AN EXAMINATION OF THE ACHIEVEMENT
OF PHONOLOGICAL SKILLS FOR THREE GROUPS
PARTICIPATING IN AN EARLY INTERVENTION PROGRAM

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate School
of The Ohio State University

By

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* * * * *

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ABSTRACT

This study brought together three important areas of research: early literacy intervention, phonemic awareness skills, and demographic groups. This study revealed information about how well initially low-performing children gained phonemic awareness as participants in the Reading Recovery program, an early literacy intervention. Although the gap has narrowed over the past two decades between academic performances of African-American students and Caucasians, it still exists. My study categorized subjects by race and socioeconomic status (SES) to create three demographic groups ('Low SES African-Americans, 'Others with Low SES,' and 'Non-low SES' participants). The three demographic groups' scores on the Hearing and Recording Sounds in Words task, a measure of phonemic awareness, revealed extremely low entry and extremely high exit scores for all three demographic groups. A total of 2,787 participants in the Reading Recovery program in one Midwestern state participated in this study. The length of time in the program was also described among the three groups and found to be similar.

A chi-square test revealed the proportion of students in each demographic group and program outcome. The three demographic groups, upon program completion, had similar proportions of students meeting program criteria. When compared to the other
two demographic groups, a greater percentage of African-Americans with low SES did not complete the program.

An ANOVA (3X3) included two factors (demographic group and program group). Gains made in the students’ Hearing and Recording Sounds in Words task were computed by subtracting the entry score from the exit score and served as the dependent variable. Gain scores were influenced by ceiling effects on the exit scores. The ANOVA (3X3) revealed no interaction effect and no main effect for demographic group. Statistical differences were found among all three program groups (met performance criteria, did not meet performance criteria, did not receive a complete program). This study suggested that students from the demographic groups investigated do make gains in the ability to hear and record sounds in words as participants in the Reading Recovery program.
Dedicated to

My Parents, Donald and Beatrice Hovest,

and my uncle, the late Reverend James A. Siefker, B. A., M. A.
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CHAPTER 1

INTRODUCTION

Literacy learning is critical to success in school and in society. Literacy achievement has been on the rise for various demographic groups, but gaps exist among various races and levels of socioeconomic status across the board. Specifically, the fact that fewer African-American students compared to other demographic groups reach high standards is of great concern to educators and policy makers, and our national education system is not serving these students as well as it should.

Research reveals that early literacy learning is critical to success and that early intervention makes a difference for struggling readers. Supporting our lowest literacy achievers early in their academic careers is one way to create scaffolding to successful ongoing literary achievements. For some young learners, early intervention is necessary if they are to be successful readers and writers. Research further reveals that an understanding of phonemic awareness is a critical factor in early reading success. It is not surprising, therefore, that many early intervention programs tend to focus on the
development of phonemic awareness. It is especially important to assure success for the children who may be at an economic disadvantage in our schools. African-American students, in particular, are more likely than mainstream groups to come from backgrounds with low socioeconomic status (SES). An early intervention program that has a strong emphasis on the development of phonemic skills can make a positive difference for minority students who are having difficulty learning to read.

One literacy intervention program for low literacy achievers, Reading Recovery, recognizes the importance of phonological processing (Adams, 1990). “Reading Recovery teachers give specific and explicit attention to letters, sounds, and words both while writing extended text and as direct instruction within each Reading Recovery lesson” (Reading Recovery Council of North America, 1999, p. 42). This research investigated the effects of the Reading Recovery program for low SES African-American students in the critical area of phonemic awareness.

Statement of the Problem

Our Lowest Achievers

Some scholars have expressed concerns about the effectiveness of our schools, especially the need to boost the achievement of those whose skill development lags behind. Clay (1982) stated that approximately 80% of the students will learn within regular classroom instruction, whatever the approach. The remaining 20%, the lowest achievers, will need additional support beyond regular classroom instruction.
Children who fall behind their peers in literacy learning make slower progress throughout their schooling (Carter, 1984; Cooley, 1981; Stanovich, 1986; Juel, 1988). As Shanahan and Barr (1995) have stated, “Children who have difficulty learning to read do less well in other subject areas, have lower self-esteem, pose greater discipline problems in school, and are less likely to complete a high school education” (p. 958). Walberg and Tsai (1984) have likened the rate of progress for low achievers to the New Testament’s Gospel according to Matthew. The metaphor of the rich getting richer and the poor getting poorer serves as an analogy in literacy research known as the Matthew effects in reading (Stanovich, 1986). Students whose early educational experiences provide strong academic skills (the rich) continue to build upon prior knowledge and become skilled readers as they progress through school (getting richer). Students without strong academic skills (the poor) have difficulty gaining and building upon knowledge (getting poorer). Consequently, we need to know how best to support our lowest literacy achievers early in their academic careers.

**Demographic Challenges**

The demographics of the United States student population vary widely and are becoming more diverse each year. Some scholars suggest that students from varying cultural backgrounds tend not to succeed at the same pace academically (Delpit, 1988; Erickson, 1987; Ladson-Billings, 1994) and of particular concern are African-American students from low SES backgrounds (Campbell, 1982; Hess & Greer, 1987; Hess &
Lauber, 1985). Neither African-American nor white teachers feel prepared to meet the needs of African-American students (Ladson-Billings, 1994).

The National Center for Educational Statistics (NCES, 1991) reported that African-American students are well below the academic performance level of white students. A 1989 study of standardized testing demonstrated below grade level performance for 44.7% of 13-year-old African-Americans compared to only 28.8% of whites in the same age group.

The National Assessment of Educational Progress has reported scores on reading and math for African-Americans and Caucasians at 17 years of age annually, since 1971. There has been some improvement, but not enough. Data from the 1996 National Assessment of Educational Progress (NAEP) study of 9-, 13-, and 17-year-old students showed that reading performance has increased since the earliest assessment conducted in 1971. The increase was evident for all groups of 9- and 13-year-olds. In the 17-year-old category, only the African-American students showed an increase in their reading abilities, and their dropout rate was simultaneously declining (Vanneman, 1998).

A gap between the test scores of African-Americans and their Caucasian peers is evident at the college level. Representation of African-American students indicates a decline as SAT scores increase (College Entrance Exam Board in Jencks and Phillips, 1998). Enrollment into a 4-year-college is lower for Hispanics, African-Americans, and low-income students than for their Caucasian counterparts (Berkner and Chavez, 1997).

The gap is also evident at a much younger age. An annual study conducted by the National Longitudinal Survey of Youth (NLSY) annually from 1986 to 1994 shows a

African-American students are overrepresented in our nation’s special education programs (Russo & Talbert-Johnson, 1997; Keulan, 1995; Graybill, 1997; Jeschke, 1997; Reschly, 1997), while they are underrepresented in gifted programs (Graybill, 1997). Research in the learning disabilities field suggests the number of children enrolled in special programs can be reduced by early intervention, more specifically, by the Reading Recovery program (Lyons, 1994).

**Early Intervention and Reading Recovery**

Educators have control over their own instructional practices, which is their greatest strength (Carbo, 1995). Changes in the environment can make a large impact upon test performance (Jencks & Phillips, 1998). Instructional practices that attempt to support at-risk populations have been plentiful. A successful way of supporting the neediest learners has been to provide early intervention that intercepts students who are lagging behind their peers in academic achievement. The goal of these programs has been to try and build students’ academic competencies quickly, so that they have the foundational skills on which to build throughout their schooling. Without early literacy intervention, poor first-grade readers are likely to continue to be poor readers in later grades, as well (Clay, 1979; Juel, 1988).

The Reading Recovery program was developed to provide a second chance at literacy learning for at-risk first-graders. In 1985-86, the first Reading Recovery program
in the United States was implemented in one Ohio school district. Since then, this program has reached 559,184 students across North America. Reading Recovery is defined as “... a system-wide intervention that involves a network of education, communication, and collegiality designed to create a culture of learning that promotes literacy for high-risk children” (Lyons, Pinnell, DeFord, 1993, p. 2). The Reading Recovery program has also been described as a primary and effective safety net (Fountas & Pinnell, 1996; Askew, Fountas, Lyons, Pinnell, Schmitt, 1998). “The goal of Reading Recovery is to help children become independent readers with internal self-extending systems” (Fountas & Pinnell, 1996, p. 194).

Reading Recovery students are first-graders who are the lowest literacy achievers in their school, and therefore, at-risk of reading failure. These students work one-on-one with trained Reading Recovery teachers for one-half hour during each school day. Daily lessons continue until the Reading Recovery student demonstrates a level of skill and enough independence in reading and writing, that improvement can continue to occur without the daily one-to-one support. The length of the program varies with the individual literacy skills of each individual student. Lessons continue until the student has in place “... a system of strategies which work in such a way that the child learns from his [sic] own attempts to read” (Clay, 1993b, p. 58). Then a decision is made regarding discontinuing the child’s program. “Discontinuing is a systematic process by which a child is determined to no longer need Reading Recovery teaching in special 30-minute sessions” (Askew, Fountas, Lyons, Pinnell, & Schmitt, 1998, p. 13). Although 60 lessons is considered a full program, some students need a longer time and some a shorter
time to make ‘Discontinued’ status. Discontinued students can continue to gain new literacy skills inside the regular classroom program with no additional support.

**Phonemic Awareness and Reading Recovery**

Phonemic awareness, an important component in acquiring literacy, is the basic ability to lend conscious attention to the phonemes (individual sounds) in a word as “...abstractable and manipulable components of the language” (Adams, 1990, p. 65). Phonemic awareness reflects a basic recognition of the isolated sounds used to create a word. Students’ reading performances can improve when phonemic awareness training is a part of the curriculum (Blachman, 1987; Wallach & Wallach, 1976; Williams, 1980). Phonemic awareness can be enhanced through instructional techniques (Bradley & Bryant, 1983; Lundberg, Frost, & Petersen, 1988).

Reading Recovery students are taught to use letter/sound knowledge, including strategies for monitoring by sound and letter relationships. “Reading Recovery teachers give specific explicit attention to letters, sounds, and words, both when reading and writing extended text and as direct instruction” (Askew, Fountas Lyons, Pinnell, Schmitt, 1998, p. 17). To assess students’ abilities to hear and record sounds in spoken words, the Hearing and Recording Sounds in Words task (Clay, 1993a) is administered to each student at entry into and exit from the Reading Recovery program. As noted by Clay, “This observation task directs the attention of teachers and children to phonemic awareness, a current emphasis in the research literature” (1993a, p. 65).
Purpose of the Study

The purpose of this study was to examine the degree to which students of various demographic groups enrolled in Reading Recovery improved in their phonemic abilities. Subjects for the study were low socioeconomic African-American students, other students with ‘Low SES’ status, and ‘Non-low SES’ students. Student achievement data were analyzed to determine whether race coupled with the level of socioeconomic status were related to how well participants improved their abilities to hear and record sounds in words. We know that Reading Recovery is implemented with high consistency and fidelity across sites (Hiebert, 1996); this study was undertaken to determine how Reading Recovery influences the potential literacy abilities of students from varying backgrounds. Results of this study will provide information to inform policy decision makers who are concerned about assuring early success in literacy for all students, particularly low economic status minority students.

Definitions

The following terms will be used in this study. The definitions are divided into two parts. Literacy Definitions include terminology in literacy learning. Reading Recovery Definitions include terms specifically related to the Reading Recovery program.
Literacy Definitions:

Blend training – Learning to put spoken sounds together to make a word (recognizing that /k/ /a/ /t/ is ‘cat’) (Stahl, Duffy-Hester, & Stahl, 1998).

Decoding – An understanding of the association between the sounds in words and the orthographic symbols that represent these sounds (Swank & Catts, 1994).

Hearing and Recording Sounds in Words – A measure of the participant’s knowledge of the relationships between letters and sounds in words. The assessor reads a short sentence or two to the child and then rereads again slowly, asking the child to try to write down the words. Products are scored as to the number of phonemes accurately represented through sound analysis. The assessment includes five parallel forms.

Phonemic Awareness – “...a type of metalinguistic awareness that involves understanding that words are composed of individual distinct sounds, and that these sounds can be manipulated” (Copeland, Winsor, & Osborn, 1994, p.29).

Phonemic Awareness Hierarchy – Five levels of phonemic awareness (Adams, 1990):
1. The most primitive – having “...an ear for the sound of words” (p. 80).
2. The ability “...to compare and contrast the sounds of words for rhyme or alliteration” (p. 80).
3. Blending and syllable-splitting require a familiarity with dividing words into isolated sounds and to be comfortable with how the phonemes sound in isolation.
4. Phonemic segmentation tasks require the ability to analyze words into a series of isolated sound parts on demand.

5. Phonemic manipulation which requires an ability to add, delete, or move sounds within words to create new words (or nonwords).

Picture Mnemonics – Integrating pictures with letters to aid prereaders’ letter/sound learning (the letter ‘v’ made into a ‘vase’ and ‘w’ made into ‘wings’).

Reading-readiness – Assumes that students can prepare for literacy learning by first acquiring a set of prescribed skills including auditory discrimination, visual discrimination, visual motor skills, and large motor abilities (Morrow, 1993).

Reading Recovery Definitions:

Reading Recovery – “A system-wide intervention that involves a network of education, communication, and collegiality designed to create a culture of learning that promotes literacy for high-risk children” (Lyons, Pinnell, DeFord, 1993, p. 2).

Reading Recovery Children

Reading Recovery children are the lowest achieving students in the first-grade class. Clay describes these children as:

...those who are having some trouble making the transition [children translate their previous competencies in reading and writing into ways of responding which work within the demands and opportunities of the classroom] and those who are clearly falling behind the large group of children who are succeeding.
Some of these children have been sick or absent for long periods, others seem to be confused by the complexities of literacy, and still others take longer to learn (1993b, p. 81).

Children are selected for Reading Recovery so that they can receive supplementary help in order to make the accelerated progress they need to catch up with their classmates. These children receive the intervention and become classified as one of the following:

- **Served Children** – Children who have had at least one Reading Recovery lesson or Roaming Around the Known session.

- **Program Children** – Children who have completed the program (that is, those who were discontinued from the program prior to receiving 60 lessons) or received a minimum of 60 lessons.

- **Discontinued** – Reading Recovery program children who are able to use a variety of flexible strategies for problem solving in reading and writing text and who will continue to improve within the classroom (a self-extending system is in place) (Askew, Fountas, Lyons, Pinnell, & Schmitt, 1998). The decision to discontinue is carefully considered by the classroom teacher, Reading Recovery teacher, and other members of a Reading Recovery team.

- **Not Discontinued** – Children who received the Reading Recovery program (at least 60 lessons) but do not have a self-extending system to support ongoing literary competence outside of the one-to-one teacher-child setting.

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*This study is based on reporting practices of Reading Recovery from 1984-1998. Current reporting practice has changed and is described in Appendix A.*
Nonprogram Children – Students who were enrolled in the Reading Recovery program and received at least one lesson, but did not receive 60 lessons. That is, those who neither discontinued nor received 60 lessons.

- Year-end Children – Students who did not receive 60 lessons because the school year ended prior to the possibility of their receiving the necessary 60 lessons.
- Withdrawn Children – Children who exited the program prior to receiving a complete Reading Recovery program.

Time of Entry – Time of entry into the program can take place on any day of the school calendar. The time of entry for this study runs from August through November for the 1996-97 school year.

SES – The variable ‘socioeconomic status’ as defined by government school lunch assistance exists at four levels:

- Free lunch – Complete assistance
- Reduced lunch – Partial assistance
- Paid lunch – No assistance
- Unknown lunch – Information not available (removed from the study).

Observation Survey – Six literacy tasks were used to gather information about each child’s ability to identify letters, hear and record sounds, identify sight vocabulary, understand concepts about print, write whole words, and read real texts. These tasks were developed by Marie Clay (1993a). These tasks are used to measure entry and exit performances of Reading Recovery children. Hearing and Recording Sounds in Words is one of the tasks and is a variable of interest.
Length of Time in Program – The total number of weeks a student spends in the Reading Recovery program.

Group – Students in this study have been divided into the following three categories based on race and SES:

- **African-American Students of Low SES** – African-American students who participated in the Reading Recovery program from one Midwestern state in the 1996-97 school year and who were eligible for either a reduced or free lunch program.

- **Other Students of Low SES** – Students with reduced or free lunch who participated in the Reading Recovery program from one Midwestern state during the 1996-97 school year, who were not African-American (as described above).

- **Students with Non-low SES** – All students with paid lunch status who participated in the Reading Recovery program from one Midwestern state during the 1996-97 school year.

Research Questions

Specific questions to be addressed in this study include the following:

1. The following questions involve descriptive statistics to systematically organize and summarize important information regarding this data set about the three subgroups (‘Low SES African-American students,’ ‘Low-SES students,’ ‘Non-low SES students’):

   - On average, what are the three subgroups’ program entry scores on the hearing and recording sounds in words task?
• On average, what are the three subgroups’ program exit scores on the hearing and recording sounds in words task?

• On average, what are the three subgroups’ program gain scores on the hearing and recording sounds in words task?

• On average, how long are each of the three subgroups’ programs (as measured by the total number of weeks in program)?

2. What is the proportion of subjects by program status (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’) and demographic group (Low SES African-Americans, Others with Low SES, and Non-low SES participants)?

3. Do gains made in the ability to hear and record sounds in words differ among:

• the three subgroups (‘Low socioeconomic African-American participants,’ ‘Other Low SES participants,’ and ‘Non-low SES participants’)?

• the three levels of program status (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’)?

• the interaction of the three subgroups and the three levels of program status?

Method

In this study, both descriptive and inferential statistics were used to analyze results for 2,787 Reading Recovery students in the 1996-97 school year. The participants were categorized into three subgroups: African-American students with low socioeconomic status, other low SES students, and students with non-low SES.
The descriptive statistics provided frequencies for entry scores, exit scores, and gain scores on the Hearing and Recording Sounds in Words task (Clay, 1993a) as well as the number of weeks in the program for each subgroup. Means, standard deviations, minimum scores, and maximum scores were calculated and presented for entry scores, exit scores, and gain scores of the hearing and recording sounds in words task for each subgroup. The number of weeks in the program were calculated and presented for each subgroup. The descriptive statistics served as a “necessary prerequisite” (Hopkins, Glass, Hopkins, 1987, p. 111) as the rather large mass of data used in this study became more clearly defined and organized by way of the descriptive procedures.

The data were also analyzed using inferential statistics which served to answer the questions pertaining to the predictions made via hypotheses on the sample. The chi-square test was used to answer question two. The chi-square test compares the expected number of students from each subgroup within each program category to the observed number of students from each subgroup within each program. The test will determine whether the observed program result for participants within each of the three subgroups differs statistically from the expected program result.

Gains made in the ability to hear and record sounds in words were calculated by subtracting each participant’s pretest score from the posttest score on the Hearing and Recording Sounds in Words task (Clay, 1993a) and served as the dependent variable for question three. Gain scores were analyzed for possible statistically significant differences among the three subgroups (‘African-Americans with Low SES,’ ‘Others with Low SES,’ and ‘Non-low SES’ students), among the three program results (‘Discontinued,’ ‘Not
Discontinued,’ and ‘Nonprogram’), and for any interaction among the subgroups and the program results. Inferential statistics involved a 3X3, Group (‘African-American students with low socioeconomic status,’ ‘Other low SES students,’ and ‘Students with Non-low SES’) by Program Result (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’) analysis of variance (ANOVA) to answer question three. Scheffe test was used as a post hoc test to further examine main effects revealed by the ANOVA.

Summary

A body of evidence from research and evaluation indicates that children from lower socioeconomic circumstances and minority students are less likely than mainstreaming groups to succeed in school. Literacy achievement is a particular concern. Phonemic awareness, the ability to hear and recognize sounds within words, is fundamental to literacy learning. Early intervention provides opportunities for low achievers to experience success in literacy learning. One early literacy intervention, the Reading Recovery program, has demonstrated remarkable success in improving students’ literacy achievements. The program’s instructional approach places strong emphasis on letter/sound relationships and developing children’s phonemic awareness.

Although the Reading Recovery program continues to grow, it is still not reaching all eligible children. Further studies are needed to evaluate the effectiveness of the program. Evaluation studies provide evidence that Reading Recovery “works.” There is very little research to address whether Reading Recovery works for particular subgroups
such as low socioeconomic African-Americans. Finally, few studies have focused specifically on phonemic awareness as an outcome of Reading Recovery.

Research indicates a historical trend suggesting that low SES African-American students are a demographic group that tends to do poorly in our schools compared to white students. It is therefore imperative that we have more research to document what works for these students. This study focused on how three important demographic subgroups (‘Low SES African-American participants,’ ‘Other low SES participants,’ and Non-low SES participants’) compared on variables related to literacy learning. Both demographic and inferential statistics were used in the research design, and the analysis of variance (ANOVA) procedure allowed for a comparison of the subgroups using a factorial design.

The purpose of this study was to describe the extent to which subgroups of children who participated in Reading Recovery, an early intervention program readily available in this country, differ in the ability to make gains in phonemic awareness as well as the total number of weeks necessary to complete the program. Further, a comparison of the three subgroups’ development of phonemic awareness skills and program status provides insights from an important cultural group within the population of Reading Recovery students. The outcomes of this study will provide information to address important program and curricular practices for elementary schools in the United States.
CHAPTER 2

A REVIEW OF THE RELATED RESEARCH

This study focused on the performances of students who participated in an early intervention program designed to increase their literacy achievement. The participants were first-grade students in a Midwestern State enrolled in an early literacy intervention program because they were at risk of failure in learning to read. The subjects were categorized into three subgroups: African-Americans of low socioeconomic status (SES), others of low SES, and non-low SES students. After the intervention, three demographic groups were compared on program status (related to literacy performances) and gains in phonemic abilities.

In this chapter, I review the existing research that is relevant to this study. The research review is organized into three main parts. In the first part, I review the status of low socioeconomic (SES) students in U.S. schools with particular attention to African-American students. In the second part, I review the role of phonemic awareness as it
relates to emergent new literacy learners. In the third part, I review early intervention programs, including Reading Recovery. I discuss studies conducted on the role of phonological training within the Reading Recovery program and, more specifically, within the daily lesson.

Race and Socioeconomic Status

The demographic characteristics of school populations across the nation are changing. Our student population is not only growing but also becoming more and more diverse. Villegas (1991) reported that by the year 2,000, almost 40% of our nation’s school-age population will come from minority groups. Zeichner (1993) summarized our education crisis stating, “The failure of schools to enable all children to receive a high-quality education regardless of race or ethnocultural background represents a major crisis in U.S. education and is clearly in conflict with the purposes of education in a democratic society” (p. 3).

African-Americans with Low Socioeconomic Status

Some scholars are particularly concerned with the level of quality instruction for children of various cultural backgrounds (Jones-Wilson, 1990; Delpit, 1988; McDermott, 1987; Erickson, 1987; Matute-Bianchi, 1986; Ogbu, 1987). Research has shown that rates of retention, dropout, and suspension are highest for African-American children. A study of the 1996 high school dropout rates revealed that students living in families within the lowest 20% of family incomes were two-times more likely to drop out of high
school than their cohorts in the highest 20% (McMillen & Kaufman, 1997). Sable stated, “Black students are more likely than white students to repeat a grade” (1998, p. 7). Both groups, if retained, were equally likely to drop out; and in 1996, 7% of blacks and 4% of whites ages 15-24 had dropped out of school (Sable, 1998). Although there has been a slight increase in the number African-American students enrolling in advanced high school courses and taking advanced placement examinations, these students are less likely than whites to enroll in and complete college (Sable, 1998).

African-American students of low socioeconomic status appear to be particularly vulnerable within the educational system (Campbell, 1982; Hess & Greer, 1987; Hess & Lauber, 1985; Kaufman, 1991). In 1995, 17.1% of students in grades 1-12 were African-American nationwide (National Center for Education Statistics, 1998). A greater percentage of African-Americans are enrolled in special education, with 28% of the special education population being African-American (National Clearinghouse for Professions in Special Education, 1991). Walker-Dalhouse (1993) reported that socioeconomic factors, not intellectual deficiencies, account for the disproportionate number of African-American students with early reading difficulties.

The Condition of Education is an annual compendium of indicators describing the status of education in the U.S. today. “The Condition of Education, 1997” relates socioeconomic conditions of children and their families to academic success and progress and reports that African-American and Hispanic youth are more likely to live in poverty and to attend schools with a higher level of poverty than their Caucasian counterparts.

Strickland and Ascher (1992) reported that middle class African-American children do as well on standardized tests as middle-class white children. Jencks and Phillips (1998) reported that when adjusting for family background, both groups tend to stay in school, work hard, participate in school academic fairs, and receive honors. Therefore, in this study, non-low SES African-American participants (n = 88; 77 discontinued, 5 did not discontinue, and 4 were 'Noaprogram' participants) are categorized with the other non-low SES participants.

The African-American students from poor urban areas are at the greatest educational disadvantage of all groups. Black children are more likely than their Caucasian counterparts to live in poverty, to have a single-parent home, to live in urban areas, and they are also more likely to have less educated parents (Sable, 1998). Sable (1998) reported that 53% of African-Americans live in central cities compared to 23% of whites. The variation in academic success has been linked to facilities, supplies, instruction, interactions with others, and tracking (Cazden, 1981; McDermott, 1987; Ogbu, 1978; Ogbu 1987). National standardized test scores are a clear example of the underachievements of our African-American students when compared to their Caucasian peers.
The Test Score Gap

The test score gap between white students and other demographic groups is staggering. Although the gap appears to be narrowing, the gap between African-Americans and other groups is obvious (Jencks & Phillips, 1998).

The National Center for Education Statistics (NCES, 1991) has compared African-American students to their Caucasian peers and has revealed that at age 8, fewer African-Americans achieve a third-grade level of academic achievement when compared to white, but at age 13, the gap widens with 44.7% of African-Americans and 28.8% of Caucasians below the eighth-grade ability level.

Osterlind (1997) reported that 74,535 college students from 56 universities nationwide were assessed on the College Basic Academic Subjects Examination (College BASE) between 1988-1993. The African-American students lagged far behind the other ethnic groups (which included Hispanic students) on all four general subject areas assessed (English, social studies, science, and mathematics).

The gap narrowed in the 1970s and 1980s, but still exists in the 1990s. There is a narrowing of the gap at the lower end of students’ scores, but the “Blacks are hugely underrepresented in the upper tails of the achievement distributions, and this underrepresentation does not seem to be decreasing” (Jencks & Phillips, 1998, p. 167). The large racial disparity at the top of the distribution shows whites are ten times more likely than blacks to score in the top 5% of the nation on standardized tests, placing African-Americans at a disadvantage for entry into good colleges (Jencks & Phillips, 1998). No one knows how much cultural differences influence the size of the gap, but we
do know that the gap is not dependent merely on the nominal content of the test (Jencks & Phillips, 1998).

**Reading Scores and African-American Students**

The data consistently show that as a group, African-Americans of low SES were not, and are not today, performing well academically. Many theories explain why low SES African-American students score so poorly on tests of standardized achievement. We know that the cycle of failure begins early for most students who do not do well in school.

Reading is a critical skill for academic success. Failure to achieve acceptable levels of literacy is the greatest contributor to low academic achievement (Applebee, Lange, Jenkins, Mullis, & Foertsch, 1990), and the most cited reason for dropping out of school (Natriello, McDill, & Pallas, 1990). The National Assessment of Educational Progress reported that whites outperformed African-Americans on a national reading measure in fourth, eighth, and twelfth grades (Donahue, Voelkl, Campbell, & Mazzeo (1998). Lloyd (1978) found third-grade school performance and test scores to be predictors of high school completion. A Reading Literacy study conducted by the International Association for the Evaluation of Educational Achievement showed that reading comprehension scores for Caucasian 9- and 13-year-olds were higher than African-American and Hispanic counterparts (Binkley & Williams, 1996). The National Assessment of Educational Progress, highlighting writing performance in a NAEP 1996 Long-Term Trend in Writing Assessment from 1986 to 1996, revealed that the scores of
grades 4, 8, and 11 remained mainly unchanged, with African-American and Hispanic students scoring lower than their Caucasian peers (Vanneman, 1998).

Quality instruction benefiting all children is paramount for improved literacy achievement. Unequal numbers of African-American children are not receiving necessary instruction, are falling behind early in their academic careers, are staying behind, and, for some, dropping out before ever feeling successful as a student at school.

Phonological Skills in Beginning Reading

Reading skills at an early age make a difference in the academic progress of children in later grades. Phonological awareness has been described as “[t]he ability to manipulate sounds . . .” (Cunningham, 1995, p. 10) and as “. . .the awareness of and the ability to manipulate the phonological structure of words . . .” (Troia, 1999, p. 28).

Some researchers argue that phonological abilities predict reading success (Wagner & Torgesen, 1987; Zifcak, 1976). Liberman, Shankweiler, and Liberman have suggested that the degree to which awareness of phonological structures does exist is the single best predictor of early reading success (1989). Stanovich described phonological awareness tasks as “. . .the best predictor of the ease of early reading acquisition – better than anything else we know of, including IQ” (1994, p. 284).

Research has suggested that mastery of phonological skills is basic and essential to beginning reading, and that it must take place within the first and second year of formal schooling (Durrell & Murphy, 1953; Williams, 1980). Researchers further claim that it is possible and necessary to teach children phonological awareness for reading achievement.
Phonological awareness is not an end in itself; it supports decoding the text so that meaning-making can occur. Strickland clarifies, “…skills are worthless as isolated knowledge but powerful as strategies used purposefully and masterfully” (1998, p. 7). In the following sections, I define phonemic awareness and review research that supports the role of phonemic awareness during emergent literacy learning.

**Phonemic Awareness**

The importance of phonemic awareness in learning to read is well established in the research (Scott & Ehri, 1990; Perfetti, Beck, Bell, & Hughes, 1987; Sanchez & Rueda, 1991; Stanovich, Cunningham, & Cramer, 1984) and is critical to success in beginning to read (Bryant, Bradley, Maclean, & Crossland, 1989, Perfetti, 1991). Phonemic awareness skills enable the emergent learner to use letter and sound correspondences in order to read and spell words (Griffith & Olson, 1992). Wilson stated, “…phonemic awareness can be viewed as the first building block or component to reading literacy” (1998, p. 2). Adams (1990) argued that “…the child’s level of phonemic awareness on entering school may be the single most powerful determinant of the success she or he will experience in learning to read and of the likelihood that she or he will fail” (p. 304).
Definition of Phonemic Awareness

The definition of phonemic awareness is important to this study, because the Hearing and Recording Sounds in Words task (Clay, 1993a), the dependent variable in this study, is a measure of phonemic awareness (Clay, 1993a). Phonemic Awareness is “...a type of metalinguistic awareness that involves understanding that words are composed of individual distinct sounds, and that these sounds can be manipulated” (Copeland, Winsor, & Osborn, 1994, p. 29). Juel, Griffith, and Gough (1986) described phonemic awareness as “...the knowledge that the spoken word can be broken down into smaller units (i.e., its phonemes)....” (p. 245).

Phonemic awareness can be broken down into levels of ability or awareness. Winsor and Pearson (1992) considered three tasks: (1) blending via linking sounds together; (2) segmentation or breaking words into phonemes; and, (3) phonemic deletion which includes deleting phonemes from words. Adams (1990) described five levels: (1) having an ear for the sounds of speech; (2) hearing rhymes and alliteration; (3) blending syllables into words and segmenting words into syllables; (4) breaking words into the phonemic parts (phonemic segmentation); and (5) adding or deleting phonemes to existing words (phonemic manipulation).

Phonemic Awareness and Reading

Adams’s review of phonemic awareness research suggested that the ability to divide words into parts (phonemic segmentation) and to pronounce the parts into whole words (blending) are strong predictors of reading ability (1990). Others have suggested
that learning the rules that govern spelling-to-sound correspondence helps in learning to read (Gibson & Levin, 1975; Guthrie & Siefert, 1977).

Other research supports the importance of auditory (phoneme) and word attack (grapheme) correspondence (Durrell & Murphy, 1953; Fox & Wroth, 1976; Gibson, 1965), including letter-name knowledge and phonological re-coding (Turner, Herriman, & Nesdale, 1988). Researchers also support the isolation of initial sounds with preliterates (Byrne & Fielding-Barnsley, 1990). Skjelfjord (1976) suggested that blending spoken units corresponding to the visual units is essential for being able to read words.

McCutcheon and Crain-Thoreson (1994) stated that students who enter first grade with phonemic awareness training become better readers than those without that training. Treiman and Weatherston’s (1992) research reviews found that “...children who lack phonemic awareness skills are at risk for developing reading problems” (p. 174). Poor readers, phonemically unaware during first grade, are likely to be poor readers at the end of fourth grade (Juel, 1988). Phonemic awareness is an important part of the new information that emergent literacy learners must acquire to become and remain literate members of our society.

It is important to establish a role for phonemic development in learning how to read. It is likewise important to understand that phonemic awareness, although an important part of learning to read, is not the only necessary component to learning how to read. Children need exposure to oral language. “In the classroom or the home, reading instruction revolves around print, but is propelled through speech” (Adams, 1990, p. 220). Children need exposure to written language. Freppon and Dahl clarified, “It is
essential that children understand the functionality and intentionality of written language before being asked to respond to instruction about letter-sound relations” (1991, p. 196). The instruction must be meaningfully placed within a context of real reading and writing. Griffith and Olson stated, “Phonemic awareness activities will not be helpful to a child unless they can be placed in a context of real reading and writing” (1992, p. 522).

Because the Hearing and Recording Words task is the dependent variable in this study and is a measure of phonemic awareness, the next section includes phonemic awareness and writing. During the Hearing and Recording Sounds in Words task, students are asked to write the sounds heard in a dictated story. Therefore, the next section is important to this study.

**Phonemic Awareness and Writing**

There is evidence to suggest that the processes of learning to spell and decode print are related. Bradley and Bryant (1979) argue that there is a direct relationship between spelling and reading, that spelling uses phonological cues more so than reading, that there is a relationship both between phonological segmentation abilities and reading abilities and between phonological segmentation abilities and spelling abilities. The authors also argue that children’s spelling depends very closely on letter-sound correspondence – that is, phonological processes. Juel, Griffith, and Gough (1986) found “. . .that children will not acquire spelling-sound correspondence knowledge until a prerequisite amount of phonemic awareness has been attained” (p. 254).
Adams (1990) advocated teaching children to hear the sounds in words. She stated, “To the extent that they have not learned to ‘hear’ the phonemes, the network cannot help their learning of individual letters and may even work against the efficient learning of spelling patterns” (p. 304).

Clay (1991) recognized the importance of sound knowledge in linking oral language, writing, and reading. Children can generalize about letter and sound relationships in reading and writing at the earliest stages of literacy acquisition, linking letters and letter clusters with sounds and transferring the connections made to new material. Young readers may take on learning sounds through writing. Clay (1991) stated:

... children may develop this awareness of sounds in reading in another learning activity such as playing with rhyme [italics] or exploring beginning writing [italics] because an essential component of recording one’s speech in print is to work out how what is heard can be recorded by letters. (p. 15)

The emergent student’s ability to link sounds and their corresponding letters while learning how to read and write is a very important part of literacy acquisition. As Butler and Clay (1987) stated,

... in the writing they are doing, children are working with letters and the true sounds of language all the time. If you like to put it that way, they are using phonics from the very beginning. They are finding ways to represent the sounds they can hear, in print. (p. 36)
Consequently, it follows that letter learning and letter/sound relationships in reading and writing are important to literacy acquisition.

**Letter-Sound Association**

Because the Hearing and Recording Sounds in Words task (Clay, 1993a) is the dependent variable in this study, it is important to understand that hearing the individual sounds in spoken words, that is, phonemic awareness, is only the first part of the Hearing and Recording Sounds in Words task. Next, the student must know how to record the sound’s corresponding letter or letters. Constructing words involves phonemic awareness, as emergent learners must first hear the sounds within the words they wish to write. “A second step in the process is to search for and find letters that might represent those sounds” (Clay, 1998, p. 146).

Ehri and Wilce (1979) discussed how sounds could be learned with their relationship to letters. Their study of 18 second-graders’ work with nonsense CVC task cards revealed how spellings prompt orthographic images facilitating sound memory. They found that seeing letters was found to be more effective than simply hearing the letters’ names in isolation, and that subjects must be able to decode spellings to sounds accurately if spelling ability is to benefit from the ability to remember sounds. Those subjects who were successful sound learners could sound out CVC patterns, whereas unsuccessful sound learners could not. Also, spellings appeared to improve response memory. Spellings helped the subjects to preserve letters as visual images, that is, they “saw” spellings by forming visual images in their heads.
Ehri, Deffner, and Wilce (1984) studied picture mnemonics as an avenue to learn letter/sound associations. In two experiments, they evaluated the effectiveness of picture mnemonics in helping prereaders learn letter-sound associations. Twenty first-graders participated in a 20-minute group instructional program for six days. Pictures integrating the associations were compared with disassociated pictures and a no-picture control group. Pretest and posttest scores served as the variables of ANOVA. Children taught with integrated mnemonics learned more letter-sound associations and more letter-picture associations than the other two groups. They found that integrating pictures with letters is helpful to prereaders’ learning of letter/sound relationships. Children taught with mnemonics were far superior to those in the no picture at all (just shown letter) group. Two kinds of pictures were also shared. The group with the pictures made out of the letters (‘v’ was made into a ‘vase,’ ‘w’ made into ‘wings’) scored superior to those with a simple picture of an object (‘v’ associated with a picture of a ‘vase’).

Scott and Ehri (1990) conducted a study with 51 kindergartners. A prerequisite to participation in the study was that the participants could already name the letters of the alphabet. The students averaged 5.7 years in age. They were placed in one of three groups: named letters, counted letters, or visually distinctive spelling (capitals mixed with lower case) within words for three sessions. The results showed that prereaders learned simplified phonetic spellings more easily than visually distinctive non-phonetic spellings, indicating that possession of letter knowledge is sufficient for phonetic cue reading. It is not necessary, in addition, to draw readers’ attention to the letters (again, the students were familiar with the letter names before the study began). These findings indicate that
once students know the letters' names, there is an advantage of letter-sound routes over visual routes in reading words by sight, at which point word-learning proceeds more rapidly.

In *Literacy Awareness: From Acts to Awareness* (1998), Clay described the importance of sound sequences and writing letter by letter. “It is pragmatic to teach sound awareness in writing because segmentation in order to write letter by letter is essential; that is the nature of the task” (p. 58). Teachers support the students by articulating the word slowly, creating a model for children who have yet to learn how to distinctly analyze the phonemes of words spoken, and then using knowledge of letters and sounds, record the words in stories. The knowledge of the sequence of sounds and their corresponding letters support students' writings. Clay stated, “Activities are needed that help learners think about the order of sounds in spoken words and that help them analyze a new word in their writing into its sequence of sounds” (1998, p. 58). One such activity, Elkonin’s Boxes, are discussed in the next section.

**Elkonin’s Boxes**

**Historical Overview.**

K. D. Ushinsky (cited in Downing, 1973), a Russian researcher, was first to recognize the importance of hearing sounds prior to recognizing the visual graphics that represent the corresponding sounds. Ushinsky’s theory of the significance of phonological awareness over one hundred years ago introduced an analytic-synthetic phonic method into Russian education. He theorized that before learning to read, the
child must be able to distinguish sounds in words. Although letter learning is important, the auditory process is essential in learning to read and at first, sounds are considered in the absence of print. It would be difficult for the teacher to demonstrate sounds, especially in tasks such as Elkonin’s, where the letters are recorded in succession to produce a word without letter learning. Elkonin (1973) described alphabetic characters as written symbols for sounds (p. 558). Likewise, Clay (1993b) stated, “A case can be made for the theory that learning to write letters, words, and sentences actually helps the child to make the visual discriminations of detail in print that he will use in his reading” (p. 11). Elkonin’s and others’ research works are reviewed in the next section.

Elkonin’s research.

Elkonin extended Ushinsky’s work by recognizing the need to distinguish sounds in sequence before learning the corresponding letters. That is, he saw that reading is “the creation of the sound form of the word according to its graphic model” (Downing, 1973, p. 559) and that word analysis exists “on the level of overt utterances” (p. 568). Developing this skill of phonemic segmentation takes practice, first at the overt (observable) level, until it becomes a mental process insured by Elkonin’s five-stage instructional process:

1. Establishing the concept of the task. That is, to segment words by overt pronunciation.

2. Linking the operation of sound with a sequence of small objects (one object per sound within the word).
3. Mastering the sequence of sounds and objects at the overt level.

4. Mastering the sequence of sounds and objects at the mental level.

5. Operating at the mental level.

When taught to link sounds with objects before he or she learns the actual letter, the child is able to concentrate on hearing sounds in succession first, and thus can make the visual link with the letter more comfortably later. With the teacher’s modeling and guidance as needed, the child articulates each phoneme slowly, as a marker is moved into the diagram corresponding to the sound sequence in the word. The diagram contains one box for each sound in the word. The boxes provide a model of the number of sounds in the word.

Elkonin and his colleagues conducted three separate investigations of sound analysis. Each investigation experimented with 15 6-year-old students, used the same number and types of words, the same length of session (20 minutes), and the number of sessions ranged from 5-7. The first experiment required students to “utter-aloud” each word. One student analyzed five words of 40 examples and was the most successful of all the participants. The conclusion was that utterance alone did not support proper development of sound analysis of whole words, as the majority of participants could not analyze the sounds within words independently.

In experiment two, an adjustment was made in the method by including markers, one for each sound in the word. With this adjustment, 31% of all words were analyzed correctly. An improvement, over utterance with no markers (the first experiment), but the students were not competent overall.
In the third experiment, the students were shown pictures and a diagram with sound boxes (one box per sound in the word). Students filled in each square with one marker for every sound across the word and half-way through the experiment, the students used only markers (pictures and sound box diagrams were removed). Of the responses made, 82% were correct, demonstrating that sound analysis with sound boxes is the most effective and rapid way to learn the sound analysis of words.

Combined, the works of Ushinsky and Elkonin established the role of the auditory process in beginning reading. Elkonin claimed that teachers who use the analytic-synthetic sound approach can teach children to read “in a relatively short period of time” (Elkonin, p. 551). Elkonin (1973) supported the use of phonemic hearing (the ability to use auditory discrimination to separate speech sounds) to learn letters and reading skills (p. 556). Clay (1991) also recognized the importance of hearing sounds in words as a tool in both writing and reading. Children can generalize about letter and sound relationships in reading and writing at the earliest stages of literacy acquisition, linking letters and letter clusters with sounds, and transferring the links made to new material.

**Extending Elkonin’s Studies.**

Research by Ball and Bachman (1991) demonstrated that kindergarten’s spelling and reading skills improved through the use of a phonemic awareness procedure adapted from Elkonin’s work. Students participated in letter naming, letter-sound training, and ‘say-it-and-move-it’ activities. “The say-it-and-move-it activity was designed to make explicit the role of segmentation in an alphabetic system” (Ball & Balchman, 1991, p.
The students repeated the word dictated to them while moving a marker for each sound in the word as repeated, making progress from 1 to 3 phonemes over three weeks using letters and blank tiles to represent the sounds heard. Evidence that students who received training in letter naming, letter-sound instruction, and segmentation or 'say-it-and-move-it' instruction were better spellers than students who received letter-name and letter-sound training only. They concluded that children can be trained to be phonemically aware and that their training contributes positively to their writing ability.

Uhry and Shepherd (1990) studied segmentation training of isolated words with 28 first and second-graders. Over a period of six months, the control group read letters, words, and text, and the experimental group received 20 minute segmentation training sessions two times per week. Using blocks to represent sounds, students in the experimental group segmented words into their phonemic parts. Two months into the experiment, letters were added to the blocks, and students learned to use computers to segment words. When compared to the control group, students in the experimental group could read nonsense and real words in isolation better than those in the control group. Uhry and Shepherd concluded that “... spelling may affect reading through the mapping of sounds onto letters” (1990, p. 2).

Influenced by Elkonin (1973), Hohn and Ehri (1983) studied the relationship between alphabet letters and phonemic segmentation skills in kindergartners to determine whether alphabet letters facilitate phonemic segmentation skills. Testing Ehri’s view that segmenting with letters might be used to distinguish the separate sounds, 24 kindergartners were divided into groups of (1) ‘Ear’ (sound analysis), (2) ‘Letter’ (visual
and sound analysis), and (3) ‘A control group.’ The first group (sound analysis only) received training in letter segmentation without letters, but with markers. The second group used letters but received the same sound analysis training as the ear group. The control group received no training. Both experimental groups outperformed the control group, suggesting that both training methods were effective in teaching segmentation skills. The researchers observed that letter training provided an additional advantage, enabling letter subjects to segment the particular sound they practiced more effectively than ear subjects. In fact, letter-trained subjects exhibited less difficulty in learning to break up blends and made fewer mispronunciations during segmentation training than the ear subjects. One explanation could be that perhaps phonetic analysis with letters enabled learners to acquire a visual sound-symbol system used to represent the individual phonemes in memory. Despite the researchers’ observations, post hoc comparisons suggested that the differences between the two experimental groups’ abilities were not significant.

A review of early literacy intervention including the Reading Recovery program are included in the next section. Also, Elkonin’s influences and research successes within the Reading Recovery program are described.

Early Intervention and Literacy

Why some students have difficulties with language and literacy acquisition while others have very little if any trouble at all has been an intriguing and a somewhat controversial topic of debate in the field of reading education for quite some time. Clay
(1982) estimated that 80% of all emergent readers will not have much difficulty with literacy acquisition. That is, approximately one-fifth of all new entrant readers and writers can expect to experience some difficulty in learning to read and write.

Although remediation efforts have been reported throughout the 1900s (Smith, 1965), remediation techniques rarely permit students to achieve an average literacy level and return to the classroom with no further help (Bean, Cooley, Eichelberger, Lazar, & Zigmond, 1991; Carter, 1984; Coles, 1987). Johnston and Allington (1991) have reported that students usually do not receive the much-needed help from remedial programs until they have been in school a few years, losing much precious time. Johnston and Allington therefore recommended early intervention, because it helps to eliminate the gap between the more capable and less capable students.

The purpose of early intervention is to target the lowest achievers and to provide instruction in addition to the regular classroom program that will ensure early successes in basic literacy and as a result, lower the numbers of children who need extra help. Early intervention interrupts the patterned, debilitating, and ongoing cycle of continuous remediation and improves the at-risk readers’ chances of acquiring solid basic skills early in their formal years of schooling.

Slavin (1996) referred to ‘neverstreaming’ to describe five early intervention programs that can help to eliminate placement into special education for many of the participating students. Key to the ‘neverstreaming’ concept is that instructional programs must assist students to meet success from the beginning and then help them to maintain that success throughout their development (Slavin, 1996).
With early intervention, error behaviors are practiced less often, so that the confused student has less to unlearn and relearn (Clay, 1985). The aim of literacy intervention “...would be to ensure that a child does construct an inner control of reading processes” (Clay, 1991, p. 324). Often, children with reading difficulties have had to wait a few years before being helped, allowing them to slip into debilitating reading practices. By the time they received help, they had habituated ineffective strategies that were then difficult to unlearn. When offered help too late, students fell further and further behind their peers. Students who may fall behind early need support early to succeed in school.

**African-Americans and Early Intervention**

Research suggests the importance of parent-child book sharing (Anderson, Hiebert, Scott, & Wilkinson, 1985). Many low-SES children, including low-SES African-American students, have limited experiences in hearing books read aloud (Dickinson, 1989; Teale, Martinez, & Glass, 1988; Heath, 1983). “While black and white children have similar participation rates in preprimary education, blacks are generally behind whites in demonstrating early literacy skills” (Sable, 1998, p. 4). African-American children participated in early literacy activities with family members as do white children, but white children were more likely to accomplish emerging literacy skills such as identifying colors, reading or pretending to read stories, and the ability to write their own name (Sable, 1998). Literacy intervention, especially for Low SES African-American students, appears to be of particular importance.
Stanovich (1986) reported that early intervention programs have supported students at risk of reading failure. Interventions to support the academic achievement for culturally diverse, low-income children have been developed (Bempechat & Wells, 1989), and those interventions that support instructional strategies are more influential than policy-making or community influences (Wang, Haertel, & Walberg, 1990; Wang, Reynolds, & Walberg, 1995).

There is a growing number of programs for literacy intervention at the kindergarten through second-grade levels. As Taylor and Hiebert have reported, “. . . early reading intervention programs with a focus on accelerated learning and authentic reading and writing tasks can be very successful” (1994, p. 6). Although early intervention will not completely guarantee that all students will learn to read and maintain their gains over a sustained period, “. . . not providing early intervention guarantees failure for many students throughout schooling” (Fountas & Pinnell, 1996, p. 193).

Reading Recovery

Taylor and Hiebert (1994) reported that early reading intervention programs “. . . are producing exciting results” (p. 6), and more specifically, Reading Recovery was described as “leading the way . . .” (p. 6). In fact, Hiebert (1994) stated, “Reading Recovery has directed attention to early literacy in a manner that has not been the case for at least the past 20 years” (p. 86). McGill-Franzen described Reading Recovery as “. . . the most widely known early reading intervention with the longest history of success” (1994, p. 32).
Reading Recovery is defined as "... a system-wide intervention that involves a network of education, communication, and collegiality designed to create a culture of learning that promotes literacy for high-risk children" (Lyons, Pinnell, DeFord, 1993, p. 2). The goal of the program is to help young children develop a self-extending system in reading (Lyons, Pinnell, DeFord, 1993, p. 2). Clay described the term ‘recovery’ as "... a return to average classroom performance levels rather than mere improvements which is what many remedial programs achieve" (1982, p. 174). The Reading Recovery program is intended to support literature progress for the lowest 20% of the first-grade class (Klein, Kelly, & Pinnell, 1987). Clay’s intervention model provides a second chance for students who are at risk of literacy failure after they have received one full year of classroom instruction. Reading Recovery is not only an instructional program for children, but an educational system intended to reduce reading difficulties throughout all schools involved in the program. By providing extra help for a relatively brief period of time, Reading Recovery brings the hardest to teach children to a level where they can be full participants in the classroom program (Clay, 1993a). The three parts of the Reading Recovery program emphasize three separate activities: (1) instructing children, (2) in-depth staff development, and (3) continuing program evaluation. All three of these components are necessary in order for a system-wide change to occur.

Specific features of the instructional frame allot for particular opportunities to attend to phonological features of print. Clay (1998) listed the following as required segments of the daily lesson:
In every lesson a child (1) reads familiar books, (2) rereads yesterday's new book, (3) does a few minutes of work with letters singly or in making and breaking up words, (4) composes and writes a story, (5) reassembles that story as a puzzle from its parts, (6) is introduced to a new reading book, and (7) reads that book for the first time. (p. 238)

A brief description of Clay's theory of reading is presented here to provide the philosophical foundation of the Reading Recovery program. A more thorough review is available in Clay (1991) and in Askew, Fountas, Lyons, Pinnell, and Schmitt (1998). The following sections review the history of the Reading Recovery program. A basic summary of Clay's reading acquisition theory provided by Smith-Burke and Jaggar (1994, p. 66) may provide background to better understand the history of the program:

- Text reading involves the integration of cues, which includes integrating meaning, structure, and visual information.
- Children need two kinds of reading: fluent reading and challenging reading. Fluent reading is the opportunity to practice known reading materials. Reading challenging texts allows for students to take on new learning.
- Reading and writing are reciprocal processes, and students are to use knowledge from one to help build new knowledge in the other.
- Observation is a key role for the teacher, as observation guides what the teacher is to teach next in the lesson and in future lessons.
The History of Reading Recovery

Marie M. Clay developed the Reading Recovery program in Auckland, New Zealand after years of research on emergent literacy learning (1966). As a child psychologist, Clay recognized the need to help students succeed early with literacy learning. She carefully watched and documented the behaviors of good readers, poor readers, and their teachers in the 1960s and early 1970s. She worked with teachers to develop, over time, “. . .precise information about children’s behavior and teachers’ responses that seemed to help children” (Lyons, Pinnell, & DeFord, 1993, p. 4). In 1978, Clay and her colleagues piloted Reading Recovery in New Zealand. The Ministry of Education in Wellington, NZ watched the program carefully, and continues to do so annually, reporting the results of Reading Recovery as a national program in New Zealand (Kersiak, 1997).

Clay and her colleague Barbara Watson introduced Reading Recovery to the United States in 1984 at The Ohio State University. The Ohio State faculty, the Ohio General Assembly, and the Ohio Department of Education were impressed with the 73.5% success rate during the implementation year, 1984-85 (Reading Recovery in Ohio, 1996-97 State Report, The Ohio State University, 1998). In 1985, funding was made available to implement the Reading Recovery program throughout the state. The follow up study to the Columbus Study (see the Reading Recovery Executive Summary, 1984-1996, Reading Recovery Council of North America, 1996) revealed sustained gains for discontinued participants in grades two, three, and four.
The National Diffusion Network, likewise impressed with the growing successes of the program, provided funding for Reading Recovery outside of Ohio in 1987, and four new states sent training personnel to Ohio State for training. Currently, the Reading Recovery program operates in 49 states, Washington DC, and the Department of Defense Dependent Schools. The Reading Recovery network includes 43 university faculty trainers, 19,797 teachers in 10,017 schools (in Reading Recovery in North America: An Illustrated History, Reading Recovery Council of North America, 1999). Regional training centers are university affiliated sites where faculty members train teacher leaders, who in turn provide training for teachers in elementary schools across the nation. The participating school district’s Reading Recovery teachers receive a year of intensive training with subsequent support in the following years. This high quality training is beneficial to the success of early intervention programs (Wasik & Slavin, 1993).

Reading Recovery Research

The Reading Recovery program has expanded to seven countries and its successes have been documented around the world and in the United States (Reading Recovery Executive Summary, 1984-1998, Reading Recovery Council of North America, 1999). The total number of Reading Recovery students served in 15 years across the United States is 693,821 (Reading Recovery Council of North America, 2000, p. 24) Hundreds of studies across the world have documented the impact of this important and powerful intervention program. “Since 1985 in the United States, the effect of the RR [Reading Recovery] program has been replicated hundreds of thousands of times in thousands of
schools with hundreds of thousands of individual subjects” (Lyons, 1998, p. 79). Studies of Reading Recovery have focused on student instruction, growth in student ability, sustained gains over time, cost effectiveness, comparisons to other interventions, and the role of the teacher as both teacher and learner.

The extensive body of research supporting the Reading Recovery program began with pilot studies in New Zealand. Other countries, including New Zealand, Australia, the United States, Canada, Great Britain, and 49 U.S. states to date have adopted the program. The rich body of research supporting Reading Recovery is too extensive to be completely examined here (for a complete review of the research available on Reading Recovery, see Pinnell, 1995 or Askew, Fountas, Lyons, Pinnell, Schmitt, 1998). The following review focuses on studies that helped to lay the foundation for the program. Additional studies that provide background information to support this study are also reviewed.

Two major types of replication research—systematic replication and simultaneous replication—have been utilized in Reading Recovery research (Lyons, 1998). The Reading Recovery National Data Evaluation Center is located at The Ohio State University. Ongoing documentation for every Reading Recovery participant since the beginning of the program in the United States is archived there. The replication of the research documenting the ongoing success of the program with many different students, in a growing number of districts annually, increases confidence in the program and provides “substantial evidence of the effectiveness of the RR [Reading Recovery] tutoring” (Lyons, 1998, p. 3).
The earliest Reading Recovery effectiveness study, conducted by Clay in 1978, included 122 Reading Recovery children from New Zealand. Pretest and posttest measures of all 6 Observation Survey tasks (then known as the diagnostic survey) showed accelerated progress in 12-20 weeks. Those who participated in the program “made gains which equaled or exceeded the gain scores made by their classmates who showed initially the higher achievement” (Clay, 1979, p. 91).

A 1991 study in 10 Ohio school districts compared Reading Recovery students to two alternative one-to-one programs and a small group program (Pinnell, Lyons, DeFord, Bryk, & Seltzer, 1994). The study compared four at-risk models: Reading Recovery; a group-based program taught by trained Reading Recovery teachers; a Reading Recovery-like program taught by teachers trained in an abbreviated program; a skills-based program taught by teachers familiar with skill-based instruction, and a control group receiving Title I Services.

The overall experimental sample consisted of 324 first-graders from 33 schools in 10 districts across Ohio and were randomly assigned to each group. Only certified teachers were trained to participate. Dictation tests, Text Reading, and three standardized reading tests (Woodcock Reading Mastery Test-Revised, Gates-MacGinitie, and the Mason Early Reading Test) were used as measures. Data were collected by assessing students’ abilities on a combination of these measures in October, February, and May, and in the fall of the following year. Videotaping occurred at two points for all groups and these videotapes were analyzed to provide detailed descriptions of instruction in each treatment. Hierarchical Linear Models and covariates were developed to aide in group
comparisons. Results indicated that Reading Recovery was the only group for which the mean treatment effect was significant and had lasting effects. The researchers concluded that: (1) one-to-one teaching is not sufficient; (2) one-to-one instruction by a trained Reading Recovery teacher is superior to group instruction by a trained Reading Recovery teacher; and (3) Reading Recovery teacher training makes a difference.

Geekie (1992) assessed Reading Recovery’s effectiveness during the implementation year in Victoria, Australia. A qualitative approach to inquiry included observation and semi-structured interviews of 162 individuals involved in the implementation of Reading Recovery in Victoria. Results revealed positive effects of the program which included: improvement in children’s reading (with only 10 out of 121 not discontinued), changes in self-esteem and confidence for both students and teachers, and attitudes about teacher change including learning to observe students. Resistance to the program included government concerns for student withdrawal, master of items of knowledge, and cost effectiveness. Teachers also mentioned various pressures about training and general isolation from peers. Overall, all those involved shared positive aspects about the program and growth in commitment to the program.

**Vygotskian Instructional Design**

Although Reading Recovery has been assessed for program effectiveness around the globe, studies have also focused on the training model. An analysis of Reading Recovery’s instructional model reveals a likeness to Lev Vygotsky’s zone of proximal
development (1962), suggesting that the teacher and student interactions support the child’s new learning.

New learning must occur through collaboration with a more knowledgeable other. What the child can do with support today, may be done independently tomorrow with the teacher creating a ‘scaffold’ to support new learning (Wood, Bruner, and Ross, 1976). Clay and Cazden (1990) have found parallels between the instructional design of the Reading Recovery program and Vygotsky’s theory of education as a sociocultural activity suggesting, “…Vygotskian interpretations of Reading Recovery as a system of social interaction organized around the comprehension and production of texts that demonstrably creates new forms of cognitive activity in the child” (p. 206). Gaffney and Anderson (1991), Clay and Cazden (1990), and Cazden (1988) suggested that Reading Recovery has a scaffolded model of teaching support within the daily lesson.

Research of the Vygotskian instructional model in Reading Recovery.

Hobsbaum, Peters, and Sylva (1996) described the concepts of scaffolding and the Zone of Proximal Development (ZPD) within the reading and writing of the Reading Recovery lesson. Using the writing portion of the lesson, a study of 17 students and 7 teachers explored the interactions of students and teachers in London and South England. All students were visited at the beginning and end of their programs, but 4 were visited weekly. Fieldnotes were taken during visits and audiotapes were transcribed. The analysis revealed the patterns of interaction that took place over the writing period of the lesson: (1) the teacher structures the task, (2) the child gains control over cognition
through oral language; and (3) the child reveals individual learning needs and the teacher adapts the lesson to meet these needs. An in-depth analysis of the interaction revealed that the teacher and child work in the child’s ZPD, a process of scaffolding.

Pinnell (1993) investigated the importance of teacher interaction to support the development of students’ strategic reading abilities during the Reading Recovery lesson. Ten Reading Recovery teachers participated in this study. The teachers’ videotaped lessons were analyzed for time, content, and teacher behaviors. Videotaped analysis revealed that the teachers with high outcomes balanced text level with word and letter level strategies during daily lessons. Teachers with low level outcomes looked primarily to word and letter level strategies. Evidence from this study verified that Reading Recovery’s unique teacher training model is important to the student’s success in the program.

Wong, Groth, O’Flahavan, Gale, Kelley, Leeds, and Regetz (1994) characterized teacher and student interactions during the Reading Recovery lesson by analyzing teacher support during the text reading portions of the Reading Recovery lesson. Five Reading Recovery teachers’ support during rereading was compared to support for new text reading. Teachers were videotaped with two students for two consecutive lessons. Three weeks later, two consecutive lessons were taped again. Transcriptions of familiar readings and new text readings revealed five types of scaffolding comments: telling, modeling, prompting, coaching, and discussing. The study provided evidence that teachers’ differences among the five scaffolding comment categories differed significantly only in modeling. Teachers’ scaffolding comments increased significantly
during the new book introduction and texts' discussions occurred primarily during the book introduction. All five of the scaffolding comments were used interchangeably throughout the reading portions.

Lyons (1991a) described the events of a visit that she made as a teacher leader trainer with Mary, a teacher having trouble accelerating a child who was labeled 'learning disabled' (L.D). Mary’s shifts in teaching Ryan, who discontinued 7 weeks later, reveal the power of the Reading Recovery program’s clinical visits apart from the program’s instructional design.

One-on-one Instruction.

The strength of the teacher-and-child instructional model may explain why otherwise low-performing children do so well in Reading Recovery. Traditionally, low-performing children maintain a low status throughout their formal schooling. Reading Recovery’s one-to-one instructional model supports the Vygotskian theoretical frame of instruction, and one-to-one (person-to-person) interaction has been found to be a preferred learning style for African-American students (Collins & Tamarkin, 1982; Cureton, 1978; Dillon, 1989; Doughtery, 1978; Hale-Benson, 1986).

Learning Disabled Students in Reading Recovery

Carol Lyons investigated the successes of labeled or mislabeled youth in the Reading Recovery program over the past decade. The importance of Lyons’ research is clear. The most reported disability in 1995 in the United States was learning disability,
which accounted for one-third of disabled youths (National Center for Education Statistics, 1995). In 1992, nearly 12% of all K-12 grade students were labeled with a disability, an increase from 9% in 1977, and the increase was largely due to an increase in the number of students labeled as ‘learning disabled.’ African-American students with learning disabilities were at an increased risk of dropping out of school (National Center for Education Statistics, 1995). Low SES African-American students tend to be the lowest achievers and are overrepresented in special needs classes. Lyons’ research, therefore, has significance for the interpretation of this study.

Lyons (1994) addressed some major question in the learning disabilities field. After defining the learning disabled student and effective interventions, she also shared the potential of the Reading Recovery program on impacting the learning disabilities field. Reading Recovery, based on Lyons’s research, appears to be the answer for our low achievers. A more in-depth look at Lyons’s research is presented in the next section.

Research on Learning Disabled Students in Reading Recovery

Lyons (1989) compared the miscues (visual, syntactical, and semantic) of learning disabled students (N=30) to non-learning disabled students (N=30). Reading errors from both entry scores and exit scores were coded to reveal uses of meaning cues, structural cues, visual cues, and combinations of these three cues from running record levels 3-10. A combination of statistical analyses revealed that learning-disabled students were more dependent upon visual information than their non-labeled peers and non-learning disabled groups were more apt to combine all three cues. At exit, no differences existed between
the two groups, leading the researcher to conclude that Reading Recovery can be a preventative to labels for our at-risk youth.

Using case study procedures, Lyons (1991b) examined Mike’s experience in both a learning disabled setting and the Reading Recovery setting. She described parts of the daily lesson along with the student’s experiences with each task. After 12 weeks and two days of Reading Recovery lessons, Mike was no longer mislabeled. Lyons concluded that avoiding being mislabeled “learning disabled” can be an outcome of Reading Recovery.

Lyons and Beaver (1995) concluded that Reading Recovery can prevent retention and mislabeling, while simultaneously saving the district money through a discussion of two districts’ experiences with the Reading Recovery program regarding retention rates, cost effectiveness, and mislabeled learners. Educators in a suburban district reported that retention had dropped from 2.5% prior to implementation to 0.7% after implementation. Reading Recovery also reduced the number of Chapter I and learning-disabled referrals. Reading Recovery had influenced classroom practices through teacher change in theoretical principles and types of materials to support the early learner. Another school district reported that Reading Recovery has reduced retention by half and reported a reduction in learning disabled students from 1.8% before Reading Recovery to 0.63% after the program was introduced, saving hundreds of thousands of dollars.

Although this study does not focus on labeling for special education, Lyons’ research provides valuable information for this investigation. If it is true that Reading Recovery can reduce the number of children labeled as learning disabled, and a
disproportionate number of labeled students are low SES African-American students, then we need to examine the effect Reading Recovery can have on such populations.

Demographics and Reading Recovery

The Reading Recovery program has been replicated into seven English-speaking countries around the globe, yet there have been very few investigations as to how well Reading Recovery students from various demographic groups achieve success as participants in the program. No study to date has revealed the demographics of learning disabled students in Reading Recovery, but there have been studies of African-American students’ successes in the program. Reading Recovery has been listed as one of the instructional programs that may improve the academic performance of African-American students (Levine, 1994). The next section presents Reading Recovery evaluation results for particular groups of children.

Research of Demographic Groups in Reading Recovery

Hatton (1994) compared Aboriginal and non-Aboriginal pupils participating in Reading Recovery and other interventions, including homework club, discipline techniques, and a group language development program. Reading Recovery was found to be effective for the program participants.

Yukish and Fraas (1988) examined Old Order Amish children in Reading Recovery. The subjects included 25 discontinued Amish students, 8 non-Amish discontinued students, 82 Amish non-Reading Recovery students, and 48 non-Amish
non-Reading Recovery students from one rural district. The Observation Survey (Clay, 1993a) served as the assessment instruments before and after the intervention. Findings revealed that the Old Order Amish students discontinued at a higher rate than their non-Amish peers within the school district, and did so in a shorter period of time. On one end-of-year assessment task, Concepts About Print, discontinued Amish students scored above the upper limit of the average band for discontinued non-Amish pupils. The non-Amish discontinued students scored almost two reading levels higher than the Amish discontinued students on the text reading task at end-of-year.

Kelly, Gomez-Valdez, Klein, & Neal (1995) report of 1993-94 California data for three populations of children: 1) children for whom English is L1 (served in Reading Recovery; 2) children for whom Spanish is L1 (served in Descubriendo La Lectura); 3) children (English language learners) for whom English is L2 (served in Reading Recovery). Major findings were that time in lessons, rate of discontinuing, and progress in the programs did not differ among the three populations.

McGraw (1997) studied 27 students (16 African-Americans and 11 Whites) in third grade who had successfully completed (achieved ‘Discontinued’ status) Reading Recovery as first-graders. Seven different instruments were used to conduct the study, including: three narrative reading passages with oral reading and retelling, San Diego Oral reading paragraph for third grade, a timed written assignment and a teacher questionnaire. A Fisher t-test at the .05 level of significance revealed no differences between the two groups on the narrative passages and the San Diego passage. The holistic scoring of students’ retelling of the San Diego passage revealed no significant
differences between the two groups’ mean scores as determined by the Fisher t-test. The teacher’s evaluation of the students’ literacy abilities were computed using the Teacher Evaluation of Students’ Literacy Ability (TESLA). Both races were found to be successful in literacy competency at completion of the Reading Recovery program and sustained their gains into the third grade. The teachers’ expectations for both groups were found to be similar.

Di Nello’s (1997) study included San Francisco, California’s databases from both 1993-94 and 1994-95. Data were from the Reading Recovery National Data Evaluation Center (see Chapter 3). Students from 45 schools participated in either Reading Recovery or Descubriendo La Lectura (Spanish). Of the 481 students in Reading Recovery, 65% were native English language speakers. Other native languages included Spanish and Chinese. The sample included 1% (only 5) Native Americans, 6% White, 17% Asian, 36% African-American, 40% Hispanic and 172 Descubriendo La Lectura (Spanish) students. A quasi-experimental design with five covariates including gender, lunch program, teacher experience, ethnicity, and pretest scores on the Observation Survey (Clay, 1993a) tasks concluded that there were notable differences among the groups of participants being investigated.

The first investigation compared Descubriendo La Lectura (DLL, Spanish) with Reading Recovery (RR, English). Students enrolled in DLL scored higher in Observation Survey tasks than RR students, and Di Nello attributed the differences to the more predictable phonemic infrastructure of the Spanish language.
A second investigation compared various ethnic groups. Hispanic students scored higher in Observation Survey tasks, as clarified in Investigation One, when compared to the scores of Caucasians, African-Americans, and Asian/Pacific Islanders. English language proficiency influenced the number of necessary lessons, with low language achievers requiring more lessons. Asian students made the greatest gain in writing vocabulary development, but they also had less control of the English language into the Reading Recovery (in English) program than did the Caucasians, African-Americans, and Hispanics. Di Nello attributed the greater gain scores of the Asian students in comparison to the other ethnic groups to growth in English language knowledge as a result of their Reading Recovery participation.

Further inquiry into English language proficiency was the basis for question number three, which revealed that students with non-limited or fluent English were superior to limited English speakers and non-English speakers on the Concepts About Print (one of six tasks in the Observation Survey) test only. The author attributed the difference to students’ ability to express themselves.

Di Nello’s fourth inquiry compared the students’ language levels of proficiency with the number of lessons needed to complete the program. When instruction was delivered in the student’s native language, fewer lessons were required.

Di Nello’s study compared the literacy growth and understanding of students from varying ethnic backgrounds. The research reviewed above demonstrates that students from varying ethnic groups benefit from their Reading Recovery programs. This research provided evidence that students with limited English skills and who were taught in
English gained oral language skills as well as literacy skills as a result of participating in the Reading Recovery program.

This study will compare the progress of African-American students to other demographic groups in the intervention area of development of letter-sound relationships, a necessary component of the reading process. Phonics is a necessary component in learning to read. The following section discusses issues of phonics in the Reading Recovery program.

**Phonics and Reading Recovery**

Reading Recovery is based on a theory of the reading process that suggests reading is a complex act within which readers use in-the-head strategies to search for information from the text. The reader uses a range of information or cues, including meaning, structure, and visual information. A study conducted to compare five early intervention programs (including Reading Recovery) revealed that the early intervention programs emphasizing a comprehensive view of reading allowed for a broader range of reading skills when compared to other intervention programs that emphasized an isolated or particular reading skill, such as phonics instruction (Wasik & Slavin, 1993).

According to Adams, Reading Recovery acknowledges the importance of phonological awareness. The program’s design develops a “...thorough appreciation of phonics” (1990, p. 421). Support of phonological development, and more importantly, phonemic awareness throughout the child’s Reading Recovery program, are important to this study. The Hearing and Recording Sounds in Words task is a key variable of interest.
and is a valid measure of assessing program participants’ phonemic development (Clay, 1993a).

**Phonological Awareness and Reading Recovery Research**

Studies of the relationship between phonological instruction and the Reading Recovery program are few. Only one major study (DeFord, 1994) discussed later in this chapter attempted to describe phonics within the Reading Recovery daily lesson. Other studies have compared Reading Recovery to phonics instructional approaches.

Iversen and Tunmer (1993), critical of Clay’s earlier results of the initial testing in New Zealand (Clay, 1979), sought to determine whether the Reading Recovery program is more effective with an additional instructional phonics period. An experimental study compared Reading Recovery, a modified Reading Recovery, and a standard intervention. The modified Reading Recovery program included phonological skill instruction in place of the letter identification instruction after at least 35 letters were learned. The modified version supported the students through making and remaking words with similar spelling patterns using plastic letters. Thirty-two students from 30 schools in 13 districts participated in each group. A series of measures were used to assess participants: (1) the 6 tasks of the Observation Survey; (2) Dolch word recognition test; (3) Yopp-Singer test of phonemic awareness; (4) a pseudoword decoding task; and (5) a phoneme deletion test.

Students in the modified Reading Recovery model exited sooner and sustained gains comparable to the children who exited from the standard Reading Recovery program. The authors credit the gains in phonological development to a greater focus on
word analysis and less reliance on context cues. Results suggested that the manipulation of phonograms as a part of daily instruction improves the focus on word analysis and orthographic processing. Results support systemic phonological instruction for at-risk learners.

Using a quasi-experimental research design, Center, Wheldall, Freeman, Outhred, and McNaught (1995) evaluated the effectiveness of the Reading Recovery program in ten schools in New South Wales. Students from five schools offering Reading Recovery were randomly assigned to Reading Recovery or a control group. Students were measured at timed intervals: pretest, 15 weeks later as a posttest, again 15 weeks later as short-term maintenance, and again 12 months later as medium-term testing. Observation Survey and five standardized tests were used as assessment measures. Analyses compared Reading Recovery to control students at all four times, and control students and comparison students the first three times. When compared to control students at the end of 15 weeks, Reading Recovery students were stronger in text reading, but not phonological skill. At pretest, the discontinued Reading Recovery students were superior to not successful students in phonological tests, but no other measures. The Reading Recovery group scored higher on a number of diagnostic procedures, but gains were not sustained over a 30-week time period. An evaluation after one year revealed that 35% of the students benefited, 35% did not sustain gains, and 30% would have improved without the intervention as compared to control students who did not receive the intervention. The research suggested that Reading Recovery does improve phonological abilities of participants, that students with lower metalinguistic abilities are less likely to succeed in
the program when compared to peers with better metalinguistic skills, and that the program should place a heavier emphasis on phonics.

Sylva and Hurry's (1996) longitudinal study of almost 380 participants from various English schools included Reading Recovery students, phonological intervention students, and control group students. Reading Recovery and a Phonological Intervention Training were compared over two years in 63 schools in the UK: 22 Reading Recovery schools, 23 Phonological Intervention, and 18 control schools. The instruments were: British Ability Scale Word Recognition test, Neale Analysis of Reading, Observation Survey, a phonological awareness measure, British Ability Scale Spelling, and a running record of text reading leveled like Reading Recovery text levels (1-26). The 89 Reading Recovery students were compared to the 90 Phonological Intervention students and both groups were compared to 200 control students within the same schools and between other schools.

During the first and second years of the study, Reading Recovery students made stronger gains in the reading and writing tasks than the control group students. Although the Phonological Intervention group made significant gains in phonological ability than the control group, this was the only area of significant gain for this group in the first year. During the second year, the Phonological Intervention group showed no significant gain in scores from the control groups within the same schools, but did make significant progress in comparison to control students from other schools. Cost effectiveness analysis revealed that although Reading Recovery was more expensive the first year, the
student achievement was also greater. Control students needed support during the second year.

These researchers found that Reading Recovery students made and sustained greater gains in literacy achievement than did the phonological intervention students. Although this is true, the gap diminished during the second school year. With regard to a subgroup of ‘Free’ lunch program participants, they found Reading Recovery to be “particularly effective” (p. 62).

Stahl, Stahl, and McKenna (1999) studied phonological and orthographic processing in Reading Recovery to determine whether the program promotes metalinguistic awareness. The participants were 11 students receiving Reading Recovery and 19 students in the control group. Two Observation Survey tasks (Letter Identification and Hearing and Recording Sounds in Words), a pseudoword test, and Yopp-Singer Test of Phonemic Segmentation were measures used to compare the two groups. However, no significant differences were found between the two groups on pre-test measures, but the control group scored higher on all tasks. An analysis of covariance procedure revealed significant effect for treatment for Hearing and Recording Sounds in Words, Letter ID, and the Yopp-Singer test. The pseudoword test was given to the 6 discontinued students who showed abilities equivalent to normally achieving first-graders. The researchers concluded that Reading Recovery students learn phonological awareness and phonological recoding during the Reading Recovery program.

The Reading Recovery program has been the subject of controversial debate regarding phonics instruction, has been greatly misrepresented in the media as a program
with “roots in whole language,” and has been criticized for “downplaying the importance of phonics,” stating that letters and their sounds play a small role in the program (Los Angeles Times, March 12, 1999, p. B3, Helefand & Smith). The program has been accused of “helping struggling first-graders guess at words largely from looking at the pictures and seeing them in similar phrases over and over” (Los Angeles Times, November 2, 1998, p. B6, Pyle). Reading Recovery includes phonemic elements throughout the daily lesson, and “Reading Recovery teachers do [capitals] teach children about letters, sounds, and words” (Askew, Fountas, Lyons, Pinnell, & Schmitt, 1998).

The following sections describe phonemic development in Reading Recovery, more specifically the use of Elkonin’s boxes, an important instructional component in the program.

**Phonemic Awareness in the Reading Recovery Lesson**

This study involved measuring the gains that students make in their ability to hear and record sounds in a dictated-words task in the Reading Recovery program. The Hearing and Recording Sounds in Words task, the dependent variable in this study, is a measure of phonemic awareness. The Hearing and Recording Sounds in Words task “. . . directs the attention of teachers and children to phonemic awareness, a current emphasis in the research literature” (Clay, 1993a, p. 65). Within the daily Reading Recovery lesson, the teacher provides opportunities for the child to engage in phonological practices. “Letter/sound knowledge, phonological awareness, strategies for monitoring by sound/letter relationships and searching for letter/sound cues are developed
across the Reading Recovery lesson. .” (The Ohio Report, 1996, p. 32, Reading
Recovery Council of North America). Another Reading Recovery Report (see Askew,
Fountas, Lyons, Pinnell, & Schmitt, 1998), clarified that Reading Recovery teachers do
provide explicit instruction about letters, sounds, and words during reading and writing
within the daily lesson. Explicit phonemic instructional tasks may take place throughout
the daily Reading Recovery lesson. Each of the seven lesson components designed to
enhance purposeful reading and writing abilities may contribute to the child’s new
phonological awareness. The following are examples of how phonological awareness
may take place within each component.

When rereading familiar books (component 1) and taking the running record
(component 2), the child is building fluency with familiar books and may be prompted for
initial letter sounds when a reading miscue reveals a neglect of visual information. Letter
identification or making and breaking (component 3) includes letter work and word work.
The student may learn an unknown letter’s name or work with word pairs to learn a new
word that is similar to a known word. The student practices linking sounds of letters
within a word in sequence, left to right, to learn the new word (e.g., changing the first
letter in known word ‘cat’ to make an unknown or less familiar word such as ‘rat’). This
practice, referred to by Reading Recovery personnel as “Making and Breaking,” is a
planned activity with “ . . . words in isolation” [italics] (Clay, 1993b, p. 44). In making
and breaking activities, the students will be gaining reading and writing knowledge “ . . in
order to become more aware of how to work with what he [sic] knows, to get to new
words” [italics] (Clay, 1993b, p. 44). After much published research on the importance
of phonological awareness, Clay added this important section to her revised book for Reading Recovery teachers to be included as a part of daily lessons (Clay, 1993b).

The writing of a story (component 4) includes writing words in a meaningful sentence or two and includes slowly articulating an unknown word and recording the new word’s sounds into letters. Elkonin’s boxes (described later in more detail) are used to further explore sounds within words that children are learning to write. The cut-up sentence (component 5) includes recreating the written story on a sentence strip by the teacher who also cuts up the sentence into words and into smaller important word parts. Visual information is used to locate parts and place them in order from left to right, reconstructing the written story. Rereading is used to check for visual accuracy and meaningful text.

The new book introduction (component 6) precedes the reading of the new book (component 7). “The introduction to the child’s new book not only supports comprehension, but also extends children’s ability to use word recognition and grapho-phonemic skills” (Fountas & Pinnell, 1999, p. 10). During the book introduction, the teacher may call attention to known and unknown words in the text. “Locating words helps children focus on visual aspects of words, again making the grapho-phonological relationships more available to them” (Fountas & Pinnell, 1999, p. 11). It is an exercise in the ability to link sounds within a word to the visual patterns of the word. When reading a new book for the first time, the teacher may support the child’s learning by helping the child notice inaccurate reading and to further support grapho-phonological relationships, it may be necessary to call attention to letters in the beginning, end, and/or
the middle of words. Within the day-to-day lessons, the Reading Recovery teacher cautiously selects books within a gradient of difficulty, selecting those that have less predictable text as the program progresses. “This requires that the children use increasing amounts of visual information to recognize words, thereby increasing their reliance on orthography as they progress through the program” (Stahl, Stahl, & McKenna, 1999, p. 29).

As in the above examples, knowledge of letters and sounds is acquired throughout the Reading Recovery lessons’ reading and writing opportunities. DeFord (1994) revealed:

...what the students in this study could write and aspects of phonological features they could use to problem-solve in writing began to aid their problem-solving as readers. What they could read eventually began to inform their problem-solving in writing. (p. 51)

The depth (or scope) of each task within the lesson supports the growth and use of phonemic awareness to occur. As clarified by DeFord (1994), it is possible to learn about phonemics throughout the reading and writing of the daily lesson. There are good opportunities for the teacher to explain and reinforce phonemic skills during the writing portion of the daily lesson, where hearing and recording sounds in words (Elkonin’s sound boxes) are used to support a student’s ability to hear sounds, in order from left to right, across words to be written (see Clay, 1993b). During the writing portion of the lesson, the child and the teacher work together to develop and compose a story (usually a
short sentence or two) from the child’s language and experiences. The teacher supports the child’s attempts by closely monitoring and correcting all attempts made by the child, being careful to supply the letters needed but unknown to the child. The Elkonin box supports the awareness of sound sequence in words. In the next section, the use of the boxes in lessons is described.

Elkonin’s Boxes in Reading Recovery.

To facilitate hearing sounds and then recording them in words children wish to write during the Reading Recovery lesson, Elkonin’s box technique was adapted as part of the writing component of the daily lessons (DeFord, 1994). When developing the Reading Recovery program, Clay (1998) was well aware of students who could not hear the sounds across the words they wished to write. She used Elkonin’s work to address these needs. Clay (1998) stated:

. . . we benefited from his [Elkonin’s] suggestion that children would develop their phonemic awareness by writing, hearing the sounds in the words they needed to write. Hearing the sounds was the hard part of the task. Since then, experimental research has documented phonemic awareness as a critical variable at an early stage of reading. (p. 147)

Elkonin’s Boxes in the Daily Lesson.

The task has been to teach children that a good way to write new words in English is to “. . . hear the sounds within words” (Clay, 1993b, p. 32). The Elkonin method has
been adapted in Reading Recovery as the student writes the letters that correspond to the sounds heard instead of using letter tiles. The student transfers the word back into the story that he or she is writing. During the writing portion of the lesson, the teacher may ask the child to record sounds that he or she hears in a word in the story. Changes that can occur within an individual program as the child progresses in hearing and recording sounds in words include the following:

1. Gets some phonemes, any position
2. Gets consonants, and in left-to-right order, and most letters with some independence
3. Gets most words by independent analysis using phonological and orthographic knowledge. (1993b, p. 17)

The teacher uses the Elkonin technique to reinforce new phonemic learning. The teacher selects words or parts of words from the child's made-up story for use with the Elkonin technique. The boxes are designed to help the child analyze the sounds of a new word and to put the sounds together in order to create the new word. The teacher's decisions are guided by the child's current ability to hear and record sounds in words.

To begin, Clay suggested hearing the syllables within words and after syllabic mastery, the child is expected to hear the sounds within words (1993b). A few small pictures of simple words can be used with counters (not letters) at first. The teacher helps the child to move a counter with each corresponding sound within the word. A long horizontal box is cut into equal-sized squares, one for each sound (not letter). First, the child is expected to hear the sounds, and move one counter per sound in order of left to
right across the sound boxes. At first, the teacher works with the child and models the behavior.

Upon demonstrating complete coordination between sounds and movement across the page, the pictures are taken away, and only the word that the child wants to write is used. The child articulates the word slowly, moving a counter for each sound across the word, but now the corresponding letter is placed into the box that corresponds to the sound heard. Although the child works across the word, left to right, the teacher accepts the sounds and corresponding letters attempted by the child, in any order. “The focus is on hearing sounds and clusters of sounds, and finding some way to record them in letters” (Clay, 1993b, p. 33). The teacher gives any letters not heard, and works with the child on this task daily (usually two to three words daily) until the child is ready for some advanced learning.

The student’s ability to record every sound in order, across the word, letter boxes (a box for each letter, not just for each sound) is the next important shift. The teacher explains this shift to the child and supports the child by articulating the word, locating similar sound segments in known words (‘-er’ in ‘mother’ to write ‘monster’), and providing additional help for unusual words.

Eventually, the child is expected to work across the word without boxes. This later stage allows for the teacher’s support in articulating, stressing, or exaggerating sounds that need emphasis.

The processes of reading and writing, which include hearing and recording sounds in words, are also linked, in that they all must make sense to the learner. “The child in
thinking, in oral language, in reading for meaning, and in early writing is motivated to make the world make sense. . . . Somewhere in the centre [sic] of all his [sic] learning activities, the child judges this present experience in terms of its meaningfulness to him [sic] and to his [sic] theories of the task” (Clay, 1986, p. 767). The Reading Recovery lesson allows opportunities for the child to use meaningful information in all parts of the lesson. Appendix E contains a child’s writing composed with the use of Elkonin’s boxes.

Research on the Use of Elkonin’s Boxes in the Daily Lesson.

Student growth in the ability to hear and record sounds in words, and recording the sounds’ corresponding letters is assessed annually in the Reading Recovery program (Executive Summary: 1984-1998, Reading Recovery Council of North America, 1999). The mean score on the Hearing and Recording Sounds in Words task for 72,572 participants in the fall of 1997-98 was 7.37 and the spring mean score was 34.96 out of a possible score of 37 (Reading Recovery Council of North America, 1999). The ability to hear and record sounds may also influence the participants’ scores on the writing vocabulary task, an assessment in the number of words children can spell correctly within 10 minutes (see Clay, 1993a). In the 1997-98 school year, the 72,548 program children scored a mean of 4.97 words in the fall writing vocabulary task. In the spring, the mean number of words the children could write was 50.69 (Reading Recovery Council of North America, 1999).

The value of Elkonin’s boxes during lessons has been affirmed by DeFord’s (1994) descriptive study of 12 Reading Recovery students. The writing lessons of 6
high-progress and 6 low-progress students were examined. Four teachers taught 3
children each. Students’ written text as part of the daily lesson, videotapes of lessons,
Observation Survey as pre- and posttest scores, and teachers’ records were gathered and
analyzed. Results suggested that students make links across the reading and writing
portions of the lesson and the teacher aids in helping students to make these links. The
higher-outcome children learned to ‘assign a place value’ to phonemes articulated across
the words in their stories more so than the lower outcome students, who were more apt to
share the pen with the teacher. Also, the effective teachers allowed more time for writing
in early lessons, selected new books that complimented and extended the student’s
already existing knowledge of print, and helped to emphasize the importance of hearing
sounds in the words that students wished to write during their lessons. Students who used
the Elkonin boxes frequently and efficiently in their daily writing portion of the lesson
had above-average scores on the Observation Survey tasks (1993b).

Summary

Although progress has been made in educating African-American students, we
know that there exists a gap between their achievement levels and those of Caucasian
children in U.S. schools. We know that students who begin their academic careers with
low levels of achievement tend to stay low in their level of academic success. Low SES
students enter with fewer skills than their non-low SES counterparts and achieve at a
lower level. Early intervention is necessary to provide a chance for the academic success
of our lowest achievers, most especially the low SES African-American population.
Throughout the last century, remediation has been a traditional approach for helping students with low literacy achievement. We learned a great deal about students with low abilities; but typically, the additional help was not effective. Labeling students with disabilities has increased from 1977 to 1995 at a rate of 47%, but the total student population in the same span of years has decreased by 2% (National Center for Education Statistics, 1997). Early intervention was shown to have promise for redirecting the years of ineffective retention and remedial services. One program, Reading Recovery, has documented considerable evidence of success in many different educational settings. Many factors contribute to the success of Reading Recovery: the training model for teachers, the daily one-to-one lessons, the systems intervention approach, and the strong theoretical base from which teachers operate.

The research previously cited is evidence that students do not have equal advantages within our school systems. Perhaps support for the cultural differences of our students can help to reduce the overrepresentation of minority students in special programs. Although Reading Recovery has a high success rate, 81% of program children discontinued (Reading Recovery Council of North America, 1999), which may mean Reading Recovery may not be the answer for all children. We need to know more about the particular demographic groups’ successes in this early intervention program, and that information, to date, is insufficient.

Although Reading Recovery has been replicated successfully throughout the United States and in six other countries and has demonstrated positive results across a wide variety of geographic locations, there exist no serious studies regarding phonemic
awareness with an in-depth look at the achievement of subgroups of the children served.

The focus of this study was the comparison of three demographic groups’ achievements in the Reading Recovery program based on the gains the children made in their ability to hear and record sounds in words.
CHAPTER 3

METHODOLOGY AND PROCEDURES

The purpose of this study was to examine the degree to which low socioeconomic (SES) African-American students improved their phonemic awareness abilities as participants in an early intervention program. The intervention, Reading Recovery, is designed to provide daily (one-half hour) one-to-one tutoring by a specially trained teacher. The goal of Reading Recovery is to help initially struggling children in reading so that they catch up with their peers.

Reading Recovery participants, categorized into demographic groups, were assessed using a measure of phonemic awareness upon their entry into and exit from the Reading Recovery program. The Hearing and Recording Sounds in Words task, one of six tasks in the Observation Survey of Early Literacy Achievement (Clay, 1993a), was the phonemic awareness measure.

In this chapter, I describe the design for the research, procedures for Reading Recovery participant selection, population and sample selection, variables of interest, instrumentation, and procedures for analyzing data.
Research Design

Achievement data were collected for Reading Recovery participants (N=2,787) in one Midwestern state during the 1996-97 school year. Three important subgroups (‘African-American students with Low SES,’ ‘Other Low SES’ participants, and ‘Non-low SES’ students) were compared. These three subgroups served as three levels of the independent variable ‘Group.’ The students were also categorized into one of three groups according to the outcome of the program. The second independent variable ‘Result’ had three levels (Discontinued Status, Not Discontinued Status, or Nonprogram Status).

The Hearing and Recording Sounds in Words task, designed by Marie Clay (1993a), is a measure of phonemic awareness. The difference in students’ scores on Hearing and Recording Sounds in Words was derived by subtracting program entry scores from exit scores on a parallel form. The absolute growth or gain scores served as the dependent variable ‘Gain.’

Students’ classifications into demographic groups and program outcomes were based on data reported to the Reading Recovery National Data Evaluation Center, where the entry scores and exit scores for the phonemic awareness measure, Hearing and Recording Sounds in Words (Clay, 1993a), were likewise reported.

Reading Recovery National Data Evaluation Center

The Reading Recovery National Data Evaluation Center is responsible for the collection, analysis, and distribution of the research data on all Reading Recovery children. The National Data Evaluation Center does systematic editing and quality
control of all Reading Recovery data. Data are collected at children’s entry into and exit from the program as well as at the end of the year for every child served by trained Reading Recovery personnel. Instead of selecting a small group of participants or randomly selecting some portion of participants, the National Data Evaluation Center carefully collects, records, and archives the information gathered on all of the program’s participants. The total number of children enrolled in the Reading Recovery program from the pilot year in Columbus Ohio, 1984-85 to the end of the school year 1997-98 across the United States was 559,184 (Reading Recovery Council of North America, 1999). Training is provided by university personnel so that every new Reading Recovery teacher knows how data are gathered and reported. Thus, in a systematic and rigorous way, the individual teachers document and report the effectiveness of Reading Recovery for each student. Site reports, state reports and a national report are prepared and published annually. (Copies of the national report, Executive Summary, are available from the Reading Recovery Council of North America.)

Askew, Fountas, Lyons, Pinnell, and Schmitt (1998) report the general procedures for data collection which can be found in Appendix B. The scan form includes appropriate handling and marking instructions as well as directions for completing each section. See Appendix C for a copy of the scan form.

Reading Recovery Population

New Zealand Child Psychologist, Marie M. Clay (1993b), designed Reading Recovery to assist readers in the lowest 20% of the first-grade class; the program is not for everyone. Clay stated:
Most children (80 to 90 percent) do not require these detailed, meticulous and special Reading Recovery procedures or any modification of them. They will learn to read in classroom programmes of many different kinds. For a few children individual and consistent tutoring with these special procedures introduced after one year of instruction may well prevent the development of a pattern of reading failure. (p. viii)

Only the lowest literacy achievers receive Reading Recovery support. Selection for participation is a systematic procedure conducted by trained Reading Recovery personnel. The following section explains how students are selected to participate in the program.

Reading Recovery Student Selection

We know that simple observation at the end of the first year of instruction can reveal who the at-risk readers are (Clay, 1993b). The Reading Recovery program utilizes screening measures, including the six literacy tasks that comprise Clay’s Observation Survey of Early Achievement (1993a), in order to select the lowest literacy achievers who will participate in the intervention program. Children who are selected for program participation in the fall of the year have the least amount of literacy knowledge in their respective classrooms. Students who also qualify but do not gain initial entry into the program must wait for their peers who entered first to exit, before they can take their turn at participating in the program.
Other important pieces of information are also used to assist in selecting program participants. For example, classroom teachers report their observations of the children for further consideration in selecting students. Alternate ranking procedures by first-grade teachers (and sometimes with the influence of the kindergarten teachers) are used to determine each classroom’s lowest 20% and these children receive the Observation Survey in the fall. Sometimes Reading Recovery teachers may choose to give the Observation Survey to the lowest 30% of the first-grade class as determined by the alternate rankings to insure the lowest 20% of the first-grade class is obtained. Those with the lowest Observation Survey scores enter the program first.

Teachers involved in Reading Recovery training receive a copy of Guidelines and Standards for Reading Recovery, which explains this process in detail. Their training also includes extensive instruction regarding the selection of students for the program. This selection process is universal; that is to say, all participating schools use this process in selecting students.

Sample Selection

The most current and completed school year for which the necessary information to conduct this study was available from the National Data Evaluation Center at the beginning of this study was the 1996-97 school year. The sample is from one state’s 1996-97 data base, where 1,078 teachers in 769 schools in 285 districts from major cities, suburbs, and smaller rural areas participated in the program. In the 1996-97 school year, 10 new teacher leaders were trained, 20 new teachers were trained, and
the program reached 7,280 students. Findings may be generalized to states with similar Reading Recovery participants.

Of the 7,280 students available, 2,787 were participants in this study. Criteria for selecting 2,787 participants from the statewide 1996-97 database of 7,280 participants was threefold: ‘lunch status,’ ‘missing data,’ and ‘time of entry.’

**Lunch Status, Missing Data, and Time of Entry**

The variable ‘Lunch Status’ was important to this study, as it was used to determine the socioeconomic status of the participants. ‘Socioeconomic status’ is defined by information about the participants’ school lunch programs as defined by government school lunch assistance, i.e., ‘Free,’ ‘Reduced,’ or ‘Regular.’ ‘Free’ means that students pay no money to receive school lunch. ‘Reduced’ means that students pay some portion, but not the total purchase price, to receive school lunch. ‘Regular’ means that students pay the total purchase price to receive school lunch. The scan form has a place to document four levels of lunch cost: regular, reduced, free, or information unavailable. Because 599 students’ lunch cost were categorized as ‘information unavailable,’ these students were removed from this study. The existing categories of ‘Lunch Status’ were described at three levels: ‘Regular’ (school lunch is purchased at the regular price), ‘Reduced’ (school lunch is purchased at a portion of the regular price), and ‘Free’ (students pay no portion of the school lunch fee).

Seventeen additional students were removed from this study because of necessary data missing from their scan forms. Figure 3.1 displays how a total population of 559,184 was reduced to 2,787 for the purposes of this study. The
following explanation describes how time of entry into the program influenced student participation in this study and includes a table noting participants’ month of entry into the program. Table 3.2 follows the information regarding time of entry and presents the number and percent of students in this study by socioeconomic status (SES), based on participants’ existing Lunch Status.

The students’ time of entry is critical to the interpretation of the results and must be utilized as part of the research design. Students are selected to participate in the Reading Recovery program based on their literacy abilities. The lowest literacy achievers receive the program; those with the lowest scores on the six tasks as described in An Observation Survey of Early Literacy Achievement (Clay, 1993a) enter the program first, that is, at the start of the school’s calendar year. Because this study focused on lowest literacy achievers, only children who entered the program at the start of the calendar year were selected. All of the state’s schools participating in the Reading Recovery program in 1996-97 had a traditional school-year calendar, so the lowest achievers entering the program in late summer or autumn were included in this study.

As each student makes the desired achievement level and exits the program, another student gains entry, therefore students can enter the program throughout the school year on any day that school is in session. This study included only those students who entered in the fall of the year (July through November). Some districts want to begin the program as early as possible to give the lowest literacy achievers an extra advantage; therefore, some students may have enrolled in the program prior to the start of the district calendar. Other districts may have Reading Recovery teachers in
their training year. Teachers new to Reading Recovery begin their training year with intense instruction on student selection and assessment. Students are alternately ranked by the classroom teacher, and the lowest achievers based on teacher recommendation complete the six tasks of the Observation Survey of Early Literacy Achievement (Clay, 1993a). Teachers in training need to learn how to select and assess students as well as begin lessons, all of which is time consuming, which is why some districts begin training for teachers before the traditional school year begins in the fall.

While the students who are selected first participate in the program, those who will be selected next receive only classroom instruction. New learning taking place in the classroom creates a different educational experience for waitlisted entrants when compared to those who enter the program at the start of their first-grade year. Because students waiting their turn to participate have received additional instructional time in the classroom setting, it is quite possible that progress was made in their abilities to hear and record sounds in words. Therefore, to control the influence of the first-grade classroom instruction on entry scores into the Reading Recovery program, only children who enter early in the school year (July through November) were included in this study.

Beginning in July encompasses students from districts that opted for an early start in the new school year. November allows for inclusion of participants whose teachers are undergoing their first year of Reading Recovery training. Teacher training takes time. Therefore, students whose teachers are new to the program may start later than their peers tutored by an already trained teacher. By excluding students with an entry date from December through May, the number of students in this study was reduced from the total number of 7,280 participants statewide to 3,403 (excluding 3,877
students). ‘Time of entry’ is the variable name and is categorized by a month of the year with 11 levels of measure (with June excluded). The lowest achievers must enter the program earliest in the calendar year, which is why this study included the lowest achievers participating in Reading Recovery around the state. Table 3.1 presents the number and percent of students in this study by entry into the program, where entry is based upon the month the child began receiving service in the Reading Recovery program.

<table>
<thead>
<tr>
<th>Month</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>6</td>
<td>0.2</td>
</tr>
<tr>
<td>Aug.</td>
<td>896</td>
<td>32.2</td>
</tr>
<tr>
<td>Sept.</td>
<td>1,732</td>
<td>62.1</td>
</tr>
<tr>
<td>Oct.</td>
<td>55</td>
<td>2.0</td>
</tr>
<tr>
<td>Nov.</td>
<td>98</td>
<td>3.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2,787</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 3.1 Number and Percentage of Students by Month of Entry.

The following table shows the number and percent of students participating in this study by lunch status. The lunch status categories are: free, reduced and regular. The following section describes how the lunch status variable and race variable created the levels of the demographic group variable used in this study.

81
<table>
<thead>
<tr>
<th>Status</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free</td>
<td>1,150</td>
<td>41.26</td>
</tr>
<tr>
<td>Reduced</td>
<td>203</td>
<td>7.29</td>
</tr>
<tr>
<td>Regular</td>
<td>1,434</td>
<td>51.45</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2,787</td>
<td>100.</td>
</tr>
</tbody>
</table>

Table 3.2: Number and Percentage of Students by Lunch Status.

Variables of Interest

Reading Recovery is a complex system. Implementation, ongoing training, and documenting data for research are just a few of the many challenges faced by Reading Recovery personnel and their colleagues. All of these issues are beyond the scope of this study; however, an understanding of two issues in Reading Recovery is important to interpreting this study: (1) demographic categorization of participants as based on SES and ethnicity; and (2) categorizing students into program status, including criteria for discontinuing students. Both demographics and program status are considered when categorizing subjects into groups.
Number of Reading Recovery Served Students in the United States from 1984-85 to 1998-99: 559,184

Number of Reading Recovery Served Students in the United States in 1996-97: 109,879

Number of Reading Recovery Served Students in one Midwestern State in 1996-97: 7,280

Number of Reading Recovery Served Students in one Midwestern State in 1996-97 with known lunch status and no missing data: 6,674

Number of Reading Recovery Served Students in one Midwestern State in 1996-97 with a program entry date Aug. to Nov. with all necessary data: 2,787

Figure 3.1. Flow Chart from Reading Recovery Population to Study Sample.
Socioeconomic Status and Ethnicity

‘Lunch status,’ a scan form entry with four categories on the scan form, defined socioeconomic status for this study. The ‘Lunch Status’ categories as listed on the scan form are: ‘Regular,’ ‘Reduced,’ ‘Free,’ and ‘Information not Available.’ Because of the very low number of participants in the ‘Reduced’ lunch category (n=203; 173 white, 22 African-American and 8 from other races), the ‘Reduced’ and ‘Free’ lunch status groups were combined to create the ‘low SES participants’ category. The collapse of these two groups is justified, as children who received either free or reduced lunch obtained financial assistance from the government. Collapsing the levels was advantageous, as it was possible to keep the participants in this study. That is, rather than reducing the number of participants, the categories were collapsed to include all participants. Since the collapsed variables influence the outcome, caution must be used when interpreting the results.

Ethnicity is defined by the category ‘Race.’ The scan form has five categories of ‘Race’: ‘White,’ ‘African-American,’ ‘Native American,’ ‘Asian or Pacific Islander,’ and ‘Hispanic.’ The categories as defined by the National Data Evaluation Center match the five categories of ethnic group classification used in most of our nation’s public schools as reported by the Office of Management and Budget (OMB) and National Center for Education Statistics (NCES) (Bare, Meek, & Frase, 1998). A more recent federal government mandate currently holds schools accountable for an increase of at least five more categories, but at the time of this study, only five categories were mandated by the U.S. Department of Education (Zehr, 2000).
Because of the very low numbers of participants, it was once again necessary to collapse categories. Native American (n=61), Asian or Pacific Islander (n=12), and Hispanic (n=39) were collapsed to be included in the study. Collapsing the levels allowed for all participants to be included in this study, but caution must be used when interpreting the results, as three different categories of race are now included in one category.

The two variables, ‘Lunch Status’ and ‘Race,’ were combined to create the variable ‘Group,’ which categorizes the three major subgroups under investigation in this study. The participants were categorized as follows:

- Low SES African-Americans (African-American students receiving government support) (n=483; 17.33%)
- Low SES Others (all races except African-Americans receiving government support) (n=870; 31.21%)
- Non-low SES (all races not receiving government financial support) (n=1,434; 51.45%).

Table 3.3 displays the number and percent of program participants by ethnicity and socioeconomic status, as defined by government school lunch assistance (‘Reduced’ or ‘Free’ lunch status is categorized as ‘Low SES,’ and ‘Regular’ lunch is categorized as ‘Non-low SES’).
<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Low SES</th>
<th></th>
<th>Non-low SES</th>
<th></th>
<th>TOTAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>808</td>
<td>29.99</td>
<td>1,296</td>
<td>46.50</td>
<td>2,104</td>
<td>75.49</td>
</tr>
<tr>
<td>African-American</td>
<td>483</td>
<td>17.33</td>
<td>88</td>
<td>03.16</td>
<td>571</td>
<td>20.49</td>
</tr>
<tr>
<td>Other</td>
<td>62</td>
<td>02.23</td>
<td>50</td>
<td>01.79</td>
<td>112</td>
<td>04.02</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,353</td>
<td>48.54</td>
<td>1,434</td>
<td>51.45</td>
<td>2,787</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 3.3: Distribution of Reading Recovery Students by Ethnicity and Socioeconomic Status.

In light of current debate surrounding race and racism in our schools and research practices, I will address the presence of the variable ‘Race’ within this study. It is the intent of this study to inform the research that influences our education system by exploring the most efficient way to educate students. In particular, concern is for those students whose backgrounds (socioeconomic status and race) appear to be consistently lowest in achievement, especially the African-American population. I recognized that some students may transgress across two or more levels of the variable ‘Group’ in this study; however, the categories were created to best describe those participants whom current research describes as most in need of academic support. Cornell West raised concern for the “Absurdity of measuring humanity by one’s skin color” (see McGraw, 1997). Although I share West’s concern, as an elementary teacher and researcher, I am most interested in designing a study which helps to explain an
efficient and effective method to teach our children, especially our lowest achievers. The search for such a method urged this study and this research design.

Program Status

The Observation Survey of Early Literacy Achievement (also known among Reading Recovery personnel as the Observation Survey) is administered to each participant twice, sometimes three, and rarely four times. The Observation Survey is administered to report: fall scores, entry scores, exit scores, and spring scores. Participants must receive the Observation Survey in the fall, at point of entry, and at the point of exit from the program. Upon being selected to participate in the program immediately, fall scores double as entry scores. Students not immediately selected to participate in the program will receive the Observation Survey once again at time of entry and at time of exit. If exiting the program in the spring, exiting scores double as spring scores. It is very rare for a child to receive the Observation Survey just two times; fall scores would be entry scores and spring scores would be exit scores. This means the child stayed in the program the entire school year, which would occur only in very extreme circumstances.

Criteria for Discontinuing

The Reading Recovery teacher begins the child’s program with these strengths noted so that valuable teaching time is spent building a self-extending system. With her team of teacher-researchers, Clay found the optimal amount of time for one lesson to be 30 minutes. During that 30-minute time limit, the student and highly trained teacher
could strategically engage in the daily lesson – “actively reading and writing” (Lyons, Pinnell, & DeFord, p. 5). After an average of 12-20 weeks, a decision is reached regarding the child’s status. Reading Recovery students who receive a full program are categorized as program students and are further categorized as either ‘Discontinued’ or ‘Not Discontinued.’ Those who participate in the program but do not achieve program status, are categorized as ‘Nonprogram.’

Teachers must exercise caution when exiting students from the program. Teachers involved in Reading Recovery training receive detailed training of the discontinuing process. The discontinuing process is universal; that is to say, all participating schools use this process in discontinuing students.

**Discontinued Children**

Discontinued students have made accelerated progress as participants in the Reading Recovery program; they meet or exceed average levels of literacy ability and their program is stopped or discontinued. To continue progressing, the discontinued child needs strong literacy support in the classroom. If discontinued, the child is released to the classroom with no further intervention necessary. Discontinuing status is based upon the student’s ability to read at an average classroom level or above, with a self-extending system in place. Self-extending systems require children to function like good readers, approaching texts strategically and improving their reading skills each time they read. When deciding when to discontinue a child Clay (1993b) stated, “There can be no hard and fast criteria because the aim will be to replace a child in a class group in which he can continue to make progress, and this will differ from child to child.
and from school to school” (p. 58). Some other elements to consider (although not exclusive) when discontinuing are: setting — the average of the classroom’s size, and reading level; classroom teacher’s attitude; and how well the Reading Recovery reading and writing strategies carry over into the child’s daily routine in the classroom — self-correction, use of cues, cross-checking, self-monitoring, one-to-one matching, and directional behavior. The Reading Recovery teacher must also consult with the classroom teacher before concluding with a discontinuing decision.

Once the above considerations are taken into account, the Reading Recovery teacher must make appropriate preparations for the child. Clay suggested working in the classroom the last two weeks of the program and observe classroom behavior as well. Should the decision be made to discontinue the child, the Observation Survey must be administered by an independent tester who will analyze strengths, weaknesses, and growth areas compared to previous Observations Survey scores. Teachers involved in Reading Recovery training receive a copy of *Guidelines and Standards for Reading Recovery*, which explains the discontinuing process in detail. Their training also includes extensive instruction regarding discontinuing students from the program. Clay warned that teachers should allow for sufficient time in the program and should apply discontinuing criteria conservatively. “This decision must be weighed up very carefully” (1993b, p. 58). (A program at the time of this study was considered to be 60 lessons, but a few students who made very rapid progress were discontinued prior to receiving 60 lessons. Current guidelines define a program as 12-20 weeks). Classroom teachers and Reading Recovery teachers work with parents to ensure the individual student’s success in reading and writing with a record of success. Of the 559,184
students who have received the Reading Recovery program since 1984, 402,777 (72%) received a full program and 333,387 (83%) achieved ‘Discontinued Status.’

**Not Discontinued Children**

Those who do not meet the criteria for discontinuing are classified as ‘Not Discontinued.’ However, these children are not failures. “The erroneous assumption is often made that these children have failed to make progress on the programme [sic]; that is not so. Although they have failed to achieve the average level for their classes, they may be making steady but slow progress” (Clay, 1993b, p. 86). In fact, ‘Not Discontinued’ status is recognized as a positive outcome (Askew, Fountas, Lyons, Pinnell, & Schmitt, 1999). The Reading Recovery teacher has gained insight into how the child learns, which is new information that can be offered to support further inquiry into the child’s future needs. The ‘Not Discontinued’ children are cautiously monitored by teachers, and if the decision is reached to release the child from the program, other available remediation options are deemed necessary.

**Nonprogram Children**

The Reading Recovery National Data Evaluation Center collects information on every Reading Recovery participant. Most participants establish program status (72% of all U.S. participants to date). Some children may move away before receiving a full program. For others, the school year ends before the program is completed. These children are classified as ‘Nonprogram’ participants.
Status at program exit (‘Discontinued,’ ‘Not Discontinued,’ ‘Withdrawn,’ and ‘Year-end’) helps to qualify the Reading Recovery program’s success rate and determines the students’ levels of program participation (‘Program’ or ‘Nonprogram’) and success (‘Discontinued’ or ‘Not Discontinued’). As each participant nears the end of the Reading Recovery program, a decision must be reached regarding progress made during the program. The decision informs the end result or status of the child’s program, with the goal being that the child will discontinue from the program. A child is discontinued from the program upon successfully meeting program criteria at exit. The variable ‘Program Status’ exists at nine levels within the database (see Appendix C): however, in this study the levels are collapsed from nine to three, using only major program results as follows:

- Discontinued — Children successfully completed the program (n=2,193; 78.69%)
- Not Discontinued — Children completed the program but did not achieve the average reading performance of classroom peers (n=328; 11.77%)
- Nonprogram — Children who were removed from the program before completing 60 lessons (‘Withdrawn’), or did not complete 60 lessons because of the close of the school year (‘Year-end’) are considered ‘Nonprogram’ children, since their program did not include at least 60 or more lessons. There were too few ‘Nonprogram’ participants defined as ‘Year-end’ children (n=3; .11%). Therefore, the ‘Year-end’ children were combined with ‘Withdrawn’ children (n=263; 9.55%) within the level ‘Nonprogram.’

The frequencies and percentages of children in each group under investigation are recorded in Table 3.4. This table clearly demonstrates the distribution of all students
participating in this study by demographic group. The frequencies and percentages of each demographic group are further categorized into program status.

<table>
<thead>
<tr>
<th>Group</th>
<th>Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Low SES African-American students</td>
<td></td>
</tr>
<tr>
<td>• Discontinued</td>
<td>362</td>
</tr>
<tr>
<td>• Not Discontinued</td>
<td>41</td>
</tr>
<tr>
<td>• Nonprogram</td>
<td>80</td>
</tr>
<tr>
<td>Other Low SES</td>
<td></td>
</tr>
<tr>
<td>• Discontinued</td>
<td>695</td>
</tr>
<tr>
<td>• Not Discontinued</td>
<td>122</td>
</tr>
<tr>
<td>• Nonprogram</td>
<td>103</td>
</tr>
<tr>
<td>Non-low SES</td>
<td></td>
</tr>
<tr>
<td>• Discontinued</td>
<td>1,136</td>
</tr>
<tr>
<td>• Not Discontinued</td>
<td>165</td>
</tr>
<tr>
<td>• Nonprogram</td>
<td>83</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2,787</td>
</tr>
</tbody>
</table>

Table 3.4. Frequency and Percentages of Participants in Each Demographic Group by Program Status.
Instrumentation

An Observation Survey of Early Literacy Achievement

Assessments from An Observation Survey of Early Literacy Achievement (Clay, 1993a) were used to measure students’ literacy abilities at entry into and exit from the Reading Recovery program. “The Observation Survey introduces teachers to ways of observing children’s progress in the early years of learning about literacy, and leads to the selection of children for whom supplementary teaching is essential” (Clay, 1993b, p. 1). The six Observation Survey tasks include: Running Records, Letter Identification, Concepts About Print, Word Tests, Writing Vocabulary, and Hearing and Recording Sounds In Words. All six tasks are given to each of the lowest achievers in the first-grade classrooms at the participating school sites. The six scores are not combined, but rather are kept as six individual scores. These scores are used to locate the program children, and are compared to ensure that the lowest achievers receive the program prior to their more capable peers.

The Hearing and Recording Sounds in Words is one of six tasks within the Observation Survey of Early Literacy Achievement used to measure growth in phonemic awareness and was designed to reliably assess the young child’s knowledge of relationships between letters and sounds in words (Clay, 1993a). Teachers participating in the year-long Reading Recovery program training learn how to systematically observe and record reading and writing behaviors of children. The first three weeks of the teacher’s training year are devoted to learning how to record sensitive systematic observations of children’s responses to print related tasks. All
Reading Recovery teachers go through intense training to reliably master the administration of the Observation Survey (Clay, 1993a).

**Hearing and Recording Sounds in Words Task**

The phonemic awareness measure, Hearing and Recording Sounds in Words (Clay, 1993a), consists of five parallel forms and requires that the child listens to a dictated sentence and records each word sound to letter. The task allows the teacher to note what the child understands about phonemic awareness.

The teacher reads the story aloud in its entirety and then dictates the story slowly word by word, noting the child’s directional behavior, letter formation behavior, and any other behaviors that will support the teacher’s understanding of the child’s ability to record sounds. The teacher begins, “I am going to read you a story. When I have read it through once, I will read it again very slowly so that you can write down the words in the story” [italics] (Clay, 1993a, p. 66). A score of one point is given to each sound correctly represented by the corresponding letter(s) for a total of 37 possible points on this assessment of phonemic awareness. For an example, ‘bs’ for the word ‘bus’ receives two points, but a reversed confusion of ‘d’ for ‘b’ would result in only one point for the attempt ‘ds.’ Only the letters with sounds that are heard in the story correspond to points. For an example, ‘toda’ for ‘today’ receives four points, one per letter, but ‘tody’ receives three points, excluding ‘y.’ A scoring chart for each letter in the story is available to the teacher. Forms used at entry are different from those used at exit.
Reliability and Validity.

The six tasks in the Observation Survey of Early Literacy Achievement are reliable and valid test measures (Clay, 1993a). The Hearing and Recording Sounds in Words task has reliability as demonstrated on the following procedures:

- Test-retest coefficients from .73 to .89 for a New Zealand population of children (Clay, 1985)
- Reliability coefficient of .96 as determined using Cronbach’s coefficient alpha (Pinnell, McCarrier, & Button, 1990) for a United States population of children
- A correlation ranging from .84-.88 using the split-half reliability procedure for a United States population of children (Pinnell, Lyons, DeFord, Bryk, & Seltzer, 1994).

The Hearing and Recording Sounds in Words task has validity as demonstrated on a .79 correlation with a words reading task for a New Zealand population of 100 6-year old children (Clay, 1966). No other measure of validity is available for this task.

Administration

Students were administered the Hearing and Recording Sounds in Words (Clay, 1993a) task prior to entering the Reading Recovery program and again at exit from the program. Gain scores served as the dependent variable and were computed by subtracting the entry score from the exit score for each child. The administrator form and student form used for assessment are presented in Appendix D.
Data Analysis

Question 1

Data analysis procedures were designed to organize and describe the data. This section presents the analytical techniques used in this study. Results of these procedures are reported in Chapter 4.

Descriptive Procedures

The first question requested specific descriptors relevant to the three groups of participants (‘African-Americans of Low SES,’ ‘Others with Low SES,’ and ‘Non-low SES’ students) on essential variables of interest in this study. The descriptive statistical technique explored the variables of interest via the mean scores as a measure of central tendency. Frequency polygons were used to summarize, organize, and interpret the quantitative data. The ranges (minimum and maximum scores) and standard deviations were used to further define the variability or spread of the data already summarized by the averages.

Specifically, the four parts of question 1 described the three subgroups of interest on the following program variables: entry scores; exit scores; gains scores; and the total number of weeks as participants in the Reading Recovery program. The length of time a student is in the program is measured by the number of weeks the student participates in daily 30-minute tutorial sessions.
Inferential Procedures

Inferential statistics allow for scientific generalizations about a population using data from samples. The following procedures allow for the generalization about like groups of students based on new information gained from this particular data base. Until now, only methods to describe the data were used, which is a necessary prerequisite to describe and understand the subjects in this study’s sample.

Question 2

Inferential techniques were used to answer question 2. A chi-square test of independence allotted for an analysis of these data as categorized into two important types of information: ‘Group’ (‘Low SES African-Americans,’ ‘Other Low SES’ students, and ‘Non-low SES’ students) and program outcome or ‘Result’ (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’). The chi square test measured differences between the expected number of students in each category and the actual number of students in each category at a .05 level of significance.

Question 3

Inferential statistics were used to analyze question 3. In this study, I categorized the Reading Recovery participants by their demographic groups and their program results and compared the participants’ gains in phonemic awareness as demonstrated in absolute growth in the Hearing and Recording Sounds in Words task (Clay, 1993a). This study investigated the combined effects of ‘Group’ (‘African-American students with Low SES,’ ‘Other Low SES’ students, and ‘Non-low SES’ students) and the
Reading Recovery program ‘Result’ (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’) on performance in a phonemic awareness task. ‘Group’ and ‘Result’ were the independent variables in this study and gains made in the phonemic awareness, ‘Gains,’ was the dependent variable.

Because I investigated the combined effects of more than one independent variable, the results were analyzed by means of a multifactor analysis of variance. The multifactor analysis of variance tested whether there was a significant difference between the performance of the subjects from different demographic groups, whether there was a significant difference between the performance of the subjects because of program outcome or result, and whether the two independent variables, ‘Group’ and ‘Result,’ had a combined effect on the performance of the subjects. This interest in both independent variables required a two-way ANOVA (3X3).

The effects investigated by the first analysis and the second analysis are referred to as the ‘main effects,’ whereas the third, the combined effect, is referred to as ‘the interaction effect.’ The end products of these analyses were three F ratios, two of which indicated the significance of the two main effects (subgroup and program result), and the third, that of the interaction effect (combined effect of subgroup and program result). The F ratio determined that a difference did exist, and Scheffe test of statistical difference indicated significant mean differences of the groups under investigation. The .05 level of significance was used for this study, which means risking a 5% chance of rejecting a null hypothesis that should be retained. (The .05 level is a moderate level of significance and is used quite frequently in education studies.)
Assumptions

An underlying assumption of this research is that, although no two Reading Recovery students share the same lesson experiences, the program has influenced each participant's ability to hear and record sounds in a dictated story. Although the daily lessons are consistent day to day for all participants, no two students read the same list of books, write the same sentences, learn the same new letters, new sounds, and new words throughout their individualized programs at the same time or pace. I assumed that, despite the differing yet similar instructional experiences, the Reading Recovery program has influenced the subjects' abilities to hear and record sounds in words.

Another assumption in this research is that the total number of weeks in the program, a measure of the length of time in the program, is an accurate indicator of time spent in the program. Another measure, the total number of lessons, would also reveal the length of time in the program. The number of weeks is viewed by Reading Recovery personnel as the superior indicator of time spent in the program.

Limitations

This study had the following limitations.

One limitation to this study has been the lack of random selection of participants. The lowest literacy achievers cannot be randomly selected to participate in the Reading Recovery program; they are selected for participation in accordance with program guidelines. Caution must be taken when generalizing to other at-risk populations, especially those outside of the Reading Recovery intervention.
This study included only the at-risk literacy learner, since average and above-average readers are not a part of the Reading Recovery program. Only the lowest achievers upon entry into first grade may participate. Subjects were participants in one Midwestern state’s 1996-97 Reading Recovery program. Any assumptions about the subjects’ performances cannot be generalized to older or higher achieving literacy learners.

In this region and at the time data were collected for this study, teachers were not specifically directed to assess students’ English language proficiency at entry into or exit from the Reading Recovery program. It was assumed that participants understand English as demonstrated in their ability to follow the directions during the Observation Survey of Early Literacy Achievement (Clay, 1993a). This study cannot be generalized to students with limited English proficiency or non-English speakers.

Participation in the program at the district level is the decision of the district personnel. Districts and schools within districts cannot be randomly selected to participate in the program. Individual school boards must decide whether their district will participate in the program. The boards must also select which of the district’s schools will receive the program and the amount of service each school will receive. Caution must be taken when generalizing to other schools and districts.

The Hearing and Recording Sounds in Words task (Clay, 1993a) is one measure of phonemic development. There are others such as the Yopp-Singer Test of Phoneme Segmentation (Yopp, 1988). Phonemic deletion tasks and isolated sound-symbol tasks, for example, are other ways to assess phonemic awareness. The Hearing and Recording Sounds in Words task (Clay, 1993a) is the only instrument used to measure phonemic
awareness in this study and is an integral part of the Reading Recovery program because the data were available for all subjects. This study was not a comprehensive view of reading as it only included one dependent variable, the Hearing and Recording Sounds in Words task.

Extreme differences among cell sizes influenced the results of this study. The ‘Nonlow SES’ students with ‘Discontinued’ program status was the largest cell with 1, 136 (40.76%) of the subjects. The smallest cell, the ‘Low SES African-Americans’ with ‘Not discontinued’ program status had 41 (1.47%) of the subjects.

The at-risk participants’ scores on the Hearing and Recording Sounds in Words task (Clay, 1993a) at entry into and exit from the intervention program may not be generalized to similar groups of Reading Recovery students. Further replication of this study to other geographic areas may be necessary before reliable generalizations can be made to other populations.

Summary

Previous research suggests that students of low SES, especially African-Americans, typically experience greater disadvantages in learning to read when compared to other demographic groups. Research conducted thus far on the Reading Recovery program suggests that program participants make gains in literacy achievement (see the Reading Recovery Executive Summary: 1984-1998, Reading Recovery Council of North America, 1999). This study categorized the Reading Recovery participants by demographic groups and included descriptive and inferential statistics for comparisons on variables of interest as stated in the research questions.
CHAPTER 4

RESULTS

The focus of this study was on three important demographic subgroups (‘Low SES African-American’ participants, ‘Other Low SES’ participants, and ‘Non-low SES’ participants) and compared variables related to literacy learning as the subgroups participated in an early intervention program. A total of 2,787 first-grade children from the early intervention program during the 1996-97 school year across one Midwestern state were subjects for the study. Reading Recovery participants were categorized into groups based on socioeconomics and race. Participants from three different demographic groups were compared: ‘Low Socioeconomic Status (SES) African-American’ students, ‘Others with Low SES,’ and ‘Non-low SES’ students. Results are presented in this chapter with descriptive results presented first, followed by inferential results. A summary of results concludes this chapter.
Descriptive and Inferential Statistics

The first three of the four parts of question one required descriptive statistics. The fourth part of question one and all of question two required inferential statistics.

**Question 1**

The first set of research questions involves descriptive statistics to systematically organize and summarize important information regarding this data set about the three subgroups (‘Low SES African-American’ students, ‘Low-SES’ students, ‘Non-low SES’ students):

- On average, what are the three subgroups’ program entry scores on the hearing and recording sounds in words task?
- On average, what are the three subgroups’ program exit scores on the hearing and recording sounds in words task?
- On average, what are the three subgroups’ program gain scores on the hearing and recording sounds in words task?
- On average, how long are each of the three subgroups’ programs (as measured by the total number of weeks in program)?

**Entry Scores**

The first part of the first question inquired about how the three demographic groups compared at entry on the Hearing and Recording Sounds in Words test (possible score 0-37). The scores demonstrate the participants’ understanding of phonemic awareness prior to participation in the program. Table 4.1 provides the means, standard
deviations, minimum scores, and maximum scores for the demographic groups’ mean entry scores.

<table>
<thead>
<tr>
<th>Demographic Groups</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min. Score</th>
<th>Max. Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES African-Americans</td>
<td>483</td>
<td>7.15</td>
<td>6.38</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>Other Low SES Students</td>
<td>920</td>
<td>6.94</td>
<td>6.60</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>Non-low SES Students</td>
<td>1384</td>
<td>8.28</td>
<td>6.73</td>
<td>0</td>
<td>35</td>
</tr>
</tbody>
</table>

Table 4.1: Entry Score Means, Standard Deviations, Minimum Scores, and Maximum Scores for Demographic Groups.

Note that the ‘Non-low SES’ students’ average entry score is the highest at 1.13 points above the ‘African-American Low SES’ students and 1.34 points above the ‘Other Low SES’ students. The minimum score for each group is 0. The maximum scores for the groups is either 34 or 35 out of a maximum total of 37 points on the task. The minimum scores, maximum scores, and mean scores at entry for each group are roughly similar, demonstrating no drastic differences at entry among the three demographic groups’ Hearing and Recording Sounds in Words scores.

Figure 4.1 illustrates the distribution of entry scores on the Hearing and Recording Sounds in Words task by demographic group. This percent polygon shows the
Figure 4.1: Entry Hearing and Recording Sounds in Words Score by Demographic Group
similarities among the three demographic groups’ scores at entry. The distribution of students’ entry Hearing and Recording Sounds in Words scores is positively skewed making the mean the highest score among the three measures of central tendency. The median is a better single descriptive measure for a skewed distribution (Hopkins, Glass Hopkins, 1987). The median entry score is 5 for the Low SES African-Americans, 5 for Other low SES participants and 6 for Non-low SES students. The mode, or most frequent scores are: 0 for Low SES African-Americans (13%); 0 for Others with Low SES (12%); and 4 for Non-low SES (7.5%). All three demographic groups had few individuals with relatively high scores. Some similar ‘peaks and valleys’ occur in the positively skewed distribution, as the three tails taper off to the right.

Exit Scores

The second part of question one inquired into how the three demographic groups compared at exit on the Hearing and Recording Sounds in Words task. Table 4.2 provides the means, standard deviations, minimum scores, and maximum scores (possible score 0-37) for each demographic group.
<table>
<thead>
<tr>
<th>Demographic Groups</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min. Score</th>
<th>Max. Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES African-Americans</td>
<td>483</td>
<td>32.05</td>
<td>6.40</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Other Low SES Students</td>
<td>920</td>
<td>32.68</td>
<td>5.77</td>
<td>4</td>
<td>37</td>
</tr>
<tr>
<td>Non-low SES Students</td>
<td>1384</td>
<td>33.85</td>
<td>4.11</td>
<td>2</td>
<td>37</td>
</tr>
</tbody>
</table>

Table 4.2: Exit Score Means, Standard Deviations, Minimum Scores and Maximum Scores for Demographic Groups.

It is interesting to note that the exit scores, on average, are only slightly higher for ‘Non-low SES’ students when compared to ‘Other Low SES’ (difference of 1.23 points) and ‘African-American Low SES’ students (difference of 1.8 points). The maximum scores for all three groups is 37, which is the total number of possible points. The minimum score at exit for ‘African-Americans with Low SES’ is zero, differing by two points at exit from ‘Non-low SES’ students and by four points at exit from ‘Others with Low SES’.

Figure 4.2 illustrates the distribution of exit scores on the Hearing and Recording Sounds in Words task by demographic group. This percent polygon shows the similarities among the three demographic groups’ scores at exit. A similar peak occurs at the highest possible scores for all three demographic groups, as all three tails of the negatively skewed distribution taper off to the left. The differences among the three groups’ exit scores are minimized due to the ceiling effects created by the students’ scoring the highest possible score (37) at exit. In fact, when considering the percentage
Figure 4.2: Exit Hearing and Recording Sounds in Words Score by Demographic Group
of students at each score 0-37 at exit, the greatest percentage (or the mode) was tied at the
scores of 36 and 37 with 16.8% of Low SES African-American students accounted for at
each level. The greatest number of students within the Other Low SES category had
scored 36, which represents 19.3% of the subgroup (13.8% scored 35 as well as 37). The
score with the most members from the Non-low SES group was 36 with 23.2% of the
subgroup represented (19% scored 35 and 17.8% scored 37). The median scores at exit
for the three groups are: 34 for Low SES African-Americans, 34 for Other low students,
and 34 for Non-low SES participants.

Gains Scores

The third part of question one inquired into how the three demographic groups
compared on gains in the Hearing and Recording Sounds in Words task. Table 4.3
provides the means, standard deviations, minimum scores, and maximum scores (possible
score 0-37) for each demographic group.
<table>
<thead>
<tr>
<th>Demographic Groups</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min. Score</th>
<th>Max. Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES African-Americans</td>
<td>483</td>
<td>24.90</td>
<td>7.93</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Other Low SES Students</td>
<td>920</td>
<td>25.75</td>
<td>7.57</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Non-low SES Students</td>
<td>1384</td>
<td>25.57</td>
<td>7.03</td>
<td>0</td>
<td>37</td>
</tr>
</tbody>
</table>

Table 4.3: Gain Score Means, Standard Deviations, Minimum Scores and Maximum Scores for Demographic Groups.

It is interesting to note that the gain scores, on average, are within one point among all three demographic groups. ‘Non-low SES’ students when compared to ‘Other Low SES’ (difference of .18 points) and ‘Low SES African-Americans’ (difference of .85 points). The maximum scores for all three groups is 37, which is the total number of maximum points possible. The minimum gain score for ‘Low SES African-Americans’ is zero and equivalent to the ‘Non-low SES’ group, and differs by only one point from ‘Non-low SES’ students.

Figure 4.3 illustrates the distribution of gain scores on the Hearing and Recording Sounds in Words task by demographic group. This percent polygon shows the similarities among the three demographic groups’ gain scores. A similar peak occurs at the highest possible scores for all three demographic groups, as all three tails of the negatively skewed distribution taper off to the left. The median scores for the three groups are: 26 for Low SES African-Americans, 27 for Other low students, and 27 for Non-low SES participants. The mode, or most frequently occurring score for each
Figure 4.3: Gains in Hearing and Recording Sounds in Words Score by Demographic Group
subgroup is: 29 (7%) for Low SES African-Americans; 32 (7.5%) Others with Low SES; and 30 (6.4%) for Non-low participants.

**Total Weeks in the Program**

The fourth part of the first question concerned the demographic groups’ length of time in the program as measured by their total weeks in the program. Usually, students receive five lessons a week with the exception of holidays, vacations, and absences. Table 4.4 shows the means, standard deviations, minimum and maximum number of weeks in the program for each demographic group.

<table>
<thead>
<tr>
<th>Demographic Groups</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min. Score</th>
<th>Max. Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES African-Americans</td>
<td>483</td>
<td>17.57</td>
<td>4.78</td>
<td>4</td>
<td>35</td>
</tr>
<tr>
<td>Other Low SES Students</td>
<td>920</td>
<td>17.96</td>
<td>5.17</td>
<td>3</td>
<td>36</td>
</tr>
<tr>
<td>Non-low SES Students</td>
<td>1384</td>
<td>18.36</td>
<td>5.11</td>
<td>1</td>
<td>36</td>
</tr>
</tbody>
</table>

Table 4.4: Total Weeks’ Means, Standard Deviations, Minimum Scores, and Maximum Scores for Demographic Groups.

The programs for the ‘Non-low SES’ group were on average longer by one week than the other demographic groups. The minimum number of weeks in the program, on average, vary as African-Americans with ‘low SES’ have the highest minimum number of weeks and ‘Non-low SES’ having the lowest minimum number of weeks. The
maximum number of weeks required for all three groups are similar with the African-Americans of ‘Low SES’ having the lowest maximum number of weeks at 35 weeks in the program. The maximum number of weeks possible varies depending upon the participating school districts’ school calendars. Traditional school calendars are usually forty weeks.

Figure 4.4 illustrates the distribution of total number of weeks in the program by demographic group. This percent polygon shows the similarities among the three demographic groups’ length of time in the program. All three groups needed a similar amount of time in the program on average as reflected in Figure 4.4. The three lines in the figure are similar to one another, illustrating a likeness in each groups’ amount of time spent in the program. The polygon approximates a normal curve with the peaks of all three groups’ length of time in the program similar to one another.

Questions 2 and 3

Questions two and three required inferential statistics. In the chi square and ANOVA procedures, a null hypothesis was stated to clarify a chance only occurrence of any observed relationships among the variables. The hypothesis stated the expected relationships among the variables, and for this study, the null hypotheses are used to enable one to assume that observed differences occurred by chance, which is always a possibility with inferential statistics. The predetermined level of significance or alpha level was set at .05. That is, the estimated probability of the observed relationships occurring because of chance is 5 in 100 or less.
Figure 4.4: Total Number of Weeks in Program by Demographic Group
Question 2

Question 2 introduced the independent variables used in question 3, program status or ‘Result’ and demographic subgroupings of ‘Group’: How do the observed proportions of the three subgroups’ program status (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’) differ statistically from the expected proportions? A chi-square test of independence was used to test for the significance of differences among the proportions of participants represented in the categories of program status or ‘Result’ (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’) and the demographic subgroup or ‘Group’ (‘African-Americans of Low SES,’ ‘Others of Low SES,’ and ‘Non-low SES’). The null hypothesis states that the proportion of subjects in the ‘Group’ categories will not differ based on their program ‘Result’ categories. The chi square test of independence was used to determine that the differences among the proportions of students within the two categories investigated are not due to chance alone.

The result of the chi square test of independence, $X^2 (4, N=2,787) = 56.028$, $p < .001$, indicates that significant differences exist among the groups established by the variables (program status, ‘Result’ and demographic group, ‘Group’). The chi-square table (see Table 4.5) exhibits the differences and also reveals the number (and percentage) of children within the categories of ‘Result’ by ‘Group’.

In the ‘Discontinued’ category of the ‘Result’ variable, 74.95% of the ‘Low SES African-American’ students discontinued, 75.54% of the ‘Other Low SES’ students discontinued, and 82.08% of the ‘Non-low SES’ students discontinued. Three-fourths of all students categorized as ‘Low SES’ not only completed the program but succeeded, that is, discontinued. The three demographic group cells that comprise the row variable
‘Discontinued’ contributed less than 4 of the total chi square of 56.025 suggesting that there are very little differences between the expected and observed proportions of participants within each cell.

Only 8.49% of the ‘Low SES African-American’ subgroup were ‘Not Discontinued,’ 13.26% of ‘Others with Low SES’ were ‘Not Discontinued,’ and 11.92% of ‘Non-low SES’ students were ‘Not Discontinued.’ The greatest difference among the three groups participating with ‘Not Discontinued’ status is less than 5%. The three demographic group cells that comprise the row variable ‘Not Discontinued’ contributed less than 7 of the total chi square of 56.025 suggesting that there are very little differences between the expected and observed proportions of participants within each cell.
<table>
<thead>
<tr>
<th></th>
<th>Low SES African-Americans</th>
<th>Other Low SES Students</th>
<th>Non-low SES Students</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discontinued</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>362</td>
<td>695</td>
<td>1136</td>
<td>2193</td>
</tr>
<tr>
<td></td>
<td>380.06</td>
<td>723.92</td>
<td>1089</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.99</td>
<td>24.94</td>
<td>40.76</td>
<td>78.69%</td>
</tr>
<tr>
<td></td>
<td>16.51</td>
<td>31.69</td>
<td>51.80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>74.95</td>
<td>75.54</td>
<td>82.08</td>
<td></td>
</tr>
<tr>
<td>Not Discontinued</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>122</td>
<td>165</td>
<td>328</td>
</tr>
<tr>
<td></td>
<td>56.84</td>
<td>108.77</td>
<td>162.88</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.47</td>
<td>4.38</td>
<td>5.92</td>
<td>11.77%</td>
</tr>
<tr>
<td></td>
<td>12.50</td>
<td>37.20</td>
<td>50.30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.49</td>
<td>13.26</td>
<td>11.92</td>
<td></td>
</tr>
<tr>
<td>Nonprogram</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>103</td>
<td>83</td>
<td>266</td>
</tr>
<tr>
<td></td>
<td>46.10</td>
<td>87.81</td>
<td>132.10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.87</td>
<td>3.70</td>
<td>2.98</td>
<td>9.55%</td>
</tr>
<tr>
<td></td>
<td>30.08</td>
<td>38.72</td>
<td>31.20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16.56</td>
<td>11.20</td>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>483</td>
<td>920</td>
<td>1384</td>
<td>2787</td>
</tr>
<tr>
<td></td>
<td>17.33</td>
<td>33.01</td>
<td>49.66</td>
<td>100%</td>
</tr>
</tbody>
</table>

p < .001

Table 4.5: Chi-Square of Program Result by Demographic Group.
In the ‘Nonprogram’ category, 16.56% of the ‘Low SES African-Americans’ are represented, compared to 11.20% of ‘Other Low SES’ students, and 6% of ‘Non-low SES’ students. (Recall from chapter three that those who are ‘Nonprogram’ are either withdrawn before receiving a completed program or are in the program at the end of the school’s calendar year.) Students in all three demographic groups are present in the ‘Nonprogram’ category, but students from ‘Low SES’ backgrounds have a higher percentage of students represented. The three demographic group cells that comprise the row variable ‘Nonprogram’ contributed heavily to the significant chi square statistic. The ‘Nonprogram’ cells contributed just slightly less than 47 of the total chi square of 56.025 suggesting that there are large differences between the expected and observed proportions of participants within each cell. The ‘Low SES African-American’ cell in the ‘Nonprogram’ row contributed the most of any cell with just over 25 of the total chi square, which is almost half of the overall chi square statistic. The other cell contributing a large amount of significance is the ‘Non-low SES’ group as slightly more than 18 of the chi square total 56.025. The ‘Other low SES’ cell within the ‘Nonprogram’ row contributed less than 3 of the overall 56.025 chi square suggesting that the observed and expected proportions are approximately similar.

**Question 3**

Question 3 required an experimental design: Do gains made in the ability to hear and record sounds in words differ among:

- the three subgroups (‘Low Socioeconomic African-American’ participants, ‘Other Low SES’ participants, and ‘Non-low SES’ participants)?
• the three levels of program status (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’)?

• the interaction of the three subgroups and the three levels of program status?

The first part of question three compared the demographic groups’ gains based on phonemic awareness skills. Specifically, do gains made in the ability to hear and record sounds in words differ statistically among the three Groups (‘Low SES African-American’ participants, ‘Other Low SES’ participants, and ‘Non-low SES’ participants)? The null hypothesis states that there is no difference in gains made in phonemic awareness among the demographic subgroups of interest (‘Group’).

The second part of question three inquired about the influence of the program’s outcome or result on the gains in phonemic awareness because the outcome or result of the program is essential to understanding the impact of the program on the participants’ literacy skills. As discussed earlier, children may enter the program at any time during the school year and, likewise, may exit at any time for a variety of reasons. Therefore, it is imperative to include the program outcome or ‘Result’ (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’). Previous literature regarding the Reading Recovery program reveals that ‘Discontinued’ children entertain great gains in various literacy tasks (see Executive Summary, 1997; Ohio Report, 1997), including the Hearing and Recording Sounds in Words task (Clay, 1993a). The influence of the participants’ program status or ‘Result’ requires another null hypothesis: there is no difference in gains made in phonemic awareness because of program outcomes (‘Result’).
The third and final part of question three assessed the presence of any interaction of the two variables necessary to the questions posed in this study, ‘Group’ and ‘Result’. Another hypothesis was examined because of the possibility of interaction of the two variables: there is no difference in gains made in phonemic awareness because of the interaction effect of ‘Result’ and ‘Group’.

Table 4.6 provides the participants’ means and standard deviations for each demographic subgroup (Group) and program group (Result).

<table>
<thead>
<tr>
<th>N</th>
<th>Mean SD</th>
<th>African-Americans with Low SES</th>
<th>Others with Low SES</th>
<th>Non-low SES</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>7.189</td>
<td>7.046</td>
<td>6.905</td>
<td>7.005</td>
</tr>
<tr>
<td>Not Discontinued</td>
<td>41</td>
<td>24.415</td>
<td>24.730</td>
<td>25.176</td>
<td>24.915</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.355</td>
<td>6.121</td>
<td>5.994</td>
<td>6.211</td>
</tr>
<tr>
<td>Nonprogram</td>
<td>80</td>
<td>18.363</td>
<td>19.019</td>
<td>19.951</td>
<td>19.113</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.152</td>
<td>8.802</td>
<td>8.298</td>
<td>8.444</td>
</tr>
<tr>
<td>TOTAL</td>
<td>483</td>
<td>24.890</td>
<td>25.750</td>
<td>25.571</td>
<td>25.678</td>
</tr>
</tbody>
</table>

Table 4.6: Average Gains Made in Hearing and Recording Sounds in Words Task by Program Result and Demographic Group.
In Table 4.6, a general observation can be made that within program status or ‘Result’ groups, there were very small differences in the average gain score among the participants as further categorized into demographic groups. The ‘Nonprogram’ students gained between 18.363 and 19.951 points in their abilities to hear and record sounds in a dictated sentence, but the program children (those ‘Discontinued’ and ‘Not Discontinued’) gained between 24.415 and 26.925. Ceiling effects on the dependent variable, Hearing and Recording Sounds in Words, influenced the gains made by each of the three demographic groups. As the exit scores discussed earlier demonstrated, the maximum score for each of the three demographic groups was 37 and the average exit score for each group was just slightly more than 32 and just slightly less than 34 points.

A 3×3 analysis of variance (ANOVA) consisted of the three demographic groups, ‘Group’ (‘African-Americans of Low SES,’ ‘Others of Low SES,’ and ‘Non-low SES’) and three program results, ‘Results’ (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’) as independent variables. Gains made in students’ abilities to hear and record sounds in a dictated story (Hearing and Recording Sounds in Words task) was the dependent variable, ‘Gains’ which was computed by subtracting the entry score from the exit score. The level of significance was set at .05. The Scheffe procedure was used as a posthoc analysis to further describe differences among the groups. The results of the main effect for ‘Group,’ ‘Result,’ and the interaction effect of ‘Group’ by ‘Result’ are in Table 4.7.
<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>2</td>
<td>68,348</td>
<td>34.174</td>
<td>.68</td>
<td>.5042</td>
</tr>
<tr>
<td>Result</td>
<td>2</td>
<td>12446.778</td>
<td>6223.389</td>
<td>124.763</td>
<td>.0001</td>
</tr>
<tr>
<td>GXR</td>
<td>4</td>
<td>271.725</td>
<td>67.931</td>
<td>1.36</td>
<td>.2448</td>
</tr>
<tr>
<td>Error</td>
<td>2778</td>
<td>138607.307</td>
<td>49.895</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>2786</td>
<td>151734.272</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.7: Analysis of Variance for Gain in Hearing and Recording Sounds in Words Score by Group and Result.

The ANOVA revealed that the interaction effect of ‘Result by Group’ was not statistically significant, $F(4, 2,787) = 1.36, p < .2448$. The results of the ANOVA are further clarified in Table 4.6 as participants do not vary in the ability to gain phonemic awareness based on representation in demographic groups (‘Group’), but they do vary as program participants (‘Result’). This observation further clarifies the lack of any interaction effect for ‘Group’ by ‘Result.’ Within each program result, the various demographic groups’ average gains in phonemic awareness were within one point of one another. Clearly, students who received a full program gained a greater phonemic capacity than children without a full program. ‘Discontinued Low SES African-American’ students gained just shy of two full points over their ‘Not Discontinued’ counterparts in their abilities to hear and record sounds in words. Other ‘Low SES’ participants who were discontinued gained two full points over their ‘Not Discontinued’ counterparts. ‘Discontinued Non-low SES’ students gained just shy of one point more than their ‘Discontinued’ counterparts. Although the differences in the gains made
between ‘Discontinued’ and ‘Not Discontinued’ students were not as great as the differences between the ‘Program’ and ‘Nonprogram’ students, it is clear that the ‘Discontinued’ students made more progress than the ‘Not Discontinued’ participants.

The ANOVA revealed no main effect for the ‘Group’ variable as the $F$ ratio ($F(2, 2787) = .68, p < .5042$). Therefore, no statistically significant differences exist among the three demographic groups’ gain scores on the Hearing and Recording Sounds in Words task. The ‘African-American Low SES’ students ($n=483$) averaged a gain of $24.899$ (SD=7.930). The ‘Other Low SES’ students ($n=920$) gained on average $25.749$ (SD=7.568). The ‘Non-low SES’ students ($n=1384$) gained $25.571$ (SD=7.040) points on average. The null hypothesis is retained, as there exist no differences among the means of the three groups’ gains in phonemic awareness.

There is a significant main effect of ‘Result’ as the $F(2, 2787) = 124.73$, $p < .0001$. The null hypothesis is rejected, as there exists a difference among the participants as described by the variable ‘Result.’ Scheffe grouping revealed that significant differences existed among all three program groups’ gain scores in Hearing and Recording Sounds in Words task with ‘Discontinued’ students’ ($n=2,193$) scores averaging $26.379$, ‘Not Discontinued’ students’ ($n=328$) scores averaging $24.915$, and ‘Nonprogram’ students’ ($n=266$) scores averaging $19.11$. Each of the three groups differed significantly, on average, from one another. The results of the post hoc procedure are summarized in Table 4.8.
<table>
<thead>
<tr>
<th>Scheffe Grouping</th>
<th>Mean</th>
<th>N</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>26.379</td>
<td>2,193</td>
<td>Discontinued</td>
</tr>
<tr>
<td>B</td>
<td>24.915</td>
<td>328</td>
<td>Not Discontinued</td>
</tr>
<tr>
<td>C</td>
<td>19.113</td>
<td>266</td>
<td>Nonprogram</td>
</tr>
</tbody>
</table>

Table 4.8: Results of Scheffe’s Test of Gains in Hearing and Recording Sounds in Words by Result.

Should the same letters appear under the heading ‘Scheffe Grouping’ for any two or more of the categories in the variable ‘Result,’ the differences between or among those same-lettered groups would not be significant. As revealed in Table 4.8, each of the three categories of the variable differ from one another as noted with letters ‘A’, ‘B’, and ‘C’. ‘Discontinued’ students’ gains were significantly greater than the other two groups’ gains on the number of points scored on the Hearing and Recording Sounds in Words test. ‘Not Discontinued’ students’ gains on the Hearing and Recording Sounds in Words test were significantly greater than the ‘Nonprogram’ students’ gains. The Scheffe Test results which reveals that the program outcome or ‘Result’ for the Reading Recovery students is important to their abilities to gain phonemic awareness. Results of the ANOVA and the Scheffe Test are influenced by ceiling effects as the subjects’ scores at exit from the program are, on average, close to the Hearing and Recording Sounds in Words task’s maximum possible value.
Summary of Results

Descriptive statistics revealed that, on average, entry, exit, and gain scores on the Hearing and Recording Sounds in Words task among the three demographic groups were similar. Similarity occurred on the number of weeks needed to complete the program, but the ‘Non-low SES’ group took about one week more than the two ‘Low SES’ groups.

The inferential statistic, the chi square test of independence, revealed differences in proportions of participants among demographic and program groupings. Roughly 75% of the ‘Low SES’ students discontinued, but roughly 82% of the ‘Non-low’ counterparts discontinued. ‘Not Discontinued’ status differed by less than 5% among the three demographic groups. Students from each of the three demographic groups are present in the ‘Nonprogram’ category with students from ‘Low SES’ backgrounds having a higher percentage of students represented.

An analysis of variance procedure (3X3 ANOVA) indicated that there are no statistically significant differences among the three demographic groups’ gains in Hearing and Recording Sounds in Words. A Scheffe procedure revealed that each of the three program groups differed from one another significantly, on average, with ‘Discontinued’ students making the greatest gains. The interaction effect of ‘Results by Group’ was not statistically significant. Within each program result, the various demographic groups’ average gains in phonemic awareness were within one point of one another.
Discussion of Results

My study, linking phonological skills, demographics, and Reading Recovery is discussed in light of my methodological decisions. Another discussion, highlighting the results of this study in relationship to similar studies previously reviewed in Chapter 2, follow. Two major kinds of studies, demographic studies within Reading Recovery and phonological research within Reading Recovery are discussed.

Discussion of Results Relating Methodological Decisions

The decision to select only one dependent variable, gains in the Hearing and Recording Sounds in Words task, one of six task in the Observation Survey, was influenced by current research which suggests strength in the relationship between phonemic awareness skills and success in reading and writing. Hearing and Recording Sounds in Words, the dependent variable in this study, is a measure of phonemic awareness (Clay, 1993a). Reading Recovery participants are the lowest literacy achievers in the classroom. Recently, the Reading Recovery program has been the subject of controversial debate regarding a lack of phonics instruction within the program. This study included only one dependent variable, a measure of phonemic awareness, because recent research has suggested that phonemic awareness is an important predictor of reading achievement (see Stanovich, 1986, 1994), because current debate criticizes phonological training within Reading Recovery, and because we need to know how well our lowest literacy achievers gain phonemic awareness abilities as participants in an early intervention program.
Because phonemic awareness is just one facet of the many dimensions to becoming literate, this study is not a comprehensive view of reading. There are five other Observation Survey tasks all of which give important information regarding the child’s literary skills. The scores from each of the six tasks influence student selection and discontinuing decisions. This study provided new information about gains in phonemic awareness skills for various demographic groups (Low SES African-Americans, Others with Low SES, and Non-low SES students) as participants in Reading Recovery, an early intervention program.

The entry scores on the Hearing and Recording Sounds in Words task in this study are quite low because students who enter the Reading Recovery program in the fall are the lowest literacy achievers in their first grade classrooms. Regression effects may influence the findings. Ceiling effects at the exit from the program were also influential to the findings. A maximum total of 37 points were possible on the Hearing and Recording Sounds in Words task. The skewed distribution of exit scores in Figure 4.2 demonstrated, as earlier discussed, a high distribution of participants with perfect or close to perfect scores. When many of the subjects’ post-test scores reach the maximum potential, it is not possible to see a big discrepancy in scores. which, in the case of this study, influences the gains made on the phonemic task, the dependent variable. An ability to hear and record 37 sounds indicates mastery of an important body of knowledge—phonemic awareness skills. There exists 26 letters in the English alphabet. Some letters make more than one sound (i.e., the vowels), and there are combinations of letters that may go together to create one sound (i.e., ‘t’ and ‘h’ as in ‘that’). Although
there is some controversy regarding the maximum number of sounds in the English language, most scholars agree that there are just over 40 sounds possible. Recall that the Hearing and Recording Sounds in Words task, one of six tasks in the Observation Survey, has a maximum of 37 possible points; therefore, the ceiling effects, which influence the exit score of all three demographic groups, supports evidence of mastery of this important phonemic awareness task. The Hearing and Recording Sounds in Words task includes critical sounds, that is, the phonemes that are most useful to beginning readers.

As sample size decreases, sample error increases; therefore, caution was taken to ensure inclusion of as many subjects as possible. Major decisions regarding the sample selection, including time of entry, lunch cost, missing data, and race influenced the statistical model and results of this study. Time of entry was particularly important because all participants over an academic year do not enter the program at the same time, do not participate for the same length of time, and do not exit with the same program results (status). Influences such as maturation and instruction can affect the entry scores of students who do not receive the earliest opportunity to enroll in the program. Some students enter the program early in the school year and some wait until much later. Those with the lowest scores on the Observation Survey tasks (Clay, 1993a) enter the program the earliest, consequently the decision to select subjects from the beginning of the school year ensures that the participants are the lowest achievers in their first-grade class. Therefore, the threat of regression is particularly present as only the earliest participants in the program, that is, the lowest scorers of the pretest, are included in this study. Regression suggests that participants scoring unusually low, as in the case of this
study, will, on average, score higher—that is, closer to the group’s common mean on subsequent testing (Fraenkel & Wallen, 1993).

Another threat, experimental mortality attrition, concerns the dropout rate of participants and was built into my study and therefore was controlled for, as those who drop out of the program are categorized as ‘Nonprogram’ participants within the variable “Result.” Because the scan form includes a category for students with ‘Nonprogram’ status, it was possible to keep ‘Nonprogram’ students in the study. As Table 3.4 revealed, 2.87% of ‘Low SES African-Americans’ were ‘Nonprogram’ participants, 2.98% of ‘Non-low SES’ students were ‘Nonprogram’ participants, and 3.7% of ‘Others with Low SES’ were ‘Nonprogram’ participants. The chi-square test showed the number of participants in demographic group and program result and tested for significance in differences. Of the ‘Low SES African-Americans’ 16.56% were ‘Nonprogram’ students, 11.2% of ‘Others with Low SES’ were ‘Nonprogram’ students, and 6% of ‘Non-low SES’ participants achieved ‘Nonprogram’ status.

Categorization of subjects was influenced by the imbalance of subjects’ representation within various demographic groups. Using the subjects’ lunch status (level of federal support for school lunch participation) as a socioeconomic indicator is a common way to categorize students into socioeconomic groups. The decision of reducing the existing data from three levels to two levels allowed for the inclusion of all participants where a level was reported. The decision to place those with free lunch status and reduced lunch status together is easily justified as both groups receive some form of government fiscal assistance. Reducing the SES category influences the results of the study, as differences between the ability of the two SES categories are not known.
However, because only 7% of the total number of participants were on a reduced lunch plan, the placement of those participants into the ‘Low SES’ categories were not so substantial in comparison to the 41% with free status. Combining the two federal assistance levels was a strong compromise, when given that the only other option would be to remove the reduced lunch status participants.

Missing data also influenced the results. Because the scan form included ‘information unavailable’ for lunch status (see Appendix C), 599 students were not included in the study and an additional 17 were removed because of other missing data. The 599 subjects who were removed from this study due to important information missing from their scantrons make up 17% of the total number of otherwise qualified participants. Confidentiality of students’ lunch status is very important within many schools. Teacher leaders and teachers may not pursue the lunch status information due to the confidentiality factor of this important variable. It was not possible to keep those with missing necessary information in the study, however it is possible to describe these students on the variables that are known. Table 4.9 reports the means, standard deviations, minimum and maximum scores for the 599 students removed from the study.
<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min. Score</th>
<th>Max. Score</th>
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<td>599</td>
<td>8.97</td>
<td>7.852</td>
<td>0</td>
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<td>Exit scores</td>
<td>599</td>
<td>33.61</td>
<td>5.046</td>
<td>0</td>
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<tr>
<td>Gain scores</td>
<td>599</td>
<td>24.64</td>
<td>8.137</td>
<td>-11</td>
<td>37</td>
</tr>
<tr>
<td>Total weeks</td>
<td>599</td>
<td>17.65</td>
<td>5.270</td>
<td>4</td>
<td>43</td>
</tr>
</tbody>
</table>

Table 4.9: Means, Standards Deviations, Minimum Scores and Maximum Scores on Important Variables for 599 Disqualified Participants.

The mean entry score for the 599 withdrawn subjects is 8.97 which is within 1 point of the ‘Low SES African-Americans’ and within 2 points of the other two groups. The minimum score is equal to all three demographic groups in this study. The maximum score exceed the three groups by up to 3 points. The 599 withdrawn subjects scored slightly higher than the those in this study on the Hearing and Recording Sounds in Words at entry.

The mean exit score for the 599 withdrawn subjects is 33.61 which is within one and one-half points of the mean exit score for the three demographic groups in this study. The minimum score matched the ‘Low SES African-American’ students in this study. The maximum score matched all three demographic groups. The 599 withdrawn subjects’ scores at exit from the Reading Recovery program on the Hearing and Recording Sounds in Words task is not so different from the three demographic groups in this study.
The mean gain score for the 599 withdrawn subjects is 24.64. The demographic group with a gain score mean the farthest from this mean is ‘Others with Low SES,’ which vary by 1.14 points. The minimum gain score for the 599 withdrawn students is –11. A list of frequencies on gains made in Hearing and Recording Sounds in Words showed the next to the lowest gain score to be 0, that is, no other student showed a negative gain. A gain of 0 is the lowest minimum score for two of three demographic groups in this study. The third group, ‘Others with Low SES,’ had a minimum gain of 1 point. With the exception of the extreme outlier having a negative gain of 11, the gain scores of the 599 withdrawn subjects is comparable to the study’s participants. How only one student could vary so extremely from the other 3,386 (the sum total of 599 plus the 2,787 participants) students is difficult to understand. One likely explanation may be an error in recording the subject’s score on the scantron, creating an incorrect datum. The maximum gain score is 37 which is equal to all three demographic groups maximum gain in this study.

The mean total number of weeks in the program for the 599 withdrawn students was 17.65 which is within one point of the three demographic groups participating in this study. The minimum number of weeks is similar to the three demographic groups in this study, but the maximum number of weeks is 43. A list of the frequencies of the number of weeks in the program for the 599 withdrawn subjects revealed the next to the greatest number of weeks in the program was 38, which more closely resembles the subjects in this study. The extreme outlier of 43 weeks may be an error on the scantron as it may not be possible to have 43 weeks in school, however, some schools may begin the program
prior to the school calendar (or end late) so this extreme number of weeks may be possible.

Race was another variable important to the research questions and therefore, to the statistical model used to answer the questions. Race, reported by five sublevels on the scantron (see Appendix C), like lunch status, had low numbers of participants in some categories. Three subgroups, all minority groups in the United States, totaled only 62 of the 2,787 participants with the Asian/Pacific Islander group totaling only 12 participants. Unlike the students who were removed from the study due to their ‘information unavailable’ level of lunch status, those whose race had a low number of participants were grouped so that they could be included.

The option to include the students represented within a group with low representation of race, instead of electing to exclude them, meant that the variable had to be collapsed. Because both race and socioeconomic status created the independent variable ‘Group,’ race and lunch status were collapsed together.

Lunch status heavily influenced the grouping of the participants. Students with ‘Low SES’ were placed into one of two ‘Low SES’ categories, with only ‘African-Americans of Low SES’ comprising one group, and the four other races with ‘Low SES’ creating the ‘Others with Low SES’ category. Placing four different races into one category contrived a heavier emphasis on SES over race for that group.

Obviously, the results may only be interpreted using the three subgroups’ (‘Low SES African-Americans,’ ‘Others with Low-SES,’ and ‘Non-low SES’ students) attributes as collapsed and categorized to create the independent variables for this model. The model, based on the sample of 1996-97 students from one Midwestern state,
included a sample of subjects broken into three groups which supported the research question. The results of this study were influenced by the decisions to collapse those categories necessary to conduct the study. Caution must be exercised when interpreting the results and implicating any conclusions as the subjects, with the potential for 15 different groups (as defined by the categories on the scantron), were collapsed to three subgroups to create a major independent variable ‘Group.’

Discussion of Results Linking Demographic Research and Reading Recovery

Studies of demographic research include Hatton’s (1994) study of Aboriginal participants and Yukish and Fraas’s (1998) study of Old Order Amish children. Although the demographic groups differed from those in this study, the results were parallel, insofar as the studies concluded that Reading Recovery can be an effective program for the various demographic groups.

Another demographic study involving 16 African-Americans and 11 Caucasians (McGraw, 1997) revealed the sustained gains of a third-grade group on literacy competencies of former Reading Recovery students. A Fisher t-test revealed no differences among the two groups’ scores on various literacy assessments. The teacher’s questionnaire likewise revealed no differences between the two groups. My study showed that the three demographic groups (‘Low SES African-American’ children, ‘Others with Low-SES,’ and ‘Non-low SES’ students) made gains in their abilities to hear and record sounds in words, but ceiling effects on the dependent variable, Hearing and Recording Sounds in Words, influenced this outcome in my study. Although McGraw did not include specific phonological testing in her analysis, she did
demonstrate that both ethnic groups did succeed at the same rate in their abilities to sustain skills learned as participants in Reading Recovery. Although my study did not assess sustained gains I make additional suggestions for investigating the sustained literacy gains of Reading Recovery participants in Chapter 5.

Di Nello’s 1997 study of Reading Recovery participants in San Francisco included students from 45 schools. There were 481 subjects which included students learning English as a second language. A quasi-experimental design included four major hypotheses. The investigation of four different ethnic groups including ‘Caucasians,’ ‘Hispanics,’ ‘African-Americans,’ and ‘Asian/Pacific Islanders’ included those newly acquiring English. Although the investigations into English language proficiency did not directly relate to my study, Di Nello’s examination of differences based on ethnicity did. My study’s results are like Di Nello’s as all ethnic groups involved gained in new literacy achievement, although ceiling effects in my study clearly influenced the gains made as demonstrated by the dependent variables.

Discussion of Results Linking Phonological Research and Reading Recovery

Iversen and Tunmer (1993) compared Reading Recovery to a Reading Recovery model that added additional word analysis into the daily lessons. They suggested an additional phonics period focusing on word analysis to improve phonics abilities of the participants and suggested that increased word analysis improved orthographic processing. This study also revealed phonological abilities of Reading Recovery students; however, only the actual Reading Recovery model was used. Participants’
growth in phonemic awareness as demonstrated on the Hearing and Recording Sounds in Words task, the dependent variable, revealed that Reading Recovery participants do learn about phonemic awareness as participants in the program.

Center, Wheldall, Freeman, Outhred, and McNaught (1995) evaluated students using the Observation Survey (Clay, 1993a) and five standardized assessment tools. On pretest, the students in Reading Recovery were stronger on phonological skills but no other assessments. They concluded that participants with low metalinguistic skill are less likely to succeed in the Reading Recovery program. Although ceiling effects influenced my findings, this study likewise assessed participants in Reading Recovery on phonological skills. I made no comparisons to non-participants and no special emphasis was placed upon phonemic achievement at entry into the Reading Recovery.

Sylva and Hurry’s (1996) study of 380 students compared Reading Recovery students, a phonological intervention group, and a control group over two years. The phonological group did not score as high on the reading and writing task when compared to the Reading Recovery students. At the end of the second year, differences among the groups diminished, but control students were in need of support. Like this study, Sylva and Hurry also evaluated free lunch program participants and found that when comparing a subgroup of students on the free lunch program, Reading Recovery was particularly effective. Their results were like this study, because no differences in gains in phonemic awareness among SES groups as defined by lunch categories were revealed.

Stahl, Stahl, and McKenna (1999), like this study, included Hearing and Recording Sounds in Words as a variable of interest to measure phonological abilities of participants. They also found that Reading Recovery participants gain phonological
skills; but their study extended into additional measures of phonological and orthographic abilities beyond the Observation Survey (Clay 1993a).

To date, most studies involving phonological skills within Reading Recovery use comparisons of students outside the intervention. This study included only Reading Recovery participants. No other subgroups or control groups were included. Di Nello’s study likewise included only Reading Recovery participants and concluded, like this study, that students from various demographic groups gain an ability to learn various literacy skills, including phonemic awareness. Suggestions for further research on phonological skills, demographics, and other Reading Recovery attributes of interest are discussed in Chapter 5.

Implications of the Results

Jencks and Phillips (1998) suggested finding educational practices and policies that would make students’ test scores less dependent on the parental education and income levels. This study demonstrates that the Reading Recovery program has the potential to support students from the three demographic groups (‘Low SES African-Americans,’ ‘Others with Low SES,’ and ‘Nonlow SES’ participants), and therefore suggests that early intervention—specifically Reading Recovery—can help the wide variety of our nation’s lowest-performing literacy achievers who come from various demographic backgrounds. It appears that Reading Recovery may support efforts in outdistancing the gap that currently exists between African-Americans and other students. Ceiling effects at exit influenced the gains made among the three demographic groups’ abilities to hear and record sounds in words. The differences in the amount of
new knowledge gained in the ability to hear and record sounds in words were not found among the three demographic groups but were found among the three program status groups. Students who discontinued made the greatest gains.

There are several possible explanations for this. Perhaps the intimate socially co-constructed frame of a one-to-one instructional setting frees the Reading Recovery teacher to attend to the individual’s abilities and compensates for any inadequacies, including those inadequacies which may be related to cultural differences. This assumption would suggest that the Reading Recovery teacher focuses on the child’s strengths as culturally co-constructed instruction, complementing the child’s cognitive style (which may be culturally influenced) in such a way that successful new learning can occur.

Another explanation may involve the theoretical social position of Vygotsky’s zone of proximal development (ZPD), which is the difference between what the learner can do with an adult helping and what can be done with no support (Moll, 1990). Social interactions help to shape early language learning (Wells, 1986; Halliday, 1975, 1990) and literacy development (Clay 1975, 1987b; Taylor 1983; Bissex 1980; Teale & Sulzby, 1986; Cochran-Smith 1984). The learner’s interactions with a more knowledgeable other within a meaningful social context support new learning. Support for the student’s background as defined by race and socioeconomic status may already be incorporated into the Reading Recovery program’s daily one-to-one instruction as evidenced by the successes of all demographic groups in this study. Reading Recovery is a highly interactive one-to-one tutorial with seven parts to be accomplished within the one-half hour time frame. The fast-paced lessons already involve an infrastructure for new
learning that is important to, and apparently, easily adapted to a variety of demographic groups.

Phonics is an important skill in acquiring literacy. Although not sufficient on its own, researchers have found that phonemic awareness is a necessary element in learning to read and write. Adams stated that children who do not acquire phonemic awareness “. . . are severely handicapped in their ability to master print” (1996, p. 412). This study demonstrated that, during Reading Recovery participation, growth in phonological skills was observed in all students regardless of their demographic backgrounds within the Reading Recovery experience. True phonemic awareness, the hearing aspect (Clay, 1998), as this study reveals, is learned in Reading Recovery. Participants from each of the three subgroups investigated (‘African-Americans with Low SES,’ ‘Other participants with Low SES,’ and ‘Non-low SES’ participants) demonstrated an ability to break words into their corresponding sounds and to record those sounds into their corresponding letters (as demonstrated in the Hearing and Recording Sounds in words task) regardless of their demographic categorization.

This study showed that the Reading Recovery program does teach ‘Low SES African-Americans’ to learn to hear and record sounds, an important phonemic awareness skill. Although this study did not question the potential effects of Reading Recovery on classroom practices, the potential for improving classroom instruction to support varying demographic groups may be promising.

Phonemic awareness skills are learned during the Reading Recovery daily lesson. Classroom teachers may create opportunities for students to learn phonemic awareness skills during guided reading and interactive writing as both approaches are designed for
groups of students to participate altogether. Guided reading is a practical approach to instructing groups of students with like ability to use effective reading strategies on increasingly challenging texts. Interactive writing involves students and the teacher working collaboratively to record a written message. Interactive writing supports students’ phonemic awareness development as students and teacher “share the pen” to create meaningful text together with each word being said slowly, making the sounds sequence across the word more pronounced and then linking the sounds with letters. “The construction element of interactive writing is especially effective in helping children to attend to the sounds in words and connect those sounds with graphic symbols” (McCarrier, Pinnell, & Fountas, 2000, p. 231).

The running record of text reading is an important skill for teachers as it reveals new information about how the student’s reading behaviors and informs the teacher of important instructional decisions. Reading Recovery teachers take running records everyday and could instruct classroom teachers with the information needed to take, score, analyze, and apply the information to the classroom for improved instruction. Fountas and Pinnell (1996) list suggestions for working with children in the classroom including how to make time to take running records during the daily language arts block.

Bringing classroom teachers and Reading Recovery teachers together to share important instructional approaches could enhance the performance of all students. Most importantly, the Reading Recovery teacher’s knowledge of supporting our lowest achievers could be carried over into classroom instruction. How to best support all students, including everyone from varying demographic groups, is an important instructional goal.
Generalizability

The results of this study may not be generalized to groups outside of the actual participants due to this study’s limitations, however the subjects’ scores are similar to other participants in the state’s 1996-97 Reading Recovery program. A description of the state’s total participants in the Reading Recovery program for the school year 1996-97 is available as the Reading Recovery Council of North America (RRCNA) oversees the annual publications which reveal the program’s results for each academic year. The state report for the year 1996-97, the year this study’s subjects participated in Reading Recovery, included fall scores and exit scores on the Hearing and Recording Sounds in Words task. Entry in the fall of the year included 4,504 ‘Program’ students with a mean score of 7.77 on the Hearing and Recording Sounds in Words task at entry. The Spring scores revealed ‘Program’ participants with an entry date at any time of the year (not just the fall). The Spring scores included ‘Not discontinued’ and ‘Discontinued’ (prior to April 1) students for a total number of 5,319 ‘Program’ students with a mean score of 35.55 at exit. ‘Program’ students’ entry scores and exit scores in this study are similar to the findings summarized in the state’s annual report. The percentage of ‘Program’ students who discontinued statewide was 89% which is similar to the 87% discontinuing rate in this study. The students in this study are a subset of the state’s reported students, so it is not a surprising finding that the entry scores, exit scores, and discontinued status are similar.

The national report published annually by the Reading Recovery Council of North America, Reading Recovery Executive Summary, 1984-1997, included scores on the ‘Program’ students. The national report for the year 1996-97, the year this study’s
subjects participated in Reading Recovery, included fall scores and exit scores on the Hearing and Recording Sounds in Words task. Entry in the fall of the year included 64,823 ‘Program’ students with a mean score of 6.56 on the Hearing and Recording Sounds in Words task at entry. The Spring scores revealed ‘Program’ participants with an entry date at any time of the year (not just the fall). The Spring scores included ‘Not discontinued’ and ‘Discontinued’ students for a total number of 75,471 ‘Program’ students with a mean score of 34.76 at exit. ‘Program’ students’ entry scores in this study are just slightly higher than the findings summarized in the annual national report and the exit scores are just slightly lower than scores reported in the national report. The percentage of ‘Program’ students who discontinued nationwide was 83% which is slightly lower than the 87% discontinuing rate in this study.

The statewide report and the national report summarizes discontinuing rates and Hearing and Recording Sounds is Words scores that are only slightly different than the scores reported in this study. The lack of major differences among the scores within each geographical grouping may suggest that each groups’ participants may not have differing achievement levels as participants in the Reading Recovery program. With evidence from the RRCNA’s published documents, it appears that the subjects in this study are not too different from other 1996-97 Reading Recovery participants on the dependent variable scores and program status. The similarities of this study’s subjects to participants at the state and national level may imply that, perhaps, the populations are not too different, and perhaps, the results of this study may be generalized beyond the sample of study participants.
More than half of all children in public schools in urban areas are African-American, and these schools tend to have higher poverty rates than schools outside of central city areas (National Center for Educational Statistics, 1995). This study of Reading Recovery demonstrated a success rate for growth in phonemic awareness for all three subgroups investigated (‘African-Americans of Low SES,’ ‘Others with Low SES,’ and ‘Non-low SES’ participants), and therefore suggests that Reading Recovery may be considered as an early intervention resource for first-graders across geographic, economic, and cultural areas. In conclusion, this study revealed that students from three important subgroups (‘Low SES African-Americans,’ ‘Others with Low SES,’ and ‘Non-low SES’ participants) varying in socioeconomic status and cultural backgrounds attained new phonemic information vital to their growth in literacy as participants in the Reading Recovery program.

Summary

Descriptive analyses of the three subgroups (‘Low SES African-American’ students, ‘Other Low SES’ participants, and ‘Non-low SES’ students) revealed that, on average, entry, exit, and gain scores on the hearing and recording sounds in words task differed less than two points from one another, but ceiling effects on the dependent variable at exit for all three groups influenced this finding. Therefore, the three subgroups were similar on the Hearing and Recording Sounds in Words task scores at entry, at exit, and on gains made in the ability to hear and record sounds in a dictated story. They were also similar on the number of weeks needed to complete the program
with ‘Non-low SES’ taking just slightly longer (roughly one week) than the two ‘Low SES’ groups.

The inferential statistic, the chi square test of independence, revealed statistically significant differences among the proportion of students in both demographic (‘Low SES African-Americans,’ ‘Other Low SES’ students, and ‘Non-low SES’ participants) and program categories (‘Discontinued,’ ‘Not Discontinued,’ and ‘Nonprogram’). Three-fourths of all students categorized as ‘Low SES’ not only completed the program but succeeded—that is, ‘Discontinued’—constituted roughly 82% of the ‘Non-low’ counterparts discontinued. The greatest differences among the three groups participating with ‘Not Discontinued’ status is less than 5%, with students of ‘Other Low SES’ having the highest number of ‘Not Discontinued’ participants and students from the ‘Low SES African-American’ subgroup having the lowest ‘Not Discontinued.’ Students from each of the three demographic groups are present in the ‘Nonprogram’ category with students from ‘Low SES’ backgrounds having a higher percentage of students represented.

An analysis of variance procedure (3X3 ANOVA) was used to examine the relationships among the participants’ gain scores (dependent variable) by demographic group or ‘Group’ and program status or ‘Result’ (two independent variables), and the interaction of ‘Group’ by ‘Result’ at a .05 level of significance. There are no statistically significant differences among the three demographic groups’ gains in Hearing and Recording Sounds in Words abilities, but ceiling effects greatly influence the interpretation of this finding. In the case of program status or ‘Result,’ differences exist in the mean number of points gained in Hearing and Recording Sounds in Words task among the three program groups. A Scheffe procedure revealed that each of the three
groups differed significantly, on average, from one another with ‘Discontinued’ students making the greatest gains. The interaction effect of ‘Results by Group’ was not statistically significant. Within each program result, the various demographic groups’ average gains in phonemic awareness were within one point of one another.

The results of this study suggest that Reading Recovery participants from three demographic groups (‘Low SES African-Americans,’ ‘Others with Low SES,’ and ‘Non-low SES’ participants) successfully learn to hear and record sounds in words. This study provides evidence of the importance of having a complete program and reaching performance criteria. As demonstrated by the participants in this study, ‘Discontinued’ students gain a greater score in the ability to hear and record sounds in words when compared to those who did not complete the program. Getting more students to achieve program status—and most especially ‘Discontinued’ status—is an important goal.
CHAPTER 5

PROJECT SUMMARY, CONCLUSIONS, AND
SUGGESTIONS FOR FURTHER RESEARCH

Literacy learning is crucial to our society and ultimately to our economic wellbeing and positive national identity. It is one of the most complex early tasks that we encounter. All Americans are expected to become literate, and our nation’s schools offer opportunities for all students to learn. Yet, some students lag behind. Some fall so far behind that they never catch up. Educational researchers have found that early intervention and strong literacy instruction are key factors in who succeeds and who does not. This study revealed new information about the benefits of early intervention for a particular group of entry level first-graders with low literacy ability—low socioeconomic African-American students. This chapter includes a summary, conclusions, and suggests topics for further research.
Project Summary

The major goal of this study was to evaluate the performance of African-American students with low socioeconomic status (SES) in an early intervention program. The research examined the progress of three demographic groups’ (‘Low SES African-American,’ ‘Other students with Low SES,’ and ‘Non-low SES’ students) phonemic abilities as they participated in an early literacy intervention program.

An Observation Survey of Early Literacy Achievement (Clay, 1993a) contains six early literacy measures used to select students for entry, inform instruction at entry, and inform discontinuing status at exit of the program for all participants. Hearing and Recording Sounds in Words is one of the six tasks given at entry into and exit from the Reading Recovery program and measures phonemic awareness. The gains made in the ability to hear and record sounds in words served as the dependent variable in this study and were calculated by subtracting the participants’ entry scores from their exit scores.

Subjects were 2,787 Reading Recovery participants in one Midwestern state during the school year 1996-97. All students involved in the study entered the program in the beginning of first grade. Socioeconomic status and race were crucial variables in this study. Socioeconomic status (SES) was determined by the school lunch program and was divided into two main parts: (1) ‘Free and Reduced Lunch’ and (2) ‘Regularly Paid Lunch.’ Students in the sample could be categorized into 5 race groups used in this study, but groups were collapsed into three for this study: (1) ‘African-American,’ (2) ‘Caucasian,’ and (3) ‘Native American, Hispanic, and Asian.’ Extremely low numbers of Native Americans, Hispanic students, and Asian students were the reason to collapse the variable. This study focused on Reading Recovery participants from three demographic
groups: (1) ‘Low SES African-Americans,’ (2) ‘Others with Low SES,’ and (3) ‘Non-low SES’ students.

Data were drawn from The Ohio State University database. They were collected as part of the student information requested by the Reading Recovery National Data Evaluation Center 1996-97, and anonymity was assured for all children, schools, and districts.

Both descriptive and inferential statistics were used to address the research questions. Descriptive statistics provided the three groups’ entry scores, exit scores, and gain scores on the Hearing and Recording Sounds in Words task as well as each group’s length of time in the program. Inferential statistics included a chi square and a 3 X 3 (Group by Program Result) ANOVA. The variable ‘Group’ included the three demographic groups: (1) ‘African-Americans with Low SES,’ (2) ‘Others with Low SES,’ and (3) ‘Non-low SES’ students. The variable ‘Result’ included three levels of exiting status from the Reading Recovery program: (1) ‘Discontinued,’ (2) ‘Not Discontinued,’ and (3) ‘Nonprogram.’

The chi square statistics demonstrated that ‘Low SES African-Americans’ had the lowest percentage of ‘Not Discontinued’ students compared to the other two demographic groups, but they also had the highest percent of ‘Nonprogram’ participants with 5% more ‘Nonprogram’ students than the ‘Other Low SES’ category. Perhaps this figure indicates higher mobility for this group. The mean score of ‘Low SES African-American’ students at entry into, and exit from, the program differed by less than two points from the other two demographic groups. Low SES African-American students’ mean number of weeks were within one week of the other two groups.
The interaction of a two-way ANOVA (3X3), program status and demographic group, showed no statistical difference. Ceiling effects were encountered on the dependent variable Hearing and Recording Sounds in Words, so the results of a two-way ANOVA (3X3) revealing no main effect for demographic group as defined in this study must be cautiously interpreted. There was a difference among the program results with the ‘Discontinued’ group’s mean gain score exceeding the mean of the ‘Not Discontinued’ and ‘Nonprogram’ groups’ gain scores.

Conclusions

Two conclusions can be drawn from the findings of this study. The data, as described in Chapter 3, do have their limits, and those limits, discussed in Chapter 4, must be kept in mind when deriving the following conclusions.

From the analysis of the chi-square table we can conclude that varying demographic groups as defined in this study do meet performance criteria coequally. Prior research has suggested that Low SES African-Americans’ academic performances are inferior to other demographic groups. The percentage of ‘Low SES African-Americans’ who received the program succeeded in meeting the Reading Recovery performance criteria at exit similarly to the percentage of other demographic groups in this study (‘Non-low SES’ and ‘Others with Low SES’). The percentage of ‘Low SES African-Americans’ who did not complete the program exceeded the percentage of ‘Nonprogram’ students in the other two demographic groups. Finding a way to instruct all students for academic success, especially in the critical academic areas such as reading and writing, is an important responsibility for researchers and educators. It appears from
these findings that upon completion of the Reading Recovery program, the ‘Low SES African-Americans’ succeeded at a rate parallel to that of the other two demographic groups as defined in this study. Reading Recovery students are to receive “... a full program with an opportunity for up to 20 weeks for all children” (Askew, Fountas, Lyons, Pinnell, Schmitt, 1998, p. 19). Some students are not reaching this goal. Further inquiry into this goal can be supported by teacher leaders and site coordinators working with teachers and families of students to help support all students receiving a full program.

This study concludes that Reading Recovery program participants do exercise success in learning phonemic awareness. This conclusion reinforces what Reading Recovery experts have previously exerted regarding the program’s ability to promote growth in phonological skills (Askew, Fountas, Lyons, Pinnell, and Schmitt, 1998). Although a demographic gap exists in the educational achievement of our nation’s students, we can conclude within the confines of the parameters of this study that Reading Recovery program participants make progress in the development of phonemic awareness skills regardless of race and socioeconomic factors.

This study linked three very important aspects within educational research: early intervention, demographic characteristics, and phonemic awareness. This dissertation revealed information about how the subjects from various demographic groups learn to hear and record sounds in words as participants in an early intervention program. Although ceiling effects in this study on the dependent variable (gains made in Hearing and Recording Sounds in Words) influenced the interpretation of the results, the data in this study provided evidence that participation in the Reading Recovery program, a
literacy intervention, is related to phonemic learning for ‘Low SES African-Americans,’ ‘Others with Low SES,’ and ‘Non-low SES’ participants.

Suggestions For Further Research

As Clay suggested, “The challenge of literacy improvement is fine-tuning programs that are already satisfactory to get better results” (1998, p. 197). Further research should provide information for instructional shifts to occur, ensuring sound literacy instruction for all students, and therefore improving existing programs.

Beginning with what the child knows about literacy before moving into new material can be a powerful teaching technique (Clay, 1979). Significant gains can be made in literacy achievement when cultural knowledge is coupled with the known (Au, 1980). Pinnell stated, “In Reading Recovery, the key to learning is in the teacher-student interactions that surround encounters with texts” (1994, p. 149). Results of this study confirm the potential of the Reading Recovery program to improve phonemic development for participants from all three demographic groups (‘Low SES African-Americans,’ ‘Others with Low SES’ and ‘Non-low SES’ students). It may be that a sociocultural perspective is embedded within the one-to-one instructional frame. New research could focus on teacher-student interactions in the intimate and “scaffolded” one-to-one setting. This detailed research could detect any subtle differences that might exist in Reading Recovery teachers’ interactions with students of different races and economic groups. Since students from each of the three demographic groups made gains in hearing and recording sounds in words in this study, further research may include looking for important adjustments that teachers may be making for different demographic groups.
Generating new information on the instructional model from a multicultural perspective by describing how teacher-student interactions support students’ literacy successes would extend this study. Specifically, studies of what the teachers learn about decision making during lessons may be beneficial. Elliott (1994) analyzed teacher decision making during the Reading Recovery lesson, revealing patterns in teacher decision making throughout two students’ programs. A study more specific to the writing portion of the lesson described inter- and intra-actions of the teacher and child during the story writing portion of the lesson (Mott, 1994). Handerhan (1990) viewed reading and writing as sociocultural processes revealing patterns in four teachers’ performances during Reading Recovery lessons. Wilson (1988) examined shifts in the Reading Recovery teachers’ language use over training that was specific to the program. Advancing these studies to investigate, more specifically, cultural backgrounds and experiences of the Reading Recovery teacher during Reading Recovery training could extend our understanding of culture and cultural influences within the teacher’s daily interactions with the children in the early intervention program. Since “it is apparent that issues of multiculturalism will shape public policy in the coming decades” (Agada, 1998, p. 77), such studies will be important to our schools.

African-American children use language competently within their own culture (Walker-Dalhouse, 1993). Baratz and Baratz (1969) suggested that the African-American students need “... an education system that first recognizes their abilities and their culture, that draws upon these strengths and that incorporates them into the teaching process” (p. 402). If it is true, as multiculturalists believe, that knowledge is socially constructed (Agada, 1998), then our schools must be socialized in a way to ensure that all
students have equal opportunity to learn in the most effective way. In a study of effective urban schools with mainly 'Low SES African-American' students, Waxman and Huang (1997) found that student-student and student-teacher interactions occur far more often in effective schools when compared to ineffective schools. Maintaining an effective classroom learning environment has been suggested as a means to support African-American students (Padron, 1992).

This study demonstrated that the one-to-one intervention, Reading Recovery, is effective for our low SES students' growth in phonological development. Ceiling effects on the Hearing and Recording Sounds in Words task by each of the three demographic groups indicated mastery of an important body of knowledge. There are other measures of phonemic awareness. The Yopp-Singer Test of Phoneme Segmentation (Yopp, 1995) may help teachers to identify children experiencing difficulties in reading and spelling. Further study should investigate the most effective means to support all literacy learners, including our most at-risk students, in the classroom setting.

Since the 1970s, researchers have been studying the development of African-American English to establish the dialects as a rule-governed linguistic system (Battle, 1996). Walker-Dalhouse stated that disadvantaged African-Americans, "...come to us with a wealth of experiences and the ability to use language effectively within the boundaries of their particular culture" (1993, p. 24) and suggested research on the potential effectiveness of teaching reading to at-risk learners (1993). New studies into how students with various linguistic backgrounds would benefit most in literacy learning are necessary.
When an examination of the known includes cultural knowledge and the creation of culturally sensitive pedagogy, significant gains can be made in children’s early literacy learning (Au, 1980; Au & Jordan, 1981). When linguistic and cultural adjustments are made within literacy programs in our schools, all children can benefit (Au, 1993; Morrow 1992). Studies have revealed interactions of classroom activities and various aspects of the Reading Recovery program (Paaramann, 1995; Schnug 1991; White, 1992). This study provides new information on the successes of Reading Recovery participants from varying demographic categories (‘Low SES African-Americans’, ‘Others with Low-SES’, and ‘Non-low SES’ participants). Further research into how to best complement classroom practices and Reading Recovery practices could strengthen classroom instruction and Reading Recovery instruction.

Dufresne (1994) found that new information gained by the Reading Recovery student transfers into the classroom, and that a variety of activities and opportunities in the classroom can reinforce new reading strategies learned within the daily Reading Recovery lesson. A more specific study of how classroom teachers and Reading Recovery teachers could collaborate to improve low SES African-American students’ academic skills may advance the curricular decisions made during the daily intervention, in the classroom, and in school-wide practices.

In this study, students’ phonemic gains over the duration of the program served as the dependent variable. In future research, it would be important to see how well these gains are sustained over an extended period of time. Other reports have concluded that students participating in the Reading Recovery program can sustain the literacy gains into the latter grades as reported in three state-wide studies (see Reading Recovery Executive
Summary: 1984-1997, Reading Recovery Council of North America, 1998) and various other studies (Bufalino, 1993; Collins, 1994; Howard 1995; Opacic, 1994; Rozzelle, 1996). Furthering this research to include sustained gains of Reading Recovery students, in particular phonemic awareness abilities, for various demographic groups will provide further information regarding sustained literacy successes of various races and socioeconomic groups.

Another research area of interest is the relationship between race and test scores. Jencks and Phillips (1998) have observed that African-Americans score considerably below European Americans on vocabulary, reading, and math, a gap that appears before formal schooling and is unfortunately maintained into adulthood. Although test score gaps between racial groups have narrowed since 1970. American blacks score below 75% of American whites on standardized tests (Jencks & Phillips, 1998). A study specific to the Reading Recovery program could measure how well Reading Recovery students of varying demographic groups compare to non Reading Recovery program participants in the same demographic group on standardized tests and it could serve to evaluate the improvement rate of the low achievers who participate in the Reading Recovery program.

Research on the relationships between phonemic awareness skills and standardized reading test scores are strong and positive (Yopp, 2000). Chall, Roswell, and Blumenthal’s (1963) study of 40 African-American students across four years demonstrated a positive relationship between auditory blending skills and scores on various tests including the Metropolitan Primary II and the Metropolitan Elementary. Although correlational research is not causal, it may reveal predictors of reading success. Research of Reading Recovery participants from varying demographic groups’ phonemic
awareness skills and standardized test scores in later grades would reveal the degree of the relationship.

An increase in standardized test scores, however, only narrowly defines effectiveness (Slavin, 1987). Determining the effectiveness of academic interventions must incorporate motivational variables (Hudley, 1997). Effectiveness can then be measured by motivation, which raises self-esteem (Ryan & Grolnick, 1986). Increased determination may also be important to reduce the dropout rates for the poor and culturally diverse children in American society, especially in urban areas (Irvine, 1990). Another resourceful research study could describe how well the Reading Recovery program increases not only self-esteem for participants (Stoya, 1995; Traynelis & Hansell, 1993; Davis, 1992; Sevano, 1994; Geekie, 1992; Cohen, McDonnell, & Osborn, 1989; Fratter, 1994), but also increases the sustained motivation of its participants with low socioeconomic and culturally diverse backgrounds.

Although other studies have indicated that low SES African-Americans do not do as well in some academic areas as peers from other races and SES, this study suggested that ‘Low SES African-Americans’ are capable of gaining an ability to hear and record sounds in words. Other studies have indicated that low SES African-American students do not achieve with the same success rates as their peers. In fact, low SES African-Americans are over-represented when compared to other cultural groups in special education programs (Artiles and Trent, 1994; Graybill, 1997; Keulen, 1995; Russo and Talbert-Johnson, 1997), which points to our failure in American society to truly offer equal opportunities to all children. Further research on comparisons of ‘Low SES African-
Americans' and other demographic groups could include any one of the remaining five tasks of the Observation Survey.

An early intervention program can reduce these special education referrals. Dianda (1993) found that the early intervention program, Success for All, reduced special education placements and referrals and virtually eliminated retention for African-American children in high poverty areas. Schmidt (1993) used survey research to investigate the impact Reading Recovery has on referrals to special education and Chapter I programs and promotion to second grade. Returned questionnaires from Reading Recovery personnel across the United States suggested that Reading Recovery has reduced referrals to special programs. Reading Recovery can also reduce the number of students in Learning Disabled (LD) programs (Clay, 1987a; Lyons 1994, 1987; see also Executive Summary: 1984-1997, Reading Recovery Council of North America, 1998) and can be a preventative for mislabeling young at-risk learners (Lyons, 1989). An investigation into how well Reading Recovery could reduce the number of students from various cultural groups in special programs would be beneficial. Ultimately, our success in educating our children lies in our ability to prevent their failures early in their academic careers.

This study did not include gender, only race and level of SES. Some studies specific to gender with a multicultural focus have suggested that African-American males experience lower wages in the work force, and face a decline in employment rate (see Strickland and Ascher, 1992). Other studies have suggested that extreme risks of academic affliction among African-American males exists in our schools, including a decline in college graduation rates (see Wilson-Sadberry, Winfield, Royster, 1991).
 Programs demonstrating successes with large multicultural populations, such as the
Reading Recovery program, may focus on gender-related issues to demonstrate how urban
African-American males could be better supported within our public school system.

Walker-Dalhouse has called for phonics instruction for African-American students
(1993). Harry, Allen, and McLaughlin studied parental views of early literacy instruction
for African-American students and found a request for an emphasis on phonics instruction
(1996). Explicit phonemic training coupled with the concept of reading miscues based
upon speech and oral language development, could create an interesting study regarding
explicit phonics instruction and early literacy learning for African-Americans. In a study
describing the integration of meaning, structure, and visual cues of two first-grade
Reading Recovery students, Fitzgerald-Hastings (1991) found a pattern where cues are
integrated in strategic reading, including the use of meaning, structure, and visual
information from the text. Cue integration was followed by habituation as the two
students acquired strategic learning. Studies like Fitzgerald-Hastings’s, capitalizing on a
more specific population including African-Americans of low SES, may share new insight
into how reading cues, including visual information, are used. Such a study would be
valuable, as, like the current study suggests, African-American students can gain
phonemic awareness as Reading Recovery participants. Extending this research may
include an analysis of African-American students’ text reading during daily lessons to
identify how miscues, including visual information, are used when decoding print.

Research on young, urban, and low-income parents suggests that parents are more
involved with their children’s learning during the earlier years of development (Lewis,
1992), and that to improve the education of African-American students from low-income
homes, a collaborative effort between parents and educators is needed (Neuman, Hagedorn, Celano & Daly, 1993). Improvement may require the initiative of the teachers rather than parents in order to be effective, because, to a great extent, it will involve educating the parents so that they learn how best to help their children become literate. Holland (1991) researched 6 African-American families and 7 white Appalachian families by conducting interviews throughout the school year within their homes. She found that the parents within her study were very interested in supporting their child’s progress at school, and that the Reading Recovery program created a positive home-school connection for the parents involved. Continuing Holland’s research on home-school connections could involve specific instructional support for parents to help their Reading Recovery child at home. Perhaps regularly scheduled visits for the parents to observe Reading Recovery lessons could support parents’ understanding of how children learn and improve the quality of instruction the child receives at home.

The aforementioned recommendations, though not exhaustive, encompass important points to be considered when planning and developing further research and could extend our knowledge of students’ cultural needs and differences within our educational system. It is particularly important to understand how literacy learning skills can be improved for young children, especially those with less advantageous backgrounds, and then understand how to put the results of newfound research into practice in our schools and homes.
Summary

Recent research has established the successes of the Reading Recovery program; other research has confirmed the importance of phonemic skills in early literacy learning. With this study, we now know that three important demographic groups (‘Low SES African-Americans,’ ‘Others with Low SES,’ and ‘Non-low SES’ students), can gain phonemic skills as participants in an early intervention program.

In this study, I examined the effects of Reading Recovery for students in three demographic groups (‘Non-low SES African-American students,’ ‘Low SES students from other races,’ and ‘Non-low SES’ students) with the goal of better understanding how well the three demographic groups compared in program status, length of time in program, and degree of change in phonological abilities. The results provided information as to how low socioeconomic African-American students perform on a critical component of literacy learning, phonemic awareness. If teachers can improve literacy skills by capitalizing on the already well-rehearsed cultural experiences of the children, then the same teaching can be applied to the lowest literacy achiever in an accelerated way, such that the overall literacy ability can be improved in a short period of time. Our goal, then, should be not to simply provide support for one or two culturally different groups, but to redefine our instructional support system to instruct all students at risk of literacy learning at a very early age.
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APPENDIX A
Criteria and Process for Discontinuing Service to Children

Reading Recovery provides one-to-one instruction until a child's performance shows behavioral evidence that the extra help can be discontinued. Educators involved in the program often talk about the child being able to perform within average or above average levels in classroom literacy instruction, and that is true. In classrooms where the average text reading level is too low to support the child's continued growth, discontinuing levels will need to be higher than the average. Therefore, there is another important criterion for discontinuing. The child must have a self-extending system for literacy. This means that the child is able to use a variety of flexible strategies for problem solving in reading and writing text. It is expected that the child will continue to improve in reading and writing skills and will learn from reading and writing in regular classroom instruction.

Discontinuing Reading Recovery service is a carefully considered decision that is collaboratively made by the classroom teacher, the Reading Recovery teacher, and other members of a Reading Recovery team. In schools, the team typically includes the building administrator, Reading Recovery teacher, classroom teachers, and others. The team communicates closely with the teacher leader, who operates across many schools.

At the time of discontinuing, a systematic process is followed:

1. Through consultation between the classroom teacher and the Reading Recovery teacher, the child is recognized as performing successfully in the classroom. The child is able to read and write within expected average ranges or a little above
average at that point of time in the school year.

2. A trained assessor, someone different from the Reading Recovery teacher who has been working with the child, administers the range of assessments (Observation Survey).

3. Through consultation, the educators involved decided whether the child is independently using reading and writing process with comprehension, rapid word solving, and fluency.

4. Reading Recovery tutoring is discontinued; data are recorded on scan forms; and the child’s family members are informed.

5. The Reading Recovery teacher monitors the child’s progress regularly until the educational team is assured that the child is continuing to make progress at a satisfactory rate.

The above information is taken directly from Reading Recovery Review (Askew, Fountas, Lyons, Pinnell, & Schmitt, 1999), a publication of the Reading Recovery Council of North America.
APPENDIX B
General procedures for data collection:

1. In consultation with the classroom teachers, the Reading Recovery teacher identifies individual students who need a check on performance, administers six assessments, and selects the lowest children.

2. The Reading Recovery teacher fills out a computer scan form with vital data on each child and entry scores.

3. The Reading Recovery teacher provides daily lessons to each child selected.

4. As children exit the program, the Reading Recovery teacher records exit scores on the scan form.

5. As new children enter the program, each child’s entry data are recorded on a new scan form.

6. At the end of the first grade year, all children are again tested and their scores recorded on scan forms.

7. A separate scan form is completed to report contextual variables for the Reading Recovery site.

8. Scan forms are checked by district officials and sent to the National Data Evaluation Center (NDEC) for Reading Recovery. Scan forms report the end-of-year status of each child (for example, whether service was successfully discontinued because the child met performance criteria).

9. Data are analyzed and aggregated at the National Data Evaluation Center for Reading Recovery.

10. Results are sent back to each site so that local reports may incorporate the information into their local decision making.
11. Each site reports local data to local officials, to university training centers, and to appropriate school officials and policy decision makers.

12. A national report is prepared and published annually.

The above information is taken directly from Reading Recovery Review (Askew, Fountas, Lyons, Pinnell, & Schmitt, 1999, p. 8), a publication of the Reading Recovery Council of North America.
MARKING AND HANDLING INSTRUCTIONS:

1. Darken the appropriate bubbles beneath the written entries.
2. Make marks only in designated areas.
3. If data are not available for an item, leave the item blank.
4. When erasing marks be sure to erase thoroughly.
5. Never attempt to fill in a triangle.
6. Be careful on dates. Make sure each column is bubbled.
7. Only one scan form may be used per student. If the second half of a scan form (pages 5-8) is lost or destroyed, the first half (pages 1-4) has been submitted for processing, contact your teacher leader for instructions.
8. All numeric entries should be right justified except for Student I.D. number. If the number uses less space than is available, bubble zero in the preceding space(s).

E.g. in a three column item, 30 is bubbled in as 030.
(Note: I.D. is an exception, do not bubble zero in unused spaces)

9. Perforated edges should be separated cleanly with no tear. Tiny bits of perforation should be removed.
10. Do not staple or paper clip scan sheets.
11. When submitting pages 1-4 (first halves), the scan sheets must be kept in pairs with matching scan numbers. The same is true later in the year when pages 5-8 (second halves) are turned in.

DIRECTIONS FOR PAGES 2 AND 3

Fill in the following items as soon as a student is identified to enter the program. Remember to use a number 2 pencil and to completely fill the bubbles. Items explained in the directions are specified by the same number inside a triangle on the scan form.

1. STUDENT NAME, READING RECOVERY TEACHER/SCHOOL, PARENT/GUARDIAN NAME, ADDRESS, CITY,
   STATE, ZIP: After entering this information go to the top of page 2. Insert the student name, and your official National Diffusion Network (NDN) site name. Enter in ZIP code.

2. STUDENT NAME: Beginning at the far left, write in full, correct, name of the student student and darken the appropriate bubbles. If a name is longer than the spaces available in the next many letters will fill.

3. STUDENT ID: This item is optional. Bubble from the top left to right, leave unused spaces blank.

5-6. STATE, SITE, SCHOOL SYSTEM, BUILDING, and TEACHER CODE: These codes must be obtained from your teacher leader/facility.

9. SCHOOL YEAR: Abbreviate school year to four digits.
   E.g. 1993-1994 = 9394

10. SEX: Mark boy or female.

11. STUDENT BIRTHDATE: Enter the student's birthdate.

12. SIBLINGS: Mark the number of brothers and sisters living in the same residence as the student. Do not include the Reading Recovery student.

13. NATIVE LANGUAGE: Identify the student's native language. If the native language is not English, specify English fluency based on your assessment (LEP = Limited English Proficiency, NEP = No English Proficiency). One and only one bubble on this item should be darken. If native language is other than English, Spanish, or Chinese please specify in the space provided.

14. LUNCH: Indicate if the student receives a free or reduced lunch. A Regular lunch includes purchasing a lunch, bringing lunch to school, going home for lunch, etc. If there is a lunch program at your school leave this item blank.

DIRECTIONS FOR PAGES 2 AND 3 CONTINUE ON PAGE 4

DO NOT WRITE IN THIS AREA
Reading Recovery Data Sheet  
The Ohio State University  
Columbus, Ohio 43210

STUDENT LAST NAME, FIRST NAME, MIDDLE INITIAL

TEACHER LEADER SIGNATURE AFTER CHECKING FORM

READING RECOVERY TEACHER SIGNATURE AFTER CHECKING FORM

PARENT (GUARDIAN) LAST NAME, FIRST NAME, MIDDLE INITIAL

PARENT (GUARDIAN) STREET ADDRESS, CITY, STATE AND ZIP CODE

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Native Language (Mark Only One)

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REMINDER!

Write student's name on page 6.  
Form numbers on pages 2 and 6 need to match for student to have corresponding entry and exit scores.

MARKING INSTRUCTIONS

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DO NOT WRITE IN THIS AREA

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192
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**BASEAL LEVEL CODES**

No Basal Used = 94, X = 96, P99 = 96, P99 = 97, P99 = 98, P99 = 99, 1-1 = 11, 1-2 = 12, 2-1 = 21, 2-2 = 22, etc.

**ENTRY TEST DATA**

Same as FALL TEST DATA

**TEXT RDG LEVEL**

A or B = 00

**TEXT RDG LEVEL %**

A = 000
B = 100

**FALL SCORES NOT AVAILABLE**

### ENTRY TEST DATA

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**BASEAL LEVEL CODES**

No Basal Used = 94, X = 96, P99 = 96, P99 = 97, P99 = 98, P99 = 99, 1-1 = 11, 1-2 = 12, 2-1 = 21, 2-2 = 22, etc.

**ENTRY TEST LEVEL**

A or B = 00

**ENTRY TEST LEVEL %**

A = 000
B = 100

**TEACHER IN TRAINING OR**

**TEACHER LEADER IN TRAINING**

### REMINDER!

Only use items 28 & 29 if instructed to do so by your Teacher Leader/Trainer

**NPQ RESEARCH**

**NATIONAL LIST**

193
DO NOT WRITE IN THIS AREA

DIRECTIONS FOR PAGES 2 AND 3, CONTINUED

15. TWIN CHILDREN: If the student is a twin, indicate whether the student is an identical or fraternal twin. Mark not applicable otherwise.

16. BIRTH ORDER: Indicate whether this student was an only child, the first born (oldest), the second born, the third born, or other (born fourth, fifth, etc.).

17. READING PLACEMENT: Enter the reading placement to which the student was assigned at the beginning of the year. If the child was not placed in a reading group at that time, leave the area blank. If the reading groups in the child's class are not the same as the four groups listed on the scan form, use your own judgment to determine which of the listed groups would be closest to the child's reading group level.

18. RACE: Mark the race of the student using the following classifications:
   Native American — Persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.
   White, not of Hispanic origin — Persons having origins in any of the original peoples of Europe, North Africa, or the Middle East.
   Black, not of Hispanic origin — Persons having origins in any of the black racial groups of Africa.
   Asian or Pacific Islander — Persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes for example, China, Japan, Korea, the Philippine Islands, and Samoas.
   Hispanic — Persons of Mexican, Puerto Rican, Cuban, Central and South American, or Spanish culture or origin, regardless of race.

19. DATE OF FIRST LESSON: Enter the date that you began instruction with the student and mark the appropriate bubbles. Do not count "In The Known" sessions.

20. RANDOM SAMPLE: Only darken this bubble if the student is not a Reading Recovery student and is part of the site random sample.

21. FALL TEST DATE, FALL test scores, and BASAL LEVEL: If test reading level is A or B, see codes on the scan form. Use this space for beginning of school testing only.

22. BASAL SERIES and TITLE: Enter basal series and title.

23. ENTRY TEST DATE SAME AS FALL TEST DATA: If the student began the program within 6 weeks of fall testing, darken this bubble. If this item is bubbled, the computer will automatically complete all entry information including data and basal level.

IMPORTANT: If fall and entry test scores are not the same, both the entry test data and the fall test data should be entered. This would occur if the child enters the program more than six weeks after the fall test date.

24. FALL SCORES NOT AVAILABLE: Mark this item if fall scores are not available for a student who enters Reading Recovery. For such a child, you would record entry test data and darken the bubble labeled "fall scores not available."

25. ENTRY TEST DATE, ENTRY test scores, and BASAL LEVEL: If test reading level is A or B, see codes on the scan form.

26. BASAL SERIES and TITLE: Enter basal series and title.

27. TEACHER IN TRAINING OR TEACHER LEADER IN TRAINING: Darken this bubble only if you are a teacher in training or a teacher leader in training.

28. COLUMNS A-F: This section is available to record site specific information. Use columns A through F only if you are instructed to do so by your teacher leader/trainer.

29. NYU RESEARCH WAITING LIST: This item is used only by sites affiliated with the New York University training center.

PAGES 1-4 ARE NOW READY FOR YOUR TEACHER LEADER TO REVIEW, SIGN, AND SEND TO OSU. THANK YOU.
DO NOT WRITE IN THIS AREA

DIRECTIONS FOR PAGES 6 AND 7

1. STUDENT NAME and SITE NAME: These items should have already been filled out when pages 2 and 3 were completed.
2. NUMBER OF LESSONS: Enter the number of lessons the student received during the course of Reading Recovery instruction and mark the appropriate bubbles. Do not include "In The Known" lessons.
3. TOTAL WEEKS: Record the number of weeks the student was in the program. This does include weeks during "In The Known" lessons. If only one lesson is given within a calendar week, that week is still counted in the total weeks item.
4. ACTION DATE: Enter the date that the status of the student was determined.
5. END OF PROGRAM STATUS: Carefully record the student's end of program status. One and only one bubble on this item should be darkened, otherwise the form will not be scanned properly.
6. DAYS ABSENT: Record number of days the student was absent from Reading Recovery lessons. This does not include days missed during "In The Known" lessons, but should include interrupted service days.
7. EXIT TEST DATE, EXIT test scores, and BASAL LEVEL: If text reading level is A or B, see codes on the scan form.
8. BASAL SERIES and TITLE: Enter basal series and title.

IMPORTANT: Exit scores are needed only for children who are discontinued during or at year end. Do not record exit scores for children still in Reading Recovery at year end. Exit scores may be used for Reading Recovery children who are withdrawn before the end of the year. If the exit test date is within six weeks of spring testing, the exit scores serve as spring scores and must be recorded in both items 7 and 9.

9. SPRING TEST DATE, SPRING test scores, and BASAL LEVEL: If text reading level is A or B, see codes on the scan form.
10. BASAL SERIES and TITLE: Enter basal series and title.

IMPORTANT: All traditional school year students should have spring test data unless they were unavailable at spring test time. End of year test data for summer or year-round students should be recorded in the summer test data section of the scan form (see items 18 through 20).

11. STUDENT NOT AVAILABLE FOR SPRING TEST: If a student has moved away or is otherwise unavailable for spring testing, mark the student not available for spring test bubble.
12. READING PLACEMENT: Enter the reading placement to which the student was assigned at the end of the year. If the reading groups in the child's class are not the same as the four groups listed on the scan form, use your own judgment to determine which of the listed groups would be closest to the child's reading group level.
13. RETENTION: Fill out retention information if you know whether a student will be promoted or retained at the end of the school year.
14. INTERRUPTED SERVICE: If Reading Recovery instruction was interrupted, darken the bubble next to the item reflecting the number of consecutive days the student was absent. If the period of interruption was five consecutive days or less, leave the interrupted service item blank.
15. READING RECOVERY TAUGHT IN SPANISH: Darken this bubble if Reading Recovery lessons were taught in Spanish.
16. PRIVATE/NON-PUBLIC SCHOOL: Only darken this bubble if the Reading Recovery student is attending a private/non-public school.
17. COLUMNS A-F: This section is available to record site specific information. Use columns A through F only when you are instructed to do so by your teacher leader/teacher.

DIRECTIONS FOR PAGES 6 AND 7 CONTINUE ON PAGE 3
Reading Recovery® Data Sheet
The Ohio State University
Columbus, Ohio 43210

STUDENT LAST NAME, FIRST NAME MIDDLE INITIAL

SITE NAME

SIGNATURE OF TEACHER LEADER

SIGNATURE OF READING RECOVERY TEACHER

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REMINDER: Exit scores are needed only for children who are discontinued during or at year end. Do not record exit scores for children still in Reading Recovery at year end. Exit scores may be used for a Reading Recovery child who was withdrawn before the end of the year.

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**BASAL SERIES:**

**TITLE:**

**READING LEVELS:**

- **End of Year (EOY):**
  - 1: High
  - 2: Upper Middle
  - 3: Lower Middle
  - 4: Low

**READING RECOVERY TAUGHT IN SPANISH:**

- **PRIVATE NON-PUBLIC SCHOOL:**

**SUMMER TEST DATE:**

- **MONTH | DAY | YEAR | SWV | SSOC | TEXT RDG LEVEL | ELA | SOWY | TCAP | STUDENT NOT AVAILABLE FOR SPRING TEST |
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**SUMMER YEAR RATING/DATE:**

- **Summer School Year-round:**

**BASE LEVEL CODES:**

- **No Basal Used (N):**
- **PP: 55,** **PP2: 57,** **PP3: 56,** **P: 58,** **1-1: 11,** **1-2: 12,** **2-1: 21,** **2-2: 22,** etc.

**TEXT RDG LEVEL:**

- **A or B = 00**

**TEXT RDG LEVEL %:**

- **A = 000**
- **B = 100**

**REMARKS:** Students should not have summer test data unless they were involved in a summer or year-round reading recovery program.
DIRECTIONS FOR PAGES 6 AND 7, CONTINUED

IMPORTANT: Students should have summer test data only if they were involved in a summer or year-round Reading Recovery program. These students will not have spring test scores.

18. SUMMER TEST DATE, SUMMER test scores, and BASAL LEVEL: If test reading level is A or B, see codes on the scan form.
19. BASAL SERIES and TITLE: Enter basal series and title.
20. SUMMER/YEAR-ROUND STUDENT: Use this item only if the student is involved in a summer or year-round Reading Recovery program. One and only one bubble on this item should be darkened.

PAGES 5-8 ARE NOW READY FOR YOUR TEACHER LEADER TO REVIEW, SIGN, AND SEND TO OSU. THANK YOU.

Note: If a Reading Recovery student transfers to another building or school district, the scan form must go with the student and be completed by the Reading Recovery teacher at the receiving building or school district. If a student transfers to a school without Reading Recovery, contact your teacher leader/trainee.
APPENDIX D
Prompts for
4 WRITING VOCABULARY

Beginning Time: ____________ Ending Time: ____________

WRITING PROMPTS: I, is, a, to, the, we, me, at, on, in, go (going), my, cat (cats), sat, can, it,
love, mom, dad, and, yes, no, dog, good, you, ball, he, she, play, car, for, come, like, see, here, up,
look, this.
Color words - red; number words - ten; names of family members or friends; animal words - pig, cow; prompts
from the Word Test; Basal word prompts.

Note: Do not require the child to read the words s/he has written.

COMMENTS:

Directions for
5 HEARING SOUNDS IN WORDS (DICTATION)

"I am going to read you a story. When I have read it through once I will read it again very slowly so that
you can write the words of the story." -- Read through the sentences at normal speed. "Some of the words
are hard. Say them slowly and think how you can write them."

BEGINNING OF
THE YEAR TESTING,
FORM D

1. The bus is coming. It will stop here
to let me get on.

ENTERING OR
DISCONTINUING,
FORM A

2. I have a big dog at home.

Today I am going to take him to
school.

DISCONTINUING,
FORM C (Use this form
only when Form A was
used to enter the
child)

3. I can see the red boat that we are
going to have a ride in.

END OF THE YEAR
TESTING,
FORM E

4. The boy is riding his bike.

He can go very fast on it.

If the child has difficulty say, "You say it slowly. How would you start to write it? What can you hear? What
else can you hear?" If the child cannot complete the word, say "We'll leave that word. The next one
is..."

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5 HEARING AND RECORDING SOUNDS IN WORDS (DICTATION TASK)
OBSERVATION SHEET

Date: ________________________________

Name: ________________________________  School: ________________________________

Recorder: ________________________________  Classroom Teacher: ________________________________

Circle Form Used (A, B, C, D or E): __________________________

(Fold heading under before child uses sheet)

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always comes star comes week comes comes

I like my mom. She always comes to star of the week.