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THE IMPACT OF PARTICIPATION IN THE LOTTERY FOR EDUCATION AFTER-SCHOOL
PROGRAMS (LEAPs) IN A MIDDLE SCHOOL IN MIDDLE TENNESSEE ON STUDENT
ACADEMIC ACHIEVEMENT GROWTH

Misty A. Hodge

The Impact of Participation in the Lottery for Education After-School Programs (LEAPs)
in a Middle School in Middle Tennessee on Student Academic Achievement Growth

A Field Study
Presented to
The College of Graduate Studies
Austin Peay State University
In Partial Fulfillment
Of
The Requirements for the Degree
Education Specialist

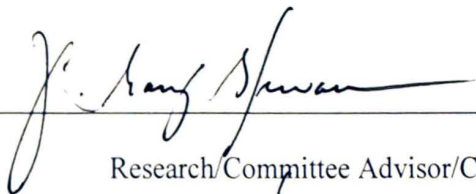
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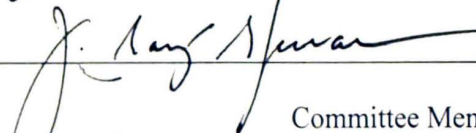
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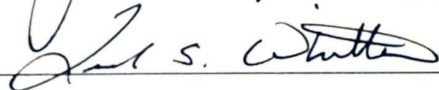
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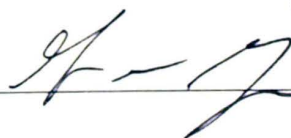
To the College of Graduate Studies:

We are submitting a Field Study written by Misty A. Hodge entitled “The Impact of Participation in the Lottery for Education: After-School Programs (LEAPs) in a Middle School in Middle Tennessee on Student Academic Achievement Growth.” We have examined the final copy of this Field Study for form and content. We recommend that it be accepted in partial fulfillment of the requirements for the degree of Education Specialist.

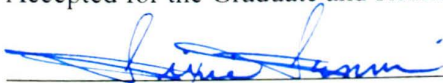

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ABSTRACT

MISTY A. HODGE. The Impact of Participation in the Lottery for Education: After-School Programs (LEAPs) in a Middle School in Middle Tennessee on Student Academic Achievement Growth (Under the direction of DR. GARY STEWART.)

Purpose: The purpose of this causal-comparative study was to determine the impact of regular student participation in the middle school LEAPs after-school program on student academic achievement growth in the areas of Reading and Mathematics.

Methods: Three research questions were posed. Question 1: Do middle school students who regularly attend the after-school LEAPs program at a middle school in Middle Tennessee show greater academic gains in reading than students who do not attend? Question 2: Do middle school students who regularly attend the after-school LEAPs program at a middle school in Middle Tennessee show greater academic gains in Mathematics than students who do not attend? Question 3: For middle school students who regularly attend the after-school LEAPs program at a middle school in Middle Tennessee, are there variations in academic outcomes based on gender, ethnicity, grade level, or socio-economic status? The investigation gathered the scores of LEAPs students for the 2010-2011 and 2011-2012 academic years and compared those of a randomly selected group from the same population. Paired samples t-tests were conducted to compare the two groups overall achievement growth across grade levels in both Reading and Mathematics.

Results: The results indicated that the mean NCE growth score for LEAPs students in reading ($M = 0.49$, $SD = 14.49$) was not significantly greater than the mean NCE growth score for non-LEAPs students who were equally matched ($M = -2.85$, $SD = 12.92$), $t(46) = 1.1486$, $p < .05$. Also, the results indicated that the mean NCE growth score for LEAPs students in Mathematics ($M = 3.04$, $SD = 12.50$) was not significantly greater than the mean NCE growth score for non-LEAPs students who were equally matched ($M = -0.32$, $SD = 11.75$), $t(46) = 1.1923$, $p < .05$. Since there was no significant difference between the two groups, the third question did not need to be answered.

Discussion: In Reading, the LEAPs students on average gained one-half of a percentile point on the TCAP. In contrast, the non-LEAPs matched group lost almost 3 percentile points. Also, in Mathematics, the LEAPs participants on average increased their performance by 3 percentile points while the non-LEAPs matched students decreased by almost one-half a percentile point. Both comparisons would suggest that there was a note-worthy educational difference in the performance of these two groups.

Conclusions: This study confirms that the LEAPs after-school program can be associated with greater academic growth but may not be the key factor in such positive outcomes.

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CHAPTER I

Introduction

Importance of the Problem

After-School Alliance (2009a) reports 30% of middle school students go unsupervised at the end of the school day. Quality after-school programs are one way to provide a safe alternative during the most violent hours for youth (U.S. Department of Justice, 2006). Therefore, the Tennessee General Assembly under TCA 49-6-702 ruled 100% of unclaimed lottery prizes should be utilized to fund after-school educational programs within Tennessee with a goal of providing academic enrichment (Lottery for Education: After-school Programs (LEAPs) Annual Report, 2011). Students who qualify for free/reduced lunch or are at-risk of educational disadvantages have first priority when accepting applications and are provided services in Reading, Mathematics, Science, and Computer Literacy skills development as well as academic tutoring and leisure opportunities. In the school year 2010-2011, LEAPs had 200 locations across Tennessee which served over 27,000 at-risk students.

The schools housing LEAPs assume that the program not only provides a safe place but also enhances student achievement. In fact, several of the LEAPs grantees have used state assessment results to note student improvement (LEAPs Annual Report, 2011). However, many research studies have recognized that after-school programs must contain certain characteristics to be effective. The Harvard Family Research Project (HFRP) (2010) stipulated while not all after-school programs have demonstrated academic benefits for students, positive outcomes have consistently been associated with sustained student participation, quality programming, and family and community partnerships.

Relationship to the Problem

The LEAPs Annual Report (2011) exhorts “some state and national initiatives that are being addressed in LEAPs relate to academic achievement, improving graduation and dropout rates, and nutrition and physical fitness” (p. 2). Therefore, the relationship between LEAPs at a middle school in Middle Tennessee and the academic outcomes of its students should be examined.

Research Questions

1. Do middle school students who regularly attend the after-school LEAPs program at a middle school in Middle Tennessee show greater academic gains in Reading than students who do not attend?
2. Do middle school students who regularly attend the after-school LEAPs program at a middle school in Middle Tennessee show greater academic gains in Mathematics than students who do not attend?
3. For middle school students who regularly attend the after-school LEAPs program at a middle school in Middle Tennessee, are there variations in academic outcomes based on gender, ethnicity, grade level, or socio-economic status?

Research Hypotheses

1. There will be no significant difference between the participant group and non-participant group on the Reading portions of the TCAP.
2. There will be no significant difference between the participant group and non-participant group on the Mathematics portions of the TCAP.
3. There will be no significant differences found for gender, ethnicity, grade level, or socio-economic status on the Reading and Mathematics portions of the TCAP.

Research Design

This causal-comparative study inspected the impact of regular student participation in the middle school LEAPs after-school program on student academic achievement growth in the areas of Reading and Mathematics. The differences in achievement gains of normal curve equivalent (NCE) scores on the Tennessee Comprehensive Assessment Program (TCAP) of LEAPs students for the 2010-2011 and 2011-2012 school years were gathered and compared to those of a matching student population. If significant results are noted, then results will be further analyzed for differences among the demographics of gender, ethnicity, and socioeconomic status.

Definitions

1. Economically Disadvantaged (U.S. Department of Agriculture, 2012) - A student who qualifies for free/reduced lunch.
2. LEAPs - Lottery for Education: After-school Programs (LEAPs Annual Report, 2011) - Provides Tennessee students with academics activities that reinforce and enhance the regular school program for an average of 15 hours per week in the areas of Reading, Mathematics or Science, and Computer Literacy skills development, academic mentoring or tutoring, and sports/leisure opportunities; available to students 5-18 years of age who are enrolled in elementary or secondary school; 50% of attendees must qualify for free/reduced lunch, be at-risk of failing a grade level, be at-risk of abuse, neglect, or disability, be at-risk of state custody, or be zoned for a school failing to make AYP.
3. NCE - Normal Curve Equivalent (Education Consumers Foundation, 2012) - A test score with a range from 1 to 99, with an average of 50; similar to percentiles.

4. Performance Level - stage of student achievement (Tennessee Department of Education, Office of Assessment and Evaluation, 2010) –
 - a. Below Basic: no mastery of concepts and not prepared for next grade level;
 - b. Basic: partial mastery of concepts and minimally prepared for next grade level;
 - c. Proficient: mastery of concepts and prepared for next grade level;
 - d. Advanced: superior mastery and significantly prepared for next grade level
(http://www.state.tn.us/education/assessment/doc/ACHEdu_Guide_test_interp.pdf)
5. Academic Growth - The difference, positive or negative, of a student's NCE scores on TCAP of last and this year.
6. Regular Attendance/Participation - A regular participant was any student who attended the LEAPs after-school program at the middle school for a minimum of 100 or more days during the school year; attendance in the program was voluntary in nature, and no fees were assessed to the student, parent, or school.
7. TCAP -Tennessee Comprehensive Assessment Program (Tennessee Department of Education, Office of Assessment and Evaluation, 2010) - An achievement test that uses multiple choice questions to measure knowledge and application skills in Reading/Language Arts, Mathematics, Science, and Social Studies in grades 3-8; a criterion-referenced test that measures student performance against specific student performance indicators.

CHAPTER II

Review of Literature

Historical Perspective

In the last part of the nineteenth century, after-school programs first appeared due to the decreased use of child labor and the increase of school attendance. Since the work schedule of parents no longer matched the school and work schedule of their children, students were left unattended in communities across the country (Noam & Malti, 2008). With more free time and overcrowding in tenement apartments, children often gathered in the streets. This led to neighborhood movements to create playgrounds and indoor recreational programs as positive after-school alternatives. By the beginning of the twentieth century, more organized activities such as sewing and housekeeping for girls and metal and wood work for boys were offered after-school. Program attendees also read books and magazines, played board games, and took field trips to local events (Halpern, 2002).

Current Status

By 2009, 8.4 million children were participating in some kind of after-school program (After-school Alliance, 2009b). The U.S. Department of Education, National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences (NCEE) (2009a) has identified four major types of after-school programs that operate in public school systems: fee-based stand-alone day cares; stand-alone academic programs; formal stand-alone programs; and broad-based after-school programs. Fee-based stand-alone day care programs have accounted for 34% of after-school enrollment. They have required parents to pay fees, provide adult supervision, and integrate homework help,

recreational endeavors, and cultural enrichment activities such as arts and crafts. Thirty-nine percent of after-school programs have been stand-alone academic instruction or tutoring services that have sought to improve student performance alone. The programs have focused exclusively on increasing mastery of Mathematics, Reading, and Science skills. The 21st Century Community Learning Centers (21st CCLCs) have been federally funded programs that have offered academic instruction and enrichment courses in areas such as art, music, drama, technology, and counseling. Other types of formal stand-alone or broad-based after-school programs have included After-School All-Stars, Boys and Girls Clubs of America, 4-H After-school, Junior Achievement, Young Rembrandts, and the YMCA (After-School Alliance, n.d.).

Results of Early Research

Prior to 2003, several research studies had explored the outcomes of student participation in after-school programs. One such study was completed by Posner and Vandell in 1994 and defined four types of after-school arrangements: maternal care, informal adult supervision, self-care, and formal after-school programs. Of the 121 children who participated in the study, 34 were enrolled in one of five different elementary formal after-school programs. School records were inspected for grades and conduct scores. A standardized measurement tool, the Wisconsin Third Grade Reading Test, was given to assess Reading performance, and surveys were completed to review work habits, socio-emotional adjustment, and peer relationships. The results showed widespread positive effects for low-income children who participated in the formal after-school programs including better grades, improved conduct and emotional adjustment, and enhanced peer relations. Posner and Vandell (1994) concluded that one way to lessen

the harmful effects of urban poverty on children was to enroll them in formal after-school programs.

Shift in Expected Outcomes

According to Mahoney and Zigler (2006), not until the passage of the No Child Left Behind (NCLB) Act of 2001 did the goal of after-school social programs shift from keeping children safe to being held accountable for outcomes. NCLB called for social program funding to be linked to evaluation and program effectiveness to be analyzed via scientifically-based research. Therefore, the Mathematica Policy Research group conducted a study to evaluate the 21st-Century Community Learning Centers (21st CCLCs) which served over one million children in 7,500 public elementary and middle schools at the time and offered academic, artistic, and enrichment opportunities before and after-school as well as on holidays, weekends, and summers (U.S. Department of Education, 2003). The results of the first-year findings advised that the 21st CCLCs had poor student participation, limited academic and developmental impact, and made no improvements to safety and behavior. Subsequently, federal funding for out-of-school-time programs was decreased. However, Mahoney and Zigler (2006) pointed out that this study created a premature evaluation of the after-school programs. Most of the 21st CCLC sites were in the earliest stages of development in which staff were still improving upon program implementation and effective methods.

Latest Positive Effects on Achievement

Since the U.S. Department of Education's landmark study in 2003, a multitude of research has been designed to reveal outcomes of after-school programs. Mahoney, Lord, and Carryl (2005) evaluated the relationship between participation in after-school

programs and academic performance including school grades and achievement as well as motivation attributes such as expectancy of success and motivation. This longitudinal study of 818 disadvantaged students in first, second, and third grades spanned across three public schools in the Northeastern United States. Four different patterns of care were cited: parent only, parent and sibling, other adult, and after-school programming. The goals of these specific after-school sites were to provide a safe environment and to promote academic and physical excellence. Grades in Reading, Mathematics, Writing, Language Arts, Social Studies, and Science along with Developmental Reading Assessment (DRA) achievement scores were obtained from the students' academic school records. Overall, some aspects of academic performance and motivation attributes were significantly higher at the end of the school year for those children attending the schools' after-school programs. The results of the DRA showed specifically that the reading achievement of students who attended the schools' after-school programs were significantly higher than those in the three alternative after-school care arrangements.

Vandell, Reisner, and Pierce (2007) also implemented a longitudinal study supported by the University of California at Irvine, the University of Wisconsin-Madison, and Policy Studies, Inc. to investigate the linkage between regular participation in high-quality after-school programs and academic and behavioral outcomes. The approximately 3,000 students were of low-income and attended a variety of urban, rural, and metropolitan programs in eight different states. The 19 elementary school and 16 middle school programs were free of charge and held at school or in community centers in Colorado, Michigan, Connecticut, Rhode Island, Colorado, California, Montana, New York, and Oregon in high-poverty communities. High-quality identification was

determined by on-site interviews and observations. Academic outcomes were measured through standardized test scores and grades in Reading and Mathematics, and behavioral outcomes concerning social skills, misconduct, and work habits were considered through teacher and student surveys. For both the elementary and middle school population, regular attendees of the after-school programs made considerable gains in standardized math test scores when judged against their unsupervised peers. Students also improved their work habits and social skills and reduced aggressive behaviors and misconduct. In the middle schools, students also reported reduced drug and alcohol use. Therefore, these researchers linked regular participation in high-quality after-school programs to significant progress on standardized test scores, improvement in work habits, and reductions in behavior problems among disadvantaged students.

Vaden-Kiernan, Hughes, Rudo, Fitzgerald, Hartry, Chambers, Smith, Muller, and Moss (2009) focused their experimental research on the impact of specific academic interventions on students' reading skills. The After-School Research Consortium and SEDL researchers chose three literacy interventions that incorporated phonemic awareness, phonics, fluency, vocabulary, and comprehension to be integrated across the various sites. Success for All's Adventure Island, a computer program including cooperative learning was employed at 5 sites. This intervention emphasized team recognition and individual achievements through certificates and other rewards. Voyager Expanded Learning's Voyager Passport, a program designed with direct instruction and small groups, was utilized at fifteen sites. These lessons contained both instruction and application periods as well as fluency and vocabulary practice. Scholastic's READ 180, a program filled with direct instruction and rotation centers, was instituted at four sites.

Included in the sessions were whole class instruction and rotation stations of small groups, independent reading, and computer software. Students were differentiated by grade and gender, numbered, and randomly assigned to either evenly distributed treatment or control groups.

Throughout the study, teachers were observed with a focus on program implementation and principals and teachers were interviewed about experience, professional development, and general perceptions. Both in the fall and spring of the school year, three assessments were given to evaluate students' Reading fluency and comprehension: DIBELS, an oral test of Reading fluency, the Woodcock Johnson, a test of Reading achievement, and Harcourt's Stanford Achievement Test (SAT-10) which measures Reading achievement as well. The only placement that showcased a significant impact on student reading outcomes was READ 180 during the first year of its implementation. On average, the READ 180 treatment group of students scored 8.5 points higher on vocabulary, 10 points higher on reading comprehension, and 15 points higher on total Reading than the control group. The authors commented on the possible reasons for the lack of progress in the other groups. Program execution at the Adventure Island sites was inconsistent with some teachers improving their skills while others struggled with the delivery of program materials. In the Voyager Passport program, many teachers voiced their uncertainty including using materials incorrectly, omitting program modules, and not following the manual. In addition, these sites faced low student attendance. In the second year of the READ 180 study, the site decreased the program to two days per week. These findings indicated that well-administered academic after-school programs may have influence on Reading outcomes. So, the authors

proposed more investigations to examine the intervention programs over an extended period of time, and that future studies must ensure that the intervention pieces be implemented fully and with fidelity.

Anderson-Butcher (2010) produced a four-year research project that also studied the impact of academic interventions as well as enrichment activities, social recreation, family involvement strategies, and nutritional programming held at after-school sites. The 1,238 participating elementary and middle school students attended school in central Ohio in 21 after-school programs operated by the schools, City Parks and Recreation Department, community centers, Communities in Schools, and other youth organizations such as Young Men's Christian Association (YMCA). Homework assistance, tutoring, enrichment activities, social recreation, family and parent involvement strategies, and academic interventions were employed at each site. Survey and observations were utilized to explore key program characteristics and academic report card data were collected to consider absenteeism, grades, and homework completion. A sample of 133 youth attending the programs was comparatively matched to students from the local district database. Findings purported that the staff had built caring and supportive relationships with the students, and the students in turn had fostered positive interactions with their peers resulting in fewer fights and less discipline referrals at school. Overall, those attending the after-school programs had higher homework completion and fewer absences than the matched group. Only the middle school students saw an increase in their Reading and Mathematics grades.

Large-scale studies have been approved by varying institutions to seek a consensus in the outcomes of after-school programs. In 2008, the National Center for

Research on Evaluation, Standards, and Student Testing (CRESST) endorsed a research study of Los Angeles Better Educated Students for Tomorrow (LA's Best), an after-school program implemented in 1988 as a safe-haven in neighborhoods frequented by gang violence and drugs, to examine the impact of different levels of student participation. This free program, established for students in kindergarten through sixth grade, has broadened its goals to include the development of the whole-child. This required the staff to hold high expectations, to foster positive relationships with students, to encourage a love of learning, and to provide a sense of safety and security. Recreational, community, and academic activities were offered to the students. These included arts and crafts, choir, dance, drama, museum visits, art camp, homework time, tutoring, and holiday celebrations.

This study was one of few that examined the importance of dosage in regards to the rate of attendance at after-school programs. The main question posed sought to describe the difference in achievement outcomes based on the different levels of intensity in student participation in the after-school programs. Researchers scanned the longitudinal database to access approximately 10,000 student achievement scores on standardized tests of Reading and Mathematics. Results indicated that Mathematics achievement scores varied by the level of program participation. Those students who attended Los Angeles Better Educated Students for Tomorrow (LA's Best), over 100 school days showed greater Mathematics achievement growth than those who did not. Although Reading and Language Arts growth was positive, it did not vary significantly with attendance intensity. In 2009, the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) replicated their prior study to include updated

evidence. Again, students who had regularly attended Los Angeles Better Educated Students for Tomorrow (LA's Best) after-school programs significantly improved in Mathematics achievement. These results suggested that 100 or more days of annual attendance is essential to produce considerable gains in Mathematics scores.

The National Center for Research on Evaluation, Standards, and Student Testing (CRESST) (2009b) sought to recognize whether or not enhanced academic instruction in after-school programs improved student performance beyond that of less structured programs. Through the 21st CCLCs, the federal government has made a significant monetary investment in after-school programs. On the other hand, some prior studies had proclaimed limited effects on students' academic achievement possibly due to the restricted assistance in Reading or Mathematics tutoring that has been offered. Therefore, the NCEE recommended specific instructional resources in 27 after-school programs for two years. This government sponsored research inspected the Reading and Mathematics achievement of students in grades two through five who attended after-school activities. The three guiding questions addressed the impact on student achievement of enhanced after-school programs in Reading or Mathematics for both one and two year's participation. The Mathematics program introduced by *Harcourt School Publishers* consisted of small group instruction three hours per week, totaling between 42 and 48 more hours of Mathematics instruction than a regular after-school program. This intervention used skill packs, Mathematics fluency games, hands-on activities, projects, computer programs, and pre and post-tests. The Reading program of Adventure Island created by *Success for All* provided 54 to 56 more hours of effective Reading instruction and included progress monitoring lessons, a variety of books, and frequent assessments. Twenty-seven after-school centers

voluntarily participated, 15 of which incorporated a Mathematics program and 12 of which used a Reading program. These centers were both school-based and community-based and located in rural, urban, and suburban settings. Class sizes averaged 10 students who were randomly assigned to groups and received either an enhanced instructional program or the regular after-school services which included mainly help with homework. Those students with severe learning disabilities, behavior problems, or whose primary language was not English were excluded from the results. The Stanford Achievement Test (SAT) abbreviated battery test for Reading and Mathematics was given to students at the beginning and ending of the school year to measure achievement gains. One year of enhanced Mathematics instruction provided statistically significant positive effects on student achievement. However, one year of enhanced Reading instruction had no impact on Reading test scores, and two years resulted in a negative impact on total Reading scores possibly due to poor lesson pacing. On average, those students who participated in the enhanced Mathematics lessons had a 10% improvement beyond average growth which resulted in an extra full month of Mathematics academic achievement. No statistically significant impact was noted for Reading instruction. The authors commented that 79% of teachers claimed it was difficult to keep pace with the daily lesson plan and could not implement all of the intended activities. So, the results displayed the benefits of after-school math instruction thus provided some evidence of possibly improving achievement through after-school activities.

Also in 2009, Walking-Eagle, Miller, Cooc, LaFleur, and Reisner presented a longitudinal evaluation of after-school programs operated in New Jersey that offered a safe environment, enriching academic activities, and homework assistance for 15,000 students in

grades K-8. The researchers utilized surveys, interviews, site visits, and a management information system to examine the programs' characteristics, attendance rates, quality and availability of services, funding, and family participation as well as students' academic performance. The results maintained that the programs had accomplished increased enrollment and attendance and had improved students' study skills. Also, students reported that the after-school programs benefited them academically by exposing them to new opportunities. Overall, ratings of the students' Reading and Language Arts skills showed significant learning gains. However, some of the sites still expressed challenges such as poor communication, lack of professional development, classes that did not meet objectives, and poor attendance.

In 2003, the Harvard Family Research Project (HFRP) revealed an overview of research studies, both experimental and quasi-experimental, on out-of-school time program outcomes. Out of 27 studies, 25 had positive academic outcomes including improved performance in school shown by achievement test scores and grades, increased school attendance, and homework completion. Twelve programs were linked to prevention outcomes such as decreased drug and alcohol use, avoidance of negative behaviors, and increased knowledge of harmful social activities.

Zief, Lauver, and Maynard (2006) examined to what extent does access to after-school programs impact student safety, behavior, social and emotional development, and academic outcomes for youth. The researchers described characteristics of five after-school programs and their influence on minority students living in impoverished environments and attending poor-performing, urban schools. The meta-analysis analyzed well-implemented experimental studies after 1982 that looked at school-based programs

that served primarily low-income students. Although the programs were found to positively influence students to participate in athletics, arts, music, dance, and drama activities, overall standardized Reading test scores did not express higher achievement.

Lauer, Akiba, Wilkerson, Aprthorp, Snow, and Martin-Glenn (2006) also conducted a meta-analysis examining after-school program characteristics and their link to assisting at-risk students in improving their Reading and Mathematics performance. This study found statistically significant results. Out of 35 studies, 30 found positive Reading outcomes and 22 professed positive Mathematics outcomes. For Reading, significant effect sizes were highest in both the lower elementary grades and high school. For Mathematics, they were highest for students in middle and high school. The researchers suggested these findings showed after-school programs do not need to focus solely on academic activities to exhibit results with student achievement.

Durlak, Weissberg, and Pachan (2007) performed a meta-analysis of 75 reports of after-school programs offered to youth ages 5-18 that sought to improve students' personal and social skills as well as academic achievement. Overall, the 69 programs evaluated conveyed statistically significant positive outcomes on feelings, attitudes, behaviors, self-perceptions, and school performance. However, only the group of SAFE programs, those with staff who were trained in sequenced, active, focused, and explicit practices, were associated with significant differences in test scores with an average of 12 percentile point gains between students who attended after-school programs and a control group. Therefore, the other after-school programs called for improvement.

Valentine, Cooper, Patall, Tyson, and Robinson (2009) extensively examined numerous research studies to decide the best practice for after-school programs. They

compared the conclusions drawn for the research literature and determined the points of uniformity across the studies. The C.S. Mott Foundation and the National Partnership for Quality After-School Programs funded research on the effects of after-school programs which spurred the first retrieval of data and twelve syntheses were ultimately utilized in this appraisal. The authors traced the characteristics of the after-school programs that were included. These characteristics included duration of the program, goal content, staffing, and school status. Each program feature was reviewed by a group of judges to determine if it should be included or excluded from the synthesis. The researchers also considered whether the after-school programs had changed over the years and excluded some previous data. The definitive research question proposed involved the improvement of participants' academic achievement and/or socio-emotional well-being. Positive effects for achievement test scores were articulated in five syntheses involving 92 studies, and an increase in grades were noted in four syntheses concerning 40 studies. However, null hypotheses were retained for achievement in four syntheses of eight studies and for grades in one synthesis of five studies. Three of the syntheses did not make claims in regards to the impact of achievement measures and its correlation with after-school programs. The results suggested that there was limited evidence to demonstrate a causal relationship between after-school programs and academic achievement.

Understanding the Diverse Results of After-school Studies

Roth, Malone, and Brooks-Gunn (2010) explained that even though conventional wisdom has held that greater participation would be likely to lead to improved academic, behavioral, and socio-emotional outcomes, participation fluctuates within and across

programs to the extent that it remains hard to capture. Bodilly and Beckett (2005) also asserted that low levels of attendance in after-school programs may explain non-significant findings. In addition to student participation, several studies have recognized that after-school programs must contain certain characteristics to be effective. The Harvard Family Research Project (HFRP) (2010) stipulated that while not all after-school programs have demonstrated academic benefits for students, positive outcomes have consistently been associated with sustained student participation, quality programming, and family and community partnerships. Baker, Spielberger, Lockaby, and Guterman (2010) maintained that over the past two decades, after-school programs have experienced remarkable growth in closing the developmental and achievement gaps between low-income students and their more advantaged peers.

Characteristics of Effective After-School Programs

Bodilly and Beckett (2005) reasoned that the following after-school program factors have been associated with positive outcomes:

- a small enrollment;
- a clear mission;
- high expectations and positive social norms;
- a safe and supportive environment;
- stable and experienced personnel;
- effective content and pedagogical practices;
- family partnerships; and
- frequent assessment.

Based on 20 years of evaluations of after-school programs that served 8.4 million children, the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) (2011) further expounded on these five key components postulated for effective after-school programs. First, goals must be clear, rigorous, and supported through program structure, content, and funding. Second, experienced leadership must use effective communication and set high expectations for staff and students. Third, experienced staff must maintain longevity in the program, must motivate and engage students, and must work well with leaders, colleagues, and parents. Fourth, the after-school program must align with the school day by providing study time and use of technology, science, and the arts to support student engagement and learning. Fifth, both formative and summative assessments must be used to evaluate the program's goals and to promote continuous improvement.

Advantages of Out-of-School-Time Activities

Fusco (2003) maintained that after-school programs provide children with varied extracurricular activities, challenging experiences, extra support and counseling services, and opportunities to actively participate in decision-making and thus decrease risk-taking behaviors such as alcohol and tobacco use and violence. Dworkin, Larson, and Hansen (2003) contended that after-school programs have given students the opportunity to take on new roles, express initiative, regulate emotions, and develop rational skills. The Harvard Family Research Project (HFRP) (2010) discussed the advantages of expanding learning time beyond the regular school day. In after-school programs, students are given the opportunity to select activities which could lead to greater

engagement and enhance the overall learning experience. A multitude of activities can be provided such as tutoring, drug prevention, arts, and recreation.

Rationale for Current Study

According to the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) (2008), after-school studies have rarely examined the importance of level of student attendance and participation. Frequently, research studies have deemed all after-school participants, no matter their attendance rates, as a treatment group and non-participants, without appropriate control of pre-existing diversity, as the comparison group. Due to the fact there has been little research that has highlighted the impact of the variables of gender, ethnicity, age, or socioeconomic status when investigating the relationship of after-school programs to academic outcomes, Fusco (2008) has supported future research that would inspect these different subgroups to settle on the stability of results and their implications.

CHAPTER III

Methods

Participant Characteristics

The subjects in this causal-comparative study were selected from the student body of a rural middle school in Middle Tennessee during the school year 2011-2012. There were 1,161 students: 399 in 6th grade, 381 in 7th grade, and 381 in 8th grade. Fifty-one percent of the students were male while 49% were female. Economically disadvantaged students composed 48% of the population. The majority (88%) of students were identified as white with a minority population of 12%.

The sample included the group of students who attended the after-school LEAPs program at the middle school. Similar to the student population, the LEAPs sample neared an even distribution among grade levels: 46 in 6th grade, 33 in 7th grade, and 31 in 8th grade. Approximately half of the students were male, representative of the school population. Due to the fact the LEAPs program was created for mostly low-income students, 74% of the students were considered economically disadvantaged. The minority group in LEAPs (35%) was significantly higher than the general population (12%).

Table 1
Middle School Composition

Grade	Total	ED	Gender	Ethnicity
6	399	192 (48%)	209 male (52%)	325 (81%) white
			190 female (48%)	74 (19%) minority
7	381	186 (49%)	185 male (49%)	346 (91%) white
			196 female (51%)	35 (9%) minority
8	381	177 (46%)	200 male (52%)	351 (92%) white
			181 female (48%)	30 (8%) minority
Total	1,161	555 (48%)	594 male (51%)	1,022 (88%) white
			567 female (49%)	139 (12%) minority

Table 2
LEAPs Composition

Grade	Total	ED	Gender	Ethnicity
6	46	34 (74%)	19 male (41%)	28 (61%) white
			27 female (59%)	18 (39%) minority
7	33	26 (79%)	18 male (55%)	19 (58%) white
			15 female (45%)	14 (42%) minority
8	31	21 (68%)	13 male (42%)	24 (77%) white
			18 female (58%)	7 (23%) minority
Total	110	81 (74%)	50 male (45%)	71 (65%) white
			60 female (55%)	39 (35%) minority

Safeguards

Permission was obtained from the Institutional Review Board at Austin Peay State University and from the Director of the County School System. Student identification was coded so that demographic and academic data was linked to an untraceable student number. This information was stored on a secure Universal Serial Bus (USB) flash drive. Upon completion of the study, all data was permanently erased from the device. Additionally, all research data was turned over to the Austin Peay State University College of Education Graduate Coordinator and the Chairperson of the Field Study Committee for storage in secured file storage.

Research Design

The design of this study was causal-comparative. The study examined the extent to which regular student participation in the middle school LEAPs after-school program affected student academic achievement growth in the areas of Reading and Mathematics. Achievement growth was determined by the differences in achievement gains of normal curve equivalent (NCE) scores on the Tennessee Comprehensive Assessment Program (TCAP). The investigation gathered the scores of LEAPs students for the 2010-2011 and 2011-2012 academic years and compared those of a randomly selected group from the same population.

Instrumentation

Student achievement and growth was measured by the TCAP which is given in the spring of each year. This criterion-referenced test utilized multiple choice questions to measure student performance against specific knowledge and application skills in Reading/Language Arts, Mathematics, Science, and Social Studies in grades 3-8. Student

achievement was organized into four performance levels: below basic, no mastery of concepts and not prepared for next grade level; basic, partial mastery of concepts and minimally prepared for next grade level; proficient, mastery of concepts and prepared for next grade level; and advanced, superior mastery and significantly prepared for next grade level (Tennessee Department of Education, Office of Assessment and Evaluation, 2010). The NCE scores, similar to percentiles, were calculated (Education Consumers Foundation, 2012).

Procedures for Data Collection

An elementary principal with 11 years of experience as well as a classroom teacher and an instructional coach first analyzed the demographics of both the populations and students enrolled in LEAPs. A LEAPs sample population of those students who regularly participated in the after-school program was created. A regular participant was defined in this study as a student who attended the LEAPs after-school program for a minimum of 100 or more days during the school year. This narrowed the sample population of LEAPs students to 64.

NCE scores for Reading and Mathematics TCAP tests from the school years of 2010-2011 and 2011-2012 were obtained from the Tennessee Value-Added Assessment System (TVAAS) website. Those students who had not received a TCAP score for the 2010-2011 and/or the 2011-2012 school years or who had taken the TCAP MAAS at either point were removed from both the LEAPs sample and the overall student population. Therefore, the LEAPS sample had been condensed to a total of 47 students.

Table 3

LEAPs Sample Composition

Grade	Total	ED	Gender	Ethnicity
6	24	18 (75%)	5 male (21%)	14 (58%) white
			19 female (79%)	10 (42%) minority
7	13	12 (92%)	7 male (54%)	6 (46%) white
			6 female (46%)	7 (54%) minority
8	10	9 (90%)	3 male (30%)	7 (70%) white
			7 female (70%)	3(30%) minority
Total	47	39 (83%)	15 male (32%)	27 (57%) white
			33 female (68%)	20 (43%) minority

The researcher then collected from the Tennessee Department of Education Statewide Student Managements System (Star Student) the demographic data of gender, race, and socioeconomic status on all 6th, 7th, and 8th grade students who attended the rural middle school in Middle Tennessee. An online random number generator was utilized to match a non-participant group member to a participant group member in socioeconomic status, ethnicity, gender, and grade level. Each individual student's achievement growth was found by subtracting the previous NCE score from the current NCE. The mean growth was computed and the standard deviation was calculated of both groups across grade levels in reading and math. Paired samples t-tests were conducted to compare the two groups' overall achievement growth across grade levels in both reading and math. The p value was set at a .05 confidence interval.

CHAPTER IV

Results

Research Questions and Hypotheses

Question One: Do middle school students who regularly attend the after-school LEAPs program at a middle school in Middle Tennessee show greater academic gains in reading than students who do not attend?

Hypothesis One: There will be no significant difference between the participant group and non-participant group on the Reading portions of the TCAP.

A paired samples t-test was conducted to assess Question One and the Null Hypothesis One to determine if there was a significant difference between the participant group and non-participant group on the Reading portions of the TCAP.

The results in Table 4 indicate that the mean NCE growth score for LEAPs students in reading ($M = 0.49$, $SD = 14.49$) was not significantly greater than the mean NCE growth score for non-LEAPs students who were equally matched ($M = -2.85$, $SD = 12.92$), $t_{(46)} = 1.1486$, $p < .05$. Although on average the LEAPs students grew 3.4 more in Reading skills than the sample group of non-LEAPs students as illustrated in Figure 1, the difference was not statistically significant with a p value of 0.26. Therefore, the Null Hypothesis was retained and Research Question One determined to be rejected also.

The 95% confidence level for the mean difference between the two groups had an interval of -2.51 to 9.19.

Table 4

Reading Comparison

Question One – Hypothesis One

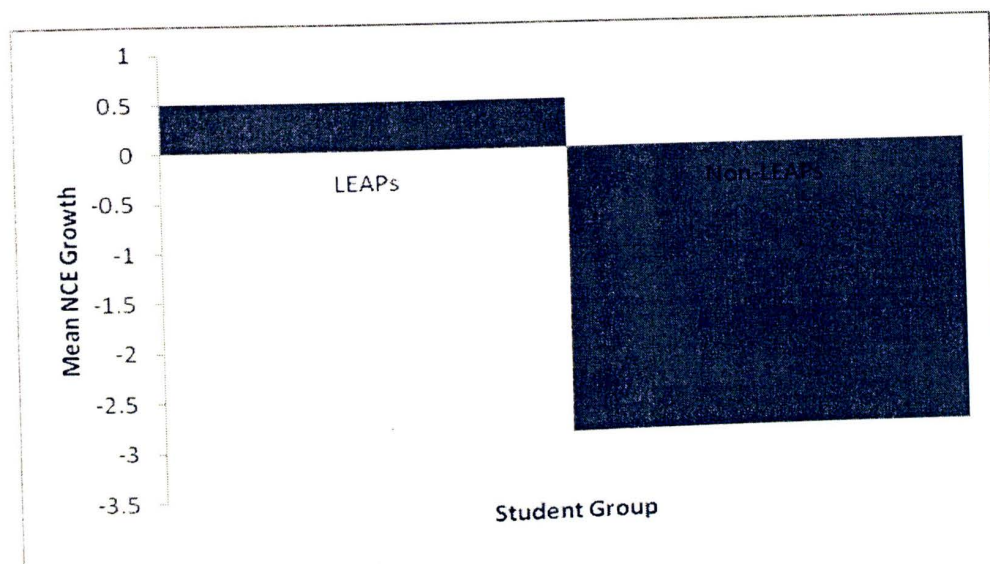
Group	N	Mean	SD	St. Error
LEAPs	47	0.49	14.49	2.11
Non-LEAPs	47	-2.85	12.92	1.89

$p = 0.26$

Figure 1

Reading Comparison Chart

LEAPs Versus Non-LEAPs Participants



Question Two: Do middle school students who regularly attend the LEAPs program at a middle school in Middle Tennessee show greater academic gains in mathematics than students who do not attend?

Hypothesis Two: There will be no significant difference between the participant group and non-participant group on the Mathematics portions of the TCAP.

A paired samples t-test was conducted to assess Question Two and the Null Hypothesis. The results in Table 5 indicate that the mean NCE growth score for LEAPs students in Mathematics ($M = 3.04, SD = 12.50$) was not significantly greater than the mean NCE growth score for non-LEAPs students who were equally matched ($M = -0.32, SD = 11.75$), $t_{(46)} = 1.1923, p < .05$. Although on average the LEAPs students grew 3.3 more in Mathematics skills than the sample group of non-LEAPs students as shown in Figure 2, the difference was not statistically significant ($p = 0.24$). The 95% confidence level for the mean difference between the two groups had an interval of 2.31 to 9.04. Therefore, the Null Hypothesis was retained and it was determined that Research Question Two was to be rejected also.

Table 5
Mathematics Comparison
Question Two – Hypothesis Two

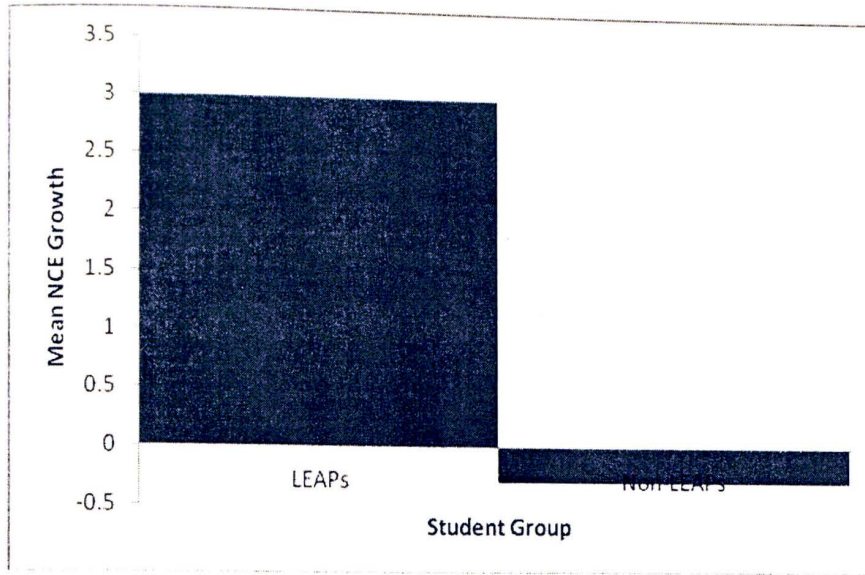
Group	N	Mean	SD	St. Error
LEAPs	47	3.04	12.50	1.80
Non-LEAPs	47	-0.32	11.75	1.70

p = 0.24

Figure 2

Mathematics Comparison Chart

LEAPS Versus Non-LEAPS Participants



Question Three: For middle school students who regularly attend the LEAPs program at a middle school in Middle Tennessee, are there variations in academic outcomes based on gender, ethnicity, grade level, or socio-economic status?

Hypothesis Three: There will be no significant differences found for gender, ethnicity, grade level, or socio-economic status on the Reading and Mathematics portions of the TCAP.

Since there was no significant difference between the participant group and non-participant group on the Reading portions of the TCAP and no significant difference between the participant group and non-participant group on the Mathematics portions of the TCAP, it was inferred by the researcher that there would be no significant difference

found for gender, ethnicity, grade level, or socio-economic status on the Reading and Mathematics portions of the TCAP.

CHAPTER V

Summary, Discussion, Implications, and Conclusions

Summary

This study was conducted to determine if the middle school after-school LEAPs program had a significant influence in student achievement growth. Through a literature review, it was determined that after-school programs have been linked to student achievement growth if they were of high-quality (Harvard Family Research Project (HFRP), 2010). In the majority of the research on after-school programs, regular attendance had not been taken into account (National Center for Research on Evaluation, Standards, and Student Testing (CRESST), 2008). Therefore, only those students in LEAPs who regularly attended the program were included in the sample population. Also, few studies have acknowledged the diversity of student backgrounds when comparing groups (Fusco, 2008). Consequently, this study matched students by the demographic indicators of grade level, gender, race, and socioeconomic status.

Discussion

The analyses in this study sought to determine if there was a significant difference between participant group and non-participant group on the Reading and Mathematics portions of the TCAP. A paired samples t-test was performed on the mean growth scores of the sample LEAPs group and a matched non-LEAPs group. In Reading, the mean NCE growth of the LEAPs group was 0.49 compared to that of the non-LEAPs group of -2.85. In Mathematics, the mean NCE growth of the LEAPs group was 3.04 compared to that of the non-LEAPs group of -0.32. Although these results were not statistically significant, the educational significance is important.

In Reading, the LEAPs students on average gained one-half of a percentile point on the TCAP. In contrast, the non-LEAPs matched group lost almost 3 percentile points. Also, in Mathematics, the LEAPs participants on average increased their performance by 3 percentile points while the non-LEAPs matched students decreased by almost one-half a percentile point. Both comparisons would suggest that there was a note-worthy educational difference in the performance of these two groups.

Implications of the Study

Results are of benefit to the future direction of the LEAPs after-school program at the middle school. The study contributed to current research on the effectiveness of after-school programs by examining Reading and Mathematics outcomes for middle school students participating in an after-school program. Although the statistical significance supported null hypotheses, the findings have shown that as a whole, students who had regularly attended the LEAPs after-school program outperformed their matched counterparts in NCE growth on the TCAP in both Reading and Mathematics. The mean NCE growth for the LEAPs sample was positive in both subject areas while the non-LEAPs matched group was negative. These results have importance in the argument of continuing the federal funding of this program.

Conclusions

The first research question asks “Do middle school students who regularly attend the after-school LEAPs program at a middle school in Middle Tennessee show greater academic gains in Reading than students who do not attend?” The findings indicate that although the LEAPs students on average show greater gains in Reading, the results are not statistically significant. Research question two poses “Do middle school students

who regularly attend the after-school LEAPs program at a middle school in Middle Tennessee show greater academic gains in Mathematics than students who do not attend?” Results show that although the LEAPs students on average show greater gains in Mathematics, the results again are not statistically significant. The third research question, “For middle school students who regularly attend the after-school LEAPs program at a middle school in Middle Tennessee, are there variations in academic outcomes based on gender, ethnicity, grade level, or socio-economic status?” remains untested due to the overall insignificant results. This study confirms that the LEAPs after-school program can be associated with greater academic growth but may not be the key factor in such positive outcomes.

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APPENDICES

APPENDIX A

Dickson County Board of Education

Letter of Approval to Conduct Research

**DICKSON COUNTY BOARD OF EDUCATION**

Danny L. Weeks, Ed.D., Director of Schools

817 North Charlotte Street

Dickson, TN 37055

Phone 615-446-7571 – Fax 615-441-1375

dweeks@dcbe.org

18 September 2012

Misty Hodge, Principal
Oakmont Elementary School
Dickson, TN 37055

Dear Ms. Hodge:

Please accept this letter confirming permission to proceed with your research project as proposed.

Upon completion, we would request that you would submit a copy of your work to my office.

If my office may be of assistance, please feel free to contact me.

Respectfully,

Dr. Danny L. Weeks,
Director of Schools

Appendix B

Austin Peay State University Institutional Review Board

Letter of Approval to Conduct Research

Date: 09-12-2012

RE: Your application regarding study number: 12-053

Dear Misty Hodge,

Thank you for your recent IRB application submission. We appreciate your cooperation with the human research review process. Your study has been reviewed, and we are pleased to inform you that your study has been approved pending the following modifications.

- Spell out the acronym, LEAP.
- Obtaining a letter from the appropriate school personnel from whom you will collect data agreeing to provide the data in the form stated in your proposal.
- item #13: state that the school from which data was collected will not be identified in any written or verbal presentation of the results. An appropriate description of the school might be "an elementary school in Middle Tennessee".

This approval is subject to APSU Policies and Procedures governing human subject research. The full IRB may review this protocol and reserves the right to withdraw approval if unresolved issues are raised during their review.

Once you have provided documentation to the IRB that the modifications have been made and approved you will receive a letter of acceptance of modifications, and then you are free to conduct your study. Your study is subject to continuing review on or before _09-12-2013_, unless closed before that date.

Please note that any changes to the study must be promptly reported and approved. Some changes may be approved by expedited review; others require full board review. If you have any questions or require further information, you can contact me by phone (931-221-6106) or email (shepherd@apsu.edu).

Again, thank you for your cooperation with the APSU IRB and the human research review process. Best wishes for a successful study!

Sincerely,

Omie Shepherd

Omie Shepherd, Chair

Austin Peay State University Institutional Review Board

Cc: Dr. Gary Stewart, Faculty Supervisor

VITAE

Misty Hodge was born in Dickson, Tennessee, on September 29, 1978. She attended Oakmont Elementary School for Kindergarten, Stuart-Burns Elementary School for grades 1-6, and Dickson Junior High School for grades 7-9. She graduated from Dickson County High School in May of 1996. The following August, she enrolled in Austin Peay State University and in May of 2000, received the degree of Bachelor of Science in Interdisciplinary Studies. She earned a Master's of Science in Administration and Supervision in 2005 from Tennessee State University. In January of 2010, she reentered Austin Peay State University to complete an Education Specialist Degree with a concentration in Elementary Education.

She taught 5th grade for 9 years before becoming an elementary instructional coach. She is now employed as an elementary school principal at Oakmont Elementary in Dickson, Tennessee.