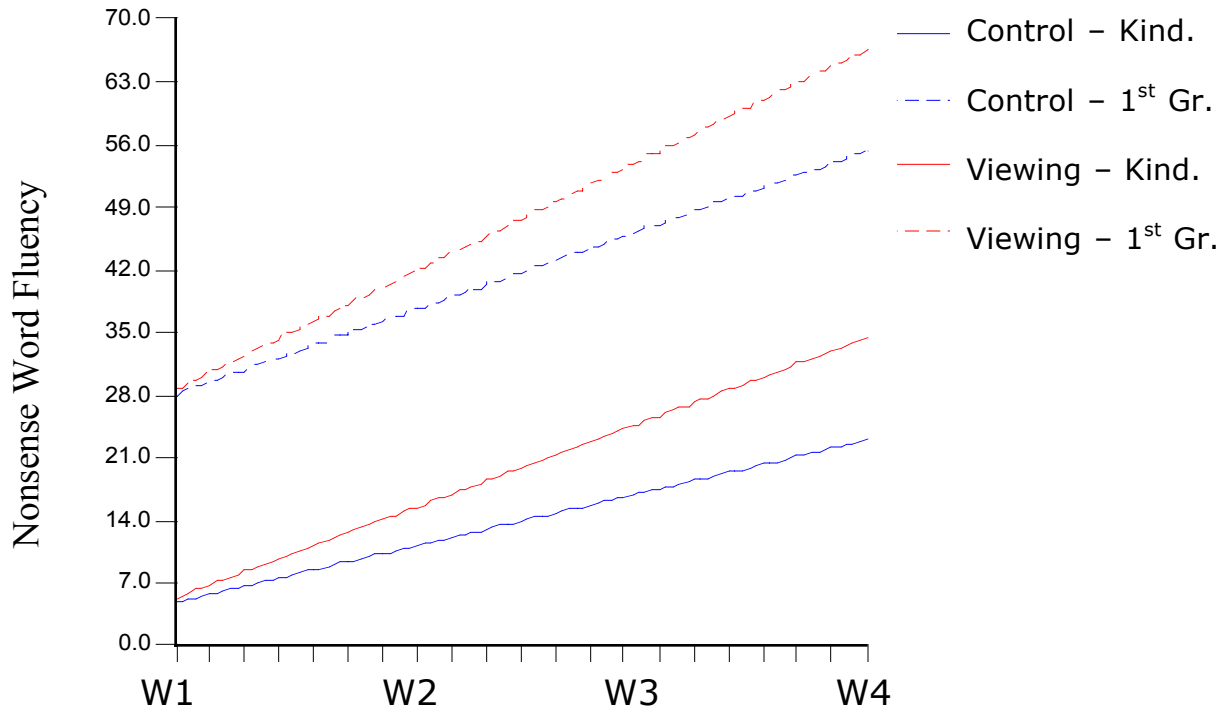


Figure 6. Nonsense Word Fluency

*Choctaw Sample*

*TERA-3*

The sample means and standard deviations, as well as the adjusted means, for the Choctaw sample are reported for each TERA-3 and its three subtests as well as the PPVT in Table 5. On the TERA-3 Reading Composite, there was a significant main effect for condition,  $F(1, 243) = 5.95, MSE = 123.25, p < .05$ . Participants in the experimental condition outperformed their peers in the control condition. There was, however, no significant condition by grade interaction,  $F(2, 244) = 2.19, p > .05$ .

Table 5 / Choctaw Data

	Control						Experimental						
	Pre			Post			Pre			Post			
	M	SD	M	SD	Adj. M	M	SD	M	SD	Adj. M	M	SD	Adj. M
<b>Preschool/Head Start</b>													
TERA-3 Reading Composite	75.38	6.90	73.08	11.67	77.02	76.33	11.05	77.93	10.88	82.12			
<i>TERA-3 Alphabet Subtest</i>	5.75	1.79	5.31	2.16	6.29	6.44	1.90	5.90	1.99	6.40			
<i>TERA-3 Conventions Subtest</i>	6.25	1.19	5.25	1.23	5.79	5.91	1.04	6.00	1.74	6.79			
<i>TERA-3 Meaning Subtest</i>	6.52	1.66	6.86	3.25	7.38	7.11	2.33	7.82	2.72	8.31			
PPVT-III	72.06	12.70	74.00	12.85	78.21	73.80	17.10	77.27	15.66	80.72			
<b>Kindergarten</b>													
TERA-3 Reading Composite	70.35	12.64	75.64	11.12	79.53	73.36	10.59	75.31	15.91	79.01			
<i>TERA-3 Alphabet Subtest</i>	5.55	2.78	5.31	2.18	8.36	5.60	2.45	5.90	1.99	8.18			
<i>TERA-3 Conventions Subtest</i>	4.92	1.55	5.27	2.51	5.98	5.20	1.80	5.73	3.01	6.43			
<i>TERA-3 Meaning Subtest</i>	5.75	2.43	5.80	1.92	6.32	6.76	2.29	5.47	2.18	5.86			
PPVT-III	73.35	13.92	77.75	13.92	80.31	80.78	14.59	81.02	13.97	80.51			
<b>First Grade</b>													
Tera-3 Reading Composite	74.31	11.08	83.41	12.72	75.90	76.98	15.26	88.59	12.20	81.94			
<i>TERA-3 Alphabet Subtest</i>	8.48	2.61	9.05	1.78	7.64	8.96	1.98	9.20	1.45	7.68			
<i>TERA-3 Conventions Subtest</i>	5.02	1.94	7.52	3.05	6.31	6.16	2.44	8.63	2.68	7.35			
<i>TERA-3 Meaning Subtest</i>	4.56	1.60	5.66	2.84	4.73	5.16	2.72	6.63	3.01	5.86			
PPVT-III	75.52	11.49	77.45	10.36	74.51	79.48	12.42	82.88	11.94	77.89			

Upon closer examination, there was no significant main effect for condition on the TERA-3 Alphabet subtest,  $F(1, 243) = .01$ ,  $MSE = 4.58$ ,  $p > .05$ , or significant condition by grade interaction on this measure,  $F(2, 244) = .10$ ,  $p > .05$ . There was, however, a significant main effect for condition on the Conventions subtest,  $F(1, 243) = 7.88$ ,  $MSE = 5.17$ ,  $p < .01$ .

According to this analysis, the participants that viewed BTL displayed significantly better understanding of certain aspects of English print than their counterparts that did not view the show. There was no significant condition by grade interaction,  $F(2, 244) = .47$ ,  $p > .05$ , on this measure. Finally, on the Meaning subtest, there was no significant main effect for condition,  $F(1, 243) = 2.69$ ,  $MSE = 6.06$ ,  $p > .05$ , or significant condition by grade interaction,  $F(2, 244) = 2.63$ ,  $p > .05$ .

#### *PPVT-III*

On the PPVT-III, there was no significant main effect for condition,  $F(1, 243) = 2.46$ ,  $MSE = 97.45$ ,  $p > .05$ , or significant condition by grade interaction,  $F(2, 244) = .60$ ,  $p > .05$ .

#### *DIBELS*

The following information was gathered from the analysis of the scores derived from the DIBELS instrument. The oral reading fluency subtest of the DIBELS was only administered during waves 3 and 4 to first grade students. A one-way ANCOVA was used to analyze these data. The results of the one-way ANCOVA with condition as a factor indicated that there was no significant main effect for condition,  $F(1, 76) = 0.01$ ,  $p = .99$ . For the analysis of the remaining four sections of the DIBELS (ISF, LNF, PSF, and NWF) HLM was used. Percentages of children considered at risk for reading difficulties as measured by the phonemic segmentation tasks are

reported in table 6.

Table 6

Choctaw Phonemic Segmentation Risk Status

<i>Risk Status</i> Grade	At-Risk		Not At-Risk		Benchmark
	<u>Mean</u>	%	<u>Mean</u>	%	
Preschool	0.0	100%	None		None Listed
Kindergarten	1.66	99%	52.00	1%	35 +
1st Grade	10.46	99%	46.00	9%	35+

When ISF scores were analyzed, the viewing and non-viewing groups did not differ at Wave 1. However, children’s performance on initial sounds was decelerating faster at each wave for children who viewed the program when compared to their non-viewing counterparts. That is, their performance at each wave, although still growing, was growing at a slightly smaller level at each subsequent wave. Kindergarten children had significantly higher scores (10.0 vs. 6.1 initial sounds) and were decelerating at a faster rate at each wave (0.10 sounds per wave vs. 0.60 sounds per wave) when compared to preschool children (see Figure 7).

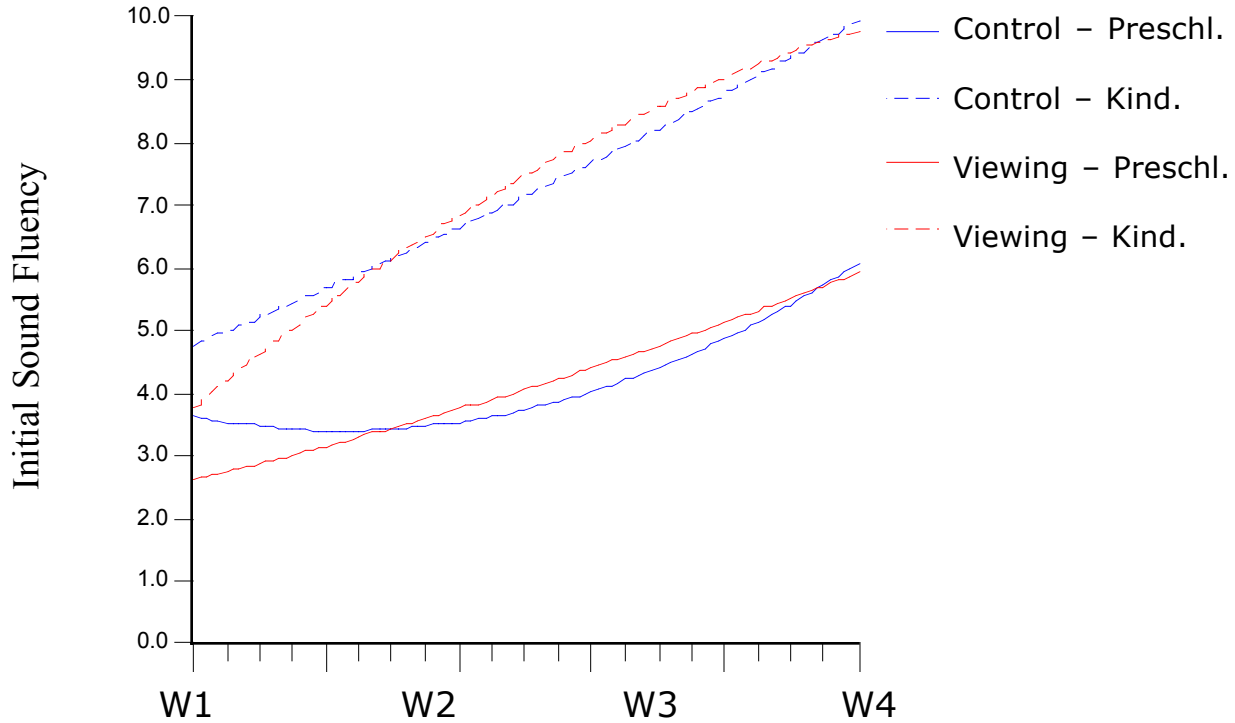


Figure 7. Initial Sound Fluency

For LNF, children in the non-viewing group had initial letter naming scores that were higher than their viewing counterparts. All children, regardless of group, were growing in their ability to name letters (see Figure 8). First grade children outperformed and were growing faster than kindergarten children who, in turn, outperformed preschool children (56.9 letters vs. 31.5 letters vs. 6.1 letters; 9.59 letters per wave vs. 5.36 letters vs. 1.1 letters).

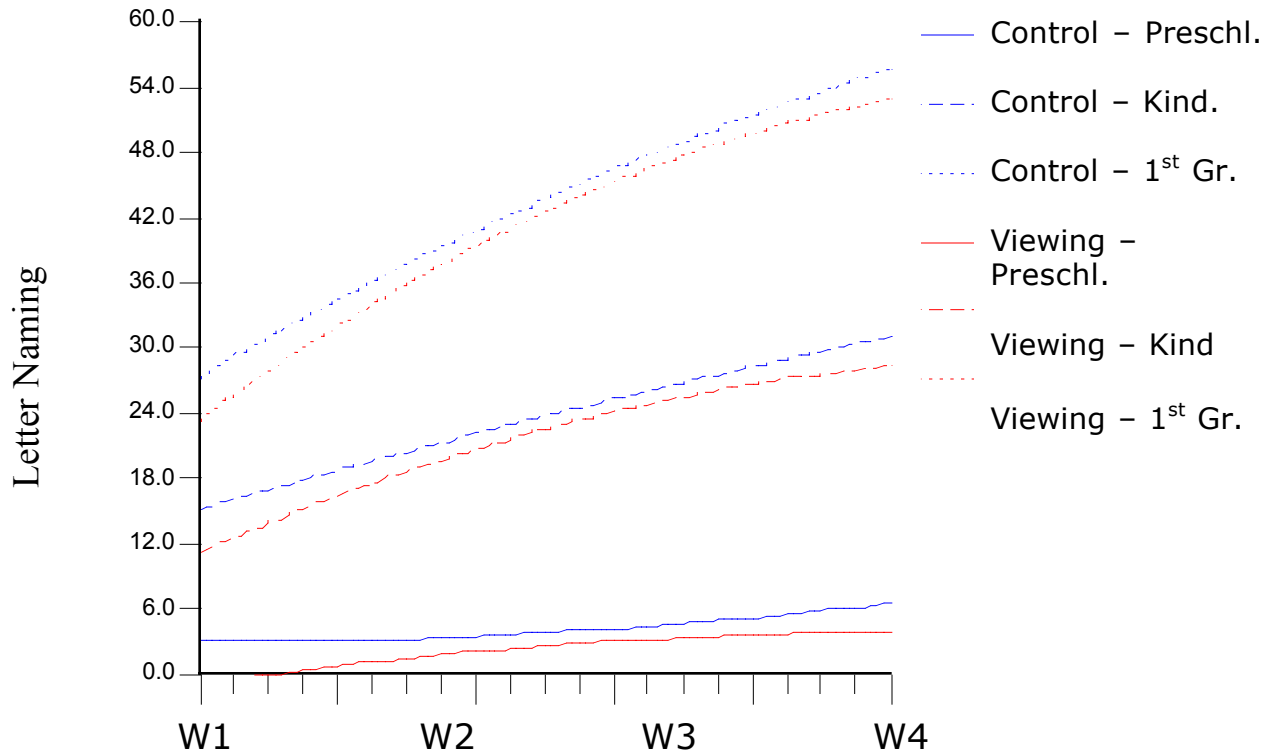


Figure 8. Letter Naming Fluency

For PSF, there were no differences at the start between viewers and non-viewers. All children, regardless of group, were growing in their phonemic awareness knowledge (see Figure 9). Differences in performance were related only to grade; that is, first grade children outperformed and were growing faster than kindergarten children (30.4 sounds vs. 15.8 sounds; growing at 6.2 sounds per wave vs. 3.5 sounds).

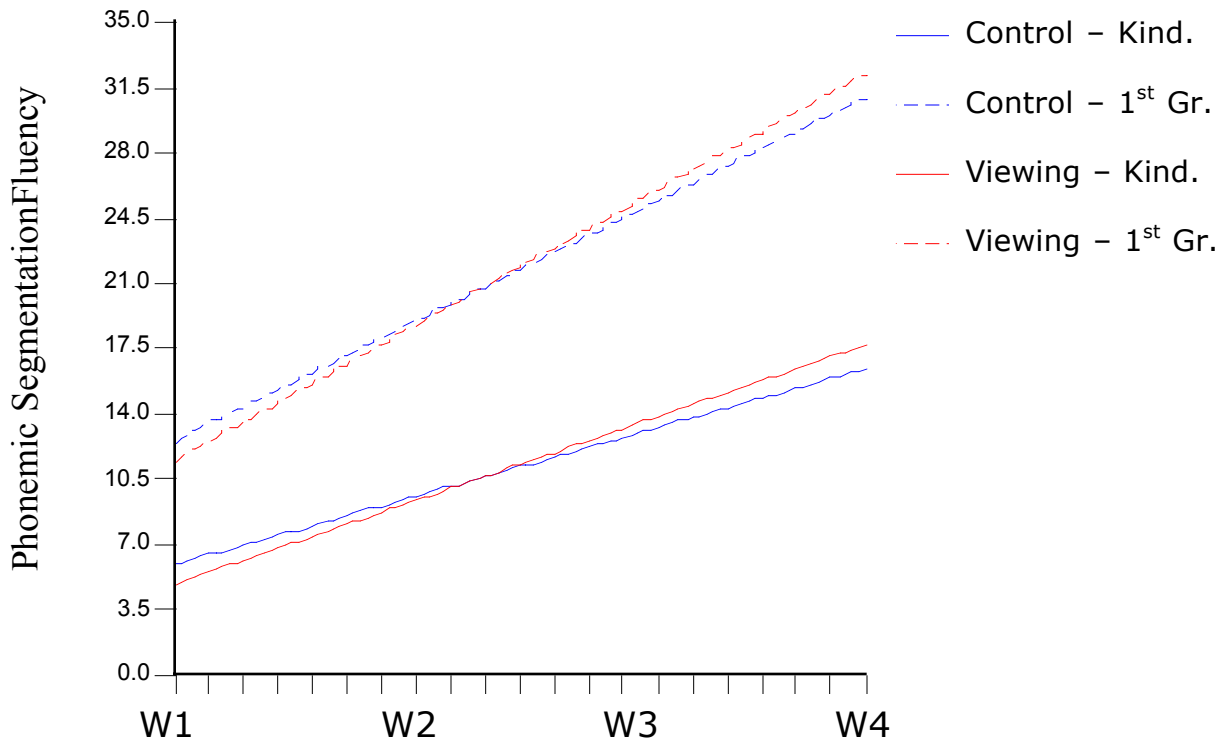


Figure 9. Phonemic Segmentation Fluency

No significant differences were noted for group at the start or end of the intervention period on the NWF task (see Figure 10). Significant differences were found for grade level: first grade children outperformed kindergarten children (35.2 letter sounds vs. 18.5 letter sounds). Interestingly, kindergarten children were growing at a faster rate when compared to first graders (13.90 vs. 4.33 letter sounds). Kindergarten children were also accelerating in their growth at each wave when compared with first graders (3.08 letter sounds vs. -.36 letter sounds).

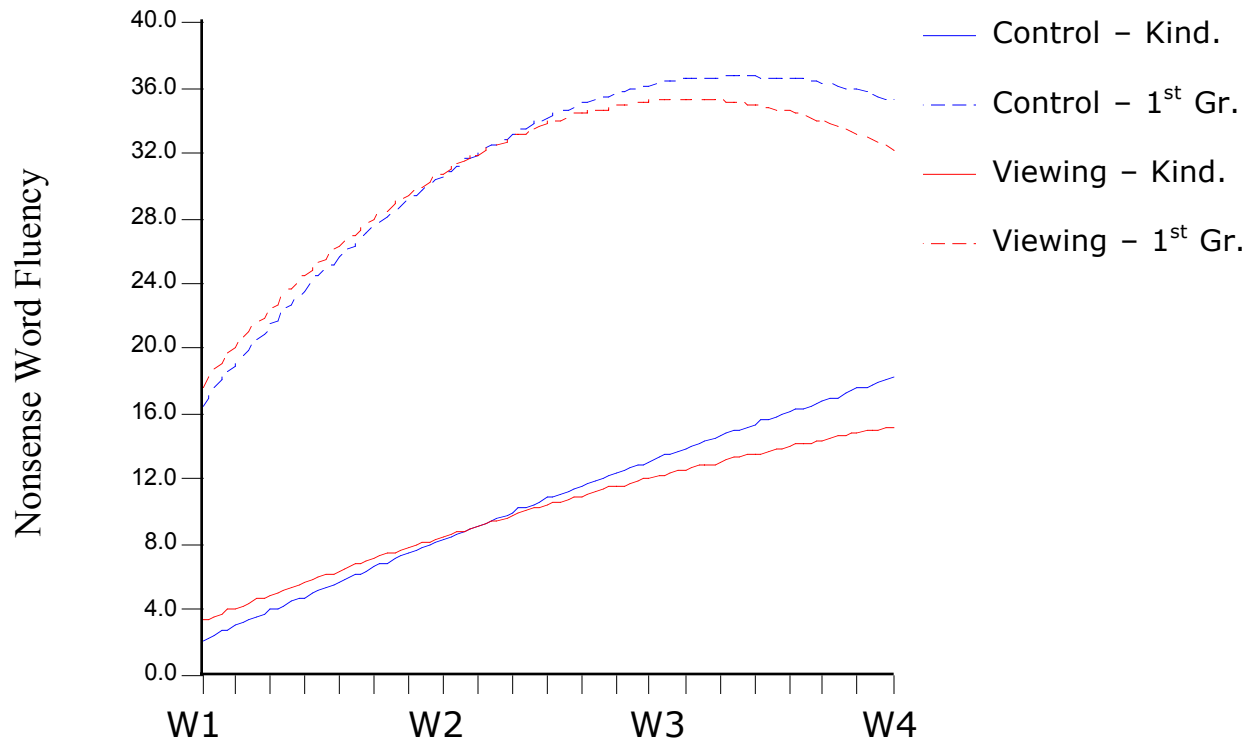


Figure 10. Nonsense Word Fluency



## Discussion

Although the program effects were not as dramatic or pervasive as the effects found by Linebarger (2000), the students did benefit from their exposure to the BTL program. This section will discuss the results of the study. Considering the two populations (Delta and Choctaw) were different and not compared to each other, their results will be discussed separately.

### *Delta*

In general, children on the Delta who watched BTL appeared to benefit from exposure to this program. As with previous research, significant results favoring those who viewed the program more often occurred with kindergarten children (Linebarger, 2000). In certain instances, children who did not view the program outperformed their viewing peers. However, this performance is attenuated by significant differences that were present prior to the start of the intervention (see Table 7).

There was no significant finding for the overall Reading Composite score as measured by the TERA-3. However, there were significant findings on two of its subtests: alphabet knowledge and conventions. First, participants that viewed the BTL program displayed higher levels of letter knowledge and use of letters than their peers in the control group.

Table 7

**Delta Findings**

<b>Test</b>	<b>Positive Findings</b>	<b>Negative Findings</b>	<b>Null Findings</b>
<b>TERA-3</b>			
<b>Alphabet</b>	<b>X</b>		
<b>Conventions</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Meanings</b>			<b>X</b>
<b>Reading Composite</b>	<b>X</b>		
<b>PPVT-III</b>			
	<b>X</b>	<b>X</b>	<b>X</b>
<b>DIBELS</b>			
<b>Oral Reading Fluency</b>			<b>X</b>
<b>Initial Sound Fluency</b>	<b>X</b>		
<b>Letter Naming Fluency</b>		<b>X</b>	
<b>Phonemic Segmentation Fluency</b>		<b>X</b>	
<b>Nonsense Word Fluency</b>	<b>X</b>		

For the TERA-3 Conventions subtest, there was no significant overall main effect for the group. That is, there was no statistical difference between the scores of children that viewed the program and those that did not view the program when preschool, kindergarten, and first grade children were grouped as one. However, when the scores were analyzed separately by each grade level, statistical differences were found. At the preschool level, children that did not view the program (control) out-performed children that did view the program. Pretest scores on this measure suggest that the control group (standard score 12.24) had greater familiarity with the

conventions of print than the experimental group (standard score 7.90). One reason for this large initial difference may be due to the make-up of the experimental and control groups that participated in the study. Even with the extreme measures that were taken to equate the two groups, the small population of 4-year-old children attending childcare centers in the Delta prevented us from matching our samples more equally. Although the majority of children in both groups attended childcare centers serving low-income families, there were children in both groups that attended centers serving medium to high income families. The percentages of children attending centers serving medium to high-income families differed substantially between groups. Forty-eight percent of the children in the control group attended centers serving medium to high-income families while only 20% of the experimental children attended centers serving medium to high-income families. Therefore, it is highly probable that the make-up of the control group had an effect on this finding.

For the more heterogeneous kindergarten group, the viewing group out-performed the non-viewing group. It appears that viewing BTL had a positive impact on the early literacy skills, namely those related to conventions, for children who viewed the program. There were no significant differences at the first grade level. These findings tend to support those of Linebarger (2000) in that viewing the program had the greatest impact on kindergarten children.

There were no significant differences between viewers and non-viewers on the meanings subtest of the TERA-3. The meanings subtest represents higher-order reading skills. Because children's literacy levels were very low initially, it is likely that they were unable to translate improved performance on some of the lower-level skills into this higher-order skill.

Similar to the findings on the conventions subtest of the TERA-3, significant differences

between the viewing and non-viewing groups varied by grade level. At the preschool level, the non-viewing group outperformed the viewing group; while at the kindergarten level, the viewers outperformed the non-viewers. Considering the make-up of the two groups (preschool and kindergarten) previously discussed, this finding was not surprising. Moreover, this finding also supports the findings of Linebarger (2000) with respect to the benefits for kindergarten children viewing BTL.

When examining the DIBELS oral reading fluency measure, no differences were found for first graders. It appears that viewing BTL did not have an effect on the oral reading fluency of this group of children. One plausible reason for this lack of effect may have been the overall low skills level of the entire group of children. The literacy skills of both groups, experimental and control, were well below average when measured by the TERA-3. Therefore, it is highly probable that neither group of children had achieved a level where they were able to become fluent readers. Considering the fact that one of the purposes of this section of the DIBELS is to identify individuals in need of additional instructional support, it is not surprising that no differences were found between the experimental and control groups because both groups are in need of additional instructional support. Moreover, this finding is consistent with those of Linebarger (2000) in that the benefits of viewing BTL were primarily for kindergarten students, as opposed to first grade students.

Delta children's performance on the DIBELS tasks provided some interesting insights into the ways that BTL impacted viewers' early literacy abilities. Non-viewers appeared to have stronger early literacy skills prior to the start of the intervention. They outperformed their viewing peers at the pretest on ISF, LNF, and PSF. There were no differences at the pre-test on

NWF, probably because this measure is the most difficult task in the hierarchy of reading skills measured by the DIBELS. Given the initial difference in favor of the non-viewers on the ISF task, it is especially noteworthy that those who viewed the program grew at a faster rate and were able to overtake the non-viewers by the end of the intervention. However, viewers were unable to overcome the initial edge that the non-viewers demonstrated on the LNF and PSF tasks. Interestingly, despite their inability to overcome the non-viewer's advantage on *easier* literacy tasks (i.e., LNF and PSF), Delta children who viewed the program outperformed and were growing faster than their non-viewing peers on the NWF task. This is especially encouraging given the importance of understanding the correspondence between letters and their sounds in reading fluently.

#### *Choctaw*

Only two significant differences in Choctaw children's performance related to viewing BTL was found. It is probable, given the initial very low scores on most of the literacy tasks, that the children did not have enough practice or literacy knowledge to benefit from the program and supplementary curriculum materials (see Table 8).

The significant difference occurring for the TERA-3 overall reading quotient is primarily attributable to viewer's increased ability to understand the conventions of English print. This finding was particularly noteworthy, given that many of the children in this population speak English as a second language.

**Table 8****Choctaw Findings**

<b>Test</b>	<b>Positive Findings</b>	<b>Negative Findings</b>	<b>Null Findings</b>
<b>TERA-3</b>			
<b>Alphabet</b>			<b>X</b>
<b>Conventions</b>		<b>X</b>	
<b>Meanings</b>			<b>X</b>
<b>Reading Composite</b>		<b>X</b>	
<b>PPVT-III</b>			
			<b>X</b>
<b>DIBELS</b>			
<b>Oral Reading Fluency</b>			<b>X</b>
<b>Initial Sound Fluency</b>			<b>X</b>
<b>Letter Naming Fluency</b>			<b>X</b>
<b>Phonemic Segmentation Fluency</b>			<b>X</b>
<b>Nonsense Word Fluency</b>			<b>X</b>

Another potential explanation for the lack of findings may be the specific teaching styles of the groups' respective teachers. As previously stated, the students from the experimental group were selected from the largest reservation, Pearl River, whereas the students from the control groups were selected from four smaller reservations. Although they are all governed by the MBCI Tribal Council and use the same reading program, there may have been meaningful differences in the reading instruction provided to the two groups of students. In other words, the

possibility exists that the smaller schools provided more direct and individualized instruction in phonics and other literacy skill areas due to smaller class sizes.

### *Summary*

In conclusion, as previously stated, the results were not dramatic and pervasive, but the differences found were meaningful. The Delta children may have benefitted more from the intervention and viewing because they, initially, had higher literacy scores and subsequent literacy ability. Furthermore, both total populations have a demonstrated need for more intensive reading intervention. Based on the results of this study, it appears that the BTL series could be a meaningful part of the overall reading interventions. While differences were not found with every measure for each of the grade levels, the differences that were found can not be ignored. For the Delta population, it appears that the BTL program is most beneficial for the kindergarten group. When considering the Choctaw population, this distinction is not warranted because it appears that all age groups received some benefit from viewing the program.

### Limitations

The most pervasive limitation of this study is the lack of random assignment. In the absence of random assignment, it is highly possible that meaningful differences existed between the experimental and control groups especially with regards to the preschool Delta group. However, this was a limitation that was unavoidable due to the rural nature of the selected region and the fact that so few children attended childcare centers in the Mississippi Delta. Similarly, although not as threatening, was the selection of the Choctaw groups. The experimental group was drawn from one reservation population while the control group was drawn from seven

smaller reservations. However, this was not considered a serious limitation because all the reservations have similar populations that are governed by the same entities.

A second limitation was the lack of experimental control over the reading curriculum utilized at the prospective schools. Once again, this proved to be more of a problem in the Delta population than it was in the Choctaw population. For example, between the two schools that make up the experimental group in the Delta, five different reading programs were used in addition to the BTL project. The effects observed for the BTL program may have been a result of not only BTL but also one of the other programs, or a combination of programs.

A third limitation of the study specifically deals with the preschool experimental group in the Delta. Although teachers were required to turn in monthly logs, two of the experimental childcare centers did not meet this requirement. Although the centers did not complete the required documentation, they informed ETV staff that they were watching the program at least twice a week. In the absence of documentation, it is not certain how the program was used or what activities were used to complement the program viewing. Nevertheless, even with these limitations, the study yields information that is useful to educators, administrators, and the producers of the BTL series.



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