

Academic-Based After School Programming: A Matched Pairs Follow-up Study

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## Abstract

The purpose of this study was to expand the knowledge base on academic after-school programs. The majority of evaluations conducted in this area have occurred while the program was still in operation. There is a dearth of studies conducted examining any potential long term effects of participation. The current study was conducted to follow-up a matched pair sample of participants and non-participants of an academic based after-school program that operated in eight inner-city schools from June 2000 to May 2003.

Specifically, this study was conducted to ascertain the degree to which previous participation in an after-school program impacted students' academic achievement, school day attendance, and discipline events. Statistical analyses revealed that there were no significant differences between participants and similar non-participants in the aforementioned areas. Furthermore, the frequency of after-school program participation was not found to be a significant mediating variable. Finally, a discussion of the results, limitations and merits of the study, and practical implications for future research was included.

## TABLE OF CONTENTS

Acknowledgements.....	i
Abstract.....	iii
Table of Contents.....	iv
List of Tables.....	vi
List of Figures.....	vii
CHAPTER ONE.....	1
Introduction.....	1
Context/Background.....	3
Definitions.....	3
Research Questions.....	4
Delimitations and Limitations.....	5
Summary.....	6
CHAPTER TWO.....	7
Literature Review.....	7
<i>Definition of Terminology</i> .....	7
<i>Historical Perspective</i> .....	9
<i>After-school programming evolution and justification</i> .....	9
<i>Influential legislation</i> .....	11
<i>Scope of after-school programming</i> .....	13
<i>After-school program design</i> .....	15
Theoretical Orientations.....	19
Summary of Theoretical Orientations.....	25
After-school Program Influence: An Evaluation of Research.....	25
Measuring After-school Program Effectiveness.....	26
<i>Homework Assistance Programs</i> .....	27
<i>Non-experimental research</i> .....	28
<i>Quasi experimental research</i> .....	30
<i>Experimental research</i> .....	32
Homework Assistance and Academic Enrichment Programs.....	34
<i>Non-experimental research</i> .....	34
<i>Quasi-experimental research</i> .....	36
<i>Experimental research</i> .....	38
Homework Assistance and Directed Learning Programs.....	39
<i>Non-experimental research</i> .....	39
<i>Quasi-experimental research</i> .....	40
<i>Experimental research</i> .....	42
Supplemental Education Services.....	45
<i>Non-experimental research</i> .....	47
<i>Quasi-experimental research</i> .....	48
<i>Experimental research</i> .....	51

Meta-Evaluations: Comparison across After-school Programs .....	51
Research Findings Related to Non-academic Impact .....	52
<i>School Day Attendance</i> .....	52
Summary of Research Findings .....	59
Conclusion .....	60
Rationale for Current Study .....	61
<i>Description of Current Study</i> .....	63
 CHAPTER THREE .....	 64
Method.....	64
<i>Data Source</i> .....	65
<i>Participants</i> .....	66
<i>Measures</i> .....	67
<i>After-school program attendance data.</i> .....	67
<i>Regular school day attendance data.</i> .....	67
<i>Standardized achievement test results.</i> .....	68
<i>Discipline</i> .....	68
<i>Procedure</i> .....	68
<i>Data Analysis: Current Study</i> .....	70
 CHAPTER FOUR.....	 72
Results.....	72
<i>Research Question 1</i> .....	72
<i>Research Question 2</i> .....	74
<i>Research Question 3</i> .....	75
<i>Research Question 4</i> .....	76
<i>Analysis 1</i> .....	77
<i>Analysis 2</i> .....	79
<i>Analysis 3</i> .....	82
<i>Analysis 4</i> .....	85
 CHAPTER 5 .....	 88
Discussion.....	88
Quality of Program Implementation .....	90
<i>Treatment Delivery</i> .....	90
<i>Treatment Receipt</i> .....	91
<i>Treatment Enactment</i> .....	94
<i>Limitations and Merits</i> .....	97
<i>Directions for Future Research</i> .....	100
<i>Practical Implications and Conclusion</i> .....	102
 REFERENCES .....	 104

List of Tables

Table	Page
1. MANOVA of achievement variables among participants and non-participants.....	68
2. Regression analyses for variables predicting math and reading achievement school day attendance and behavioral referrals.....	71



## List of Figures

Figure	Page
1. Carroll's Model of School Learning.....	22

## CHAPTER ONE

### Introduction

Schools are under increased scrutiny and pressure to ensure all students demonstrate adequate gains in academic achievement. As mandated by *No Child Left Behind Legislation*, schools that do not achieve adequate yearly progress (AYP) are required to make specific changes. More precisely, schools that do not achieve AYP for two consecutive years must provide students with the option of attending alternate public schools within their district (Hess & Finn, 2007). After three consecutive years of schools not achieving AYP status, students must be offered supplemental education services that occur outside of formal school hours (U.S. Department of Education, 2005a). The severity of consequences continues to increase for schools that fail to make AYP for four or more consecutive years and the eventual result is restructuring of the school. Faced with heightened accountability and severe consequences, schools must take action to ensure the goal of making AYP status. Schools that are behind their AYP goal must refine their current programming while also considering the possibility of expanding services outside of the traditional school day to ensure academic success.

Given the finite length of the school day, schools have used after-school programs as one method of preventing decreased academic achievement. Students spend an average of 1,080 hours in school every year (Tomlinson, 2004). The result is that students spend approximately 90% of their time outside of the classroom (Metz, 2001). Students' out-of-school activities have been placed into six mutually exclusive categories. Outside of the traditional school day, high school students spend their time (1) completing their

homework, (2) working, (3) participating in extracurricular activities, (4) participating in structured activities, (5) spending time with family and friends in unstructured activities, and (6) sleeping (Valentine, Cooper, Bettencourt, & DuBois, 2002).

Research has informed us there is a link between time allocated to learning and levels of achievement (Carroll, 1963; Borg, 1980; Gettinger, 1985). Parents, schools, and community agencies throughout the country have recognized that learning also occurs outside of the traditional classroom (Hatcher, 1987). After-school programs have been a mainstay component of supplemental learning opportunities since the inception of compulsory schooling. After-school programs offer students structured activities to support learning and time on task that may otherwise be unavailable to students (Bergin, Hudson, Chryst, & Resetar, 1992). Currently, after-school programs provide various forms of academic enrichment, recreational, developmental and directed learning activities (Bridglall, 2005).

An increase in after-school funding and increased accountability has also raised the question of how well after-school programs influence students' academic achievement. After-school program evaluations have primarily occurred while the program is still in operation. Although concurrent evaluation is important, there is a paucity of literature evaluating the impact of after school programming on students' long term academic achievement and patterns of behavior.

## Context/Background

The purpose of this study was to examine the potential long-term benefits of student participation in an academic-based after school program. The after-school program studied was operated in five elementary schools and three middle/junior high schools across a large diverse Midwestern urban school district. The after-school program was operated from June 2000 to May 2003 and had over 3,000 participants. Primary funding for the program was secured through a 21<sup>st</sup> Century Community Learning Community Center federal grant. The after-school program was created with the expressed purpose of increasing academic achievement through offering students increased learning opportunities. The after-school program was offered four days a week and programming was comprised of one hour of recreational activities followed by an hour of academic activities. Attendance in the after-school program was voluntary and only students who attended both the recreational and academic activities were recorded as participating for a given day. Academic and behavioral data from a pre-existing database, along with follow-up data for program participants and similar non-participants were used for this study.

## Definitions

The following definitions give meaning to select terms used in this paper and that are inconsistently defined in the professional literature.

**After-school program:** a 21<sup>st</sup> Century Community Learning Centers program for students that occurred after school hours and was funded primarily through a federal grant. The program was comprised of an hour of recreational activities followed by one

hour of academic activities. Activities were taught by trained personnel, some of whom had teaching licenses, while others did not.

**Participants:** A participant was any student who participated in the after-school program for a minimum of two days during a fiscal year. A regular participant was any student who attended the after-school program for thirty or more days during a fiscal year.

**After-school Program Attendance:** Attendance in the after-school program was voluntary in nature. No fees were assessed to the individual, school, or parent/guardian for students' participation. Students were classified as being in attendance if they attended both the recreational and academic sessions of the after-school program.

**Regular school Day Attendance:** Students' school day attendance was represented by the number of school days each student could have attended school divided by the number of school days the student attended.

#### Research Questions

A review of after-school programming literature reveals a very limited number of studies evaluating long-term benefits of program participation. The current study is noteworthy because it followed-up former participants specifically to evaluate potential benefits gained from previous involvement in an after-school program. This study was guided by the following research questions:

1. To what extent are there differences in long-term academic achievement for students who participated in an academic after-school program compared to similar matched non-participants?

2. To what extent are there differences in long-term attendance rates for students who participated in an academic after-school program compared to similar matched non-participants?
3. To what extent are there differences in long-term behavior referral rates for students who participated in an academic after-school program compared to similar matched non-participants?
4. To what extent are the differences in academic achievement, school day attendance, and behavior referral rates mediated by participation in an academic after-school program?

#### Limitations

The current study examined students' potential academic benefits gained through participation in an after-school program. Students were classified as participating if they attended both the recreation and academic sessions. A primary delimitation of this study is that it focused on evaluating long-term academic benefits gained from participation using an extant database. A related delimitation was the study relied solely on using quantitative data. These limitations impact the level of specificity student progress could be examined across time. More precisely, the detail of examination was inhibited because current student functioning data, based on parent, teacher and self-report, were not included within the database containing current data. The exclusion of such qualitative data may have limited the ability to capture benefits which were otherwise not represented in the available quantitative data.

## Summary

After-school programs are implemented, in part, to help participants increase their academic achievement. Given the mandates of *No Child Left Behind* and the finite length of the school day, some schools are operating after-school programs as a method of increasing academic achievement. An increase in school accountability has resulted in an intensified focus on how well after-school programs influence students' academic achievement. Funding sources have become increasingly linked to a program's ability to increase students' achievement (Mahoney & Zigler, 2006). The majority of evaluations have focused on examining the benefits while the programs are still in operation. Given the mixed results of these evaluations, there is a need to examine potential long-term benefits of participation in after-school programs (Granger, Durlack, Yohalem, & Reisner, 2007; Mahoney, Parente, & Lord, 2007). The purpose of this study was to conduct such a follow-up examination of potential long-term benefits of program participation.

## CHAPTER TWO

### Literature Review

Cooper, Charlton, Valentine, and Muhlenbruck (2000) explicate a quality research synthesis should have synthetic and analytic elements. They indicated that synthetically, historical knowledge of the topic should be comprehensive, yet not exhaustive. Analytically, research should be evaluated in relation to methodology, and if applicable, inconsistent results should be discussed. To accomplish these objectives, this chapter first provides an abbreviated history of after-school programs and their intended purposes. Second, previous studies are evaluated for after-school programs' ability to influence student outcomes. This examination is conducted in relation to the evaluations' design and the methodological rigor which was employed. Finally, limitations of the literature base and rationale for the current study will be discussed.

#### *Definition of Terminology*

After-school programming exists in various forms with a broad array of public and private organizations operating programs. As a result, programs are often referenced using a variety of different terminology. To date, there is no consensus among researchers on specific criteria which defines an after-school program (Apsler, 2009).

The term "after-school program" is primarily used to refer to structured activities that occur after a student's traditional school day has ended and typically occur from 3 p.m. to 6 p.m. in both school and community-based settings (American Youth Policy Forum, 2006). As the frequency of structured activities increased in duration and occurrence, the term "extended-day" programs emerged to describe structured activities



offered both before and after school along with and during the evenings, weekends, vacation periods, and summer breaks (Despines, 2001).

Similarly, after-school programs and extended-day programs are often referenced as out-of-school time programs. The National Institute on Out-of-School-Time (NIOST) defines out-of-school time (OST) programming as “a wide range of program offerings for young people that take place before school, after school, on weekends, and during the summer and other school breaks” (NIOST, 2000, p. 1.). Increasingly, researchers have begun using these terms interchangeably to refer to any program with structured activities that does not operate when students are attending their traditional instructional day (Black, 2004). Although these terms appear to be all encompassing, programs are not all referenced using such interchangeable language. A primary justification for programs to depart from using such established language is to adhere to the guidelines established by their funding agency. Programs that operate solely through private funds adhere to the guidelines and objectives established by their funding entity. Conversely, programs that operate as the result of legislative initiative must adhere to and remain in accordance with provisional statutes. In both instances, programs often identify themselves in relation to their funding initiative. Recently, two landmark pieces of legislation have appropriated funds for after-school programming and have resulted in specialized program terminology.

The 21<sup>st</sup> Century Community Learning Centers (CCLC) program was created as part of 1994 reauthorization of the 1965 Elementary and Secondary Education Act (ESEA) (Title X, Part 1), which is referred to as the Improving America’s Schools Act.

The 21<sup>st</sup> CCLC program was created to provide schools with grants to create and operate academic and recreational programming during nonschool hours. Programs operating with these funds are therefore identified as 21<sup>st</sup> Century Community Learning Centers.

The *No Child Left Behind (NCLB) Act of 2001* again reauthorized the 1965 Elementary and Secondary Education Act and amended the 21<sup>st</sup> CCLC program. A provision of the NCLB (Title I, section 1116(e)) further required that supplemental education services were made available for students attending Title I schools that have not made Adequate Yearly Progress (AYP) in increasing academic achievement for three consecutive years (U.S. Department of Education, 2005a). Similar to after-school programs, supplemental education services are provided outside of the regular school day. Unlike after-school programs that offer recreational, academic and developmental enrichment opportunities, supplemental education services focus solely on providing targeted academic assistance activities.

### *Historical Perspective*

A review of and reflection on the historical context provides valuable insight into past factors that have led to the emergence of after-school programming and have influenced present programming.

*After-school programming evolution and justification.* Halpern (2003) conducted a seminal study in which he chronicled after-school programming since its inception. Originally serving as locations for English Language Learning immigrant children to enhance their English language proficiency, after-school programs can be traced back to the 1870s. Changes in child labor laws and compulsory elementary education lead to a

notable increase in free time after school hours for youth between 1900 and 1930. Crime statistics illustrated a marked increase in risky behavior and violent crime during the first four hours following the dismissal from school (Lewis, 2000; Kugler, 2001; Ascher, 2006). The rise in delinquent behavior was often attributed to a lack of adult supervision. Increasingly, schools began to offer after-school programming to address three societal concerns, (a) latchkey children, (b) increased crime rates, and (c) the realization everyone can learn (Kugler, 2001; Walker & Arbreton, 2005). Program staff utilized the safe environment and additional hours to help remediate students' deficient academic skills, develop social skills, and garner an appreciation for culture (Fletcher & Padover, 2003; Cosden, Morrison, Albanese, & Macias, 2001).

In addition to social influences, after-school programming is largely dependent on funding. The Great Depression and World War II resulted in budgetary restraints and decreased after-school programming activities. A portion of New Deal funds was allocated to help support after-school activities. For the first time, funding of after-school programming was not solely based on private funding. The United States entry into World War II also had a significant impact on after-school programs. As men joined the military effort and women joined the workforce to support the war effort, children often returned to an empty house. This marked the beginning of the "latchkey" child phenomena. After-school programs increasingly took on child-care duties as the number of latchkey children grew (Bodilly & Beckett, 2005). After-school programs have continued to expand from the 1970s to present day.

Changes in parent and child employment trends continued to serve as a focal point to justify the need for programming. During the 1970s's a growth in the number of dual income households with both parents working fulltime renewed a focus on latchkey children and the realization that students without positive options after formal school hours will create their own activities, which can be destructive in nature (Perkins-Gough, 2003; Hastings, 2004). An increase in public funding and increased emphasis on student achievement took place during the 1990s and early 2000s (Alexander, 2000). The high pressure environment associated with high-stakes testing has challenged schools to raise students' academic achievement. Currently, after-school programs are considered a supporting factor to assist students refine their academic abilities (Miller, 2001; Lauer, 2003; American Youth Policy Forum, 2007) because of educational opportunities offered outside of the traditional school day (Durkin & Jarney, 2001; Young, 2006).

*Influential legislation.* Financial resources are an integral component in the availability of after-school programs and can constrain the activities and influence program sustainability. Various legislative initiatives have influenced the availability of after-school programs, along with the type and amount programming offered.

The 21<sup>st</sup> CCLC program is a \$1 billion federal initiative to finance programming in some 7,000 schools across the United States (Archer, 2004; Perkins-Gough, 2003). Funding for the 21<sup>st</sup> CCLC program was established under the premise that providing students with a safe environment filled with additional academic and enrichment opportunities, which complement school day instruction, would help students meet academic achievement standards in core subjects (U.S. Department of Education, 2003a).

Programs operating with 21<sup>st</sup> CCLC funding are required to provide students with (1) academic learning opportunities, (2) a wide range of additional services to enrich students' exposure to arts, music, technology, along with prevention and development activities, and (3) to offer students' families literacy and educational opportunities (U.S. Department of Education, 2003a).

In its first year, more than \$40 million in funding was provided for after-school programming and funding increased to \$1 billion in 2002. However, there was a recommended 40% decrease in 21<sup>st</sup> CCLC funding within the federal education 2004 fiscal year budget. Ultimately, this decrease in 21<sup>st</sup> CCLC funding did not occur and 21<sup>st</sup> CCLCs were funded at a level of \$991 million. The 21<sup>st</sup> CCLC program once again experienced a temporary setback when President Bush vetoed the Labor-Health and Human Services-Education appropriations bill (H.R. 3043) in 2007, which would have increased 21<sup>st</sup> CCLC to over \$1 billion for the first time (Grant, 2007). However, the increased funding for 21<sup>st</sup> CCLC was later included in a 2008 fiscal year omnibus spending bill (HR 2764) that was signed by President Bush in December 2007.

The No Child Left Behind Act has also significantly influenced after-school programs and their operational and financial sustainability. For example, original provisions of the 21<sup>st</sup> CCLC program limited grants to the public schools and local education entities. However, NCLB expanded the eligibility for 21<sup>st</sup> CCLC funding to both public and private organizations. Additional changes to 21<sup>st</sup> CCLC programming also occurred. Notably, NCLB required that activities implemented with 21<sup>st</sup> CCLC

funding should enhance student learning and, if appropriate, be based on scientific research.

Supplemental education service providers were also required to adhere to guidelines established by their State's Department of Education and be identified as a supplemental education service provider by that Department of Education entity. In addition to community agencies providing supplemental education services, some after-school programs have modified their programming in order to be designated as supplemental education service providers to assist students from failing schools in order to remediate their waning skills (Rinehart, 2003; Schwartzbeck, 2005). Supplemental education service funds further enable after-school programs to tailor their programming to assist low achieving students increase their academic performance (Flynn, 2002).

Realizing the importance of after-school programming, states nationwide have also taken steps to sustain after-school programming. For example, California voters passed Proposition 49 in 2002, resulting in an increase of up to \$455 million in new funds to ensure after-school programs remain available to youth (Bartholomew, 2002). Likewise, the New York State non-profit organization, The After-School Corporation (TASC), has helped secure \$490 million in its nine years to fund over 326 after-programs which have positively impacted over 250,000 New York state youth (Russell, Mielke, Miller, & Johnson, 2007; Black, 2004).

*Scope of after-school programming.* An evaluation of the historical context of after-school programming revealed that programming was primarily funded through private sources with little or no public financing. The Child Care and Development

Program, the 21<sup>st</sup> CCLC program provision of both the Improving America's Schools Act and the No Child Left Behind Act, along with the opportunity for public and private programs to be classified as supplemental education service providers, have significantly influenced the scale and scope of current after-school programming.

Each year the United States educates approximately 50 million students (National Center for Education Statistics [NCES], 2007). After-school programs exist in approximately 56 percent of the United States' estimated 49,700 public primary schools (Parsad & Lewis, 2009). Currently, over 20% of K-8 students attend some form of school or community-sponsored after-school program (Carver & Iruka, 2006). These programs exist in many different forms, frequently offering academic enrichment, recreational, developmental, and directed learning opportunities. Academic enrichment often consists of homework help, along with music, arts, and cultural activities. Recreational programming offers students opportunities to participate in various sports, whereas developmental programs help to increase social skills while preventing behaviors such as smoking, drug use, participating in violent activities. Finally, directed learning activities provide supplemental instruction, often based on local and state learning standards, in areas such as reading and math (U.S. Department of Education, 2003a). The influence of technology has readily permeated programming. Extended library and technology programs have emerged as a way to offer at-risk students' access to technology that may otherwise not be available at home (Donlevy, 2006; Hassett, 2009; Hunter, 2006). Private religious schools have begun to provide religious, recreational, and academic activities to public school students (Piderit, 2005; Ryan, 2007). Some after-school programs offer

specialized medical, mental health and career counseling services (American Youth Policy Forum, 2007).

Overall the variation of programming activities appears to be endless. Albeit, programming primarily occurs in the areas of personal development, recreation activities, academic enrichment, and directed learning (Bell, 2003; Young, 2006). Therefore, to prevent the overlap of services, reduce expenditures, and ensure high quality after-school programming remains available to youth, 38 states have established statewide after-school networks (Collaborative Communications Group, 2005).

*After-school program design.* Quality program design is a primary factor in assuring an after-school program achieves its intended purposes. An analysis of previous programming informs present day design. Two main approaches for program design appear within the literature. They are: (1) programs predominately developed based on promising practices, and (2) programs that conceptualize program development and activities from a theoretical perspective.

Current after-school programs have primarily relied on promising practices to conceptualize the structure and nature of activities provided (Bodily & Beckett, 2005). Promising practices represent a program's activities that have worked, led to positive results, and have the potential of working in other programs (New Jersey After 3, 2007). Thus, differences in quality exist between promising practices. Some promising practices are mentioned because they have worked well for a program, whereas others have gone through a more extensive review by professionals within the field. Historically there has been a lack of justification for choosing specific practices to be included in after-school



program (Hollister, 2003). Recently, a number of national research centers have published guides to assist in the development of after-school programs. Notably, the North Central Regional Educational Laboratory (NCREL) released *Beyond the Bell: A Toolkit for Creating Effective After-School Programs* in 2003 and NIOST released *Links to Learning: Curriculum Planning Guide* in 2005. These publications provide essential information to consider when advocating for, selecting, and planning content for after-school programs. Essential considerations which appear include initial program conceptualization, staffing, program content, sustainability, and assessment (NCREL, 2003; NIOST, 2004).

Planning stages for quality and successful programs begin with advocates developing a vision and mission for the program. The goals and objectives drive the design of the program and ultimately the likelihood of its success. Programs with a clear mission and a safe environment have been associated with achieving positive outcomes for participants (Barringer, 2001; Hollister, 2003; Fletcher & Padover, 2003). An after-school program's goals and objectives are not formed in isolation. They are often tied to other agendas, such as increasing academic achievement, and are often set forth by the funding agencies (Chappell, 2006; Halpern, 2003; Bouie, 2007). Program advocates, parents, and students often have different desires for after-school programming. Successful programs form an advisory committee and conduct a needs assessment to identify activities and desires students and parents have for the program (Gewertz, 2004; Lauver & Little, 2005). A justification for the program, how it will be supported, and

reasoning for student attendance, should accompany any preliminary discussion (Despines, 2001).

Activities and opportunities offered through the program are areas essential to its success. Attendance at after-school programs is not compulsory. Before the program has any chance of accomplishing its goals, children must have a desire to attend the program. As such, decisions about the types of activities consider participants' interests. Steps are taken to identify the activity desires of students (Gewertz, 2004). High quality programs with academic components base activities on participants' academic needs, as informed by results of current standardized testing results (Protheroe, 2006), and remain flexible based on subsequent results (Nocon, 2005). To ensure stable attendance promising practices include fun enrichment opportunities to complement academic activities (Peterson & Spitz, 2003; Noam, 2003). Schools have historically provided tutoring services, extracurricular activities, and sports to facilitate learning and positive development (Miller, 2001). Services offered by present day programs are deeply rooted in their predecessor's activities and underlying functions. Providing activities and support systems which may not be available within their home environment are regarded as being integral for increasing academic achievement. There is a supposition that parents may not have the time or skills to assist their children with their homework and students may be in need of a quiet and structured environment to study (Cosden, Morrison, Albanese, & Macias, 2001; Kugler, 2001). As such, homework assistance is commonly offered within after-school programs (Vandell, Reisner, Brown, Pierce, Dadisman, & Pechman, 2004).

The quality of program implementation is an additional component that impacts program success. After-school programs, regardless of design quality, can easily fail if they are not implemented properly (Mihalic, Irwin, Fagan, Ballard, & Elliott, 2004). The degree to which a program is implemented as intended is referred to as treatment integrity or implementation fidelity (Lane, Bocian, MacMillan, & Gresham, 2004; Mihalic et al., 2004). A variety of strategies can be used to monitor the accuracy of implementing the planned activities. Collectively, these strategies are defined as treatment fidelity and include items such as self-report, direct observation, review of products and documentation of treatment (Smith, Daunic, & Taylor, 2007; Lane et al. 2004). Although using a variety of approaches to assess fidelity is recommended, it was found that approximately 24% of outcome studies document the strategies used (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Lane, Kalberg, Bruhn, Mahoney, & Driscoll, 2008). Rather, a number of studies have relied on providing a discussion related to credentialing in order to support the quality and implementation of a program (Mihalic et al., 2004). Specifically, individuals whom are licensed in an area of intervention are believed to have the expertise to properly implement the prescribed activities. Research in the area of after-school programming has relied heavily on this concept. More precisely, an emphasis on hiring highly qualified staff has proven influential in increasing student achievement. After-school programs that hire local teachers are thought to introduce an element of continuity with the school day academic goals with the program's activities (Phillips, 2004; Owens & Vallercomp, 2003). Teachers also bring their knowledge of

state and district curriculum standards to help guide the selection of after-school activities (McElvain & Caplan, 2001).

### Theoretical Orientations

After-school programs rarely directly identify the theoretical orientation after which their program was modeled. However, descriptions of a program's structure and activities often illustrate the intended purpose for each learning opportunity. In turn, the descriptions indirectly identify with various theoretical learning principles (Brown & Campione, 1996). Theoretical underpinnings emerge as after-school program activities and the program's justification are reviewed.

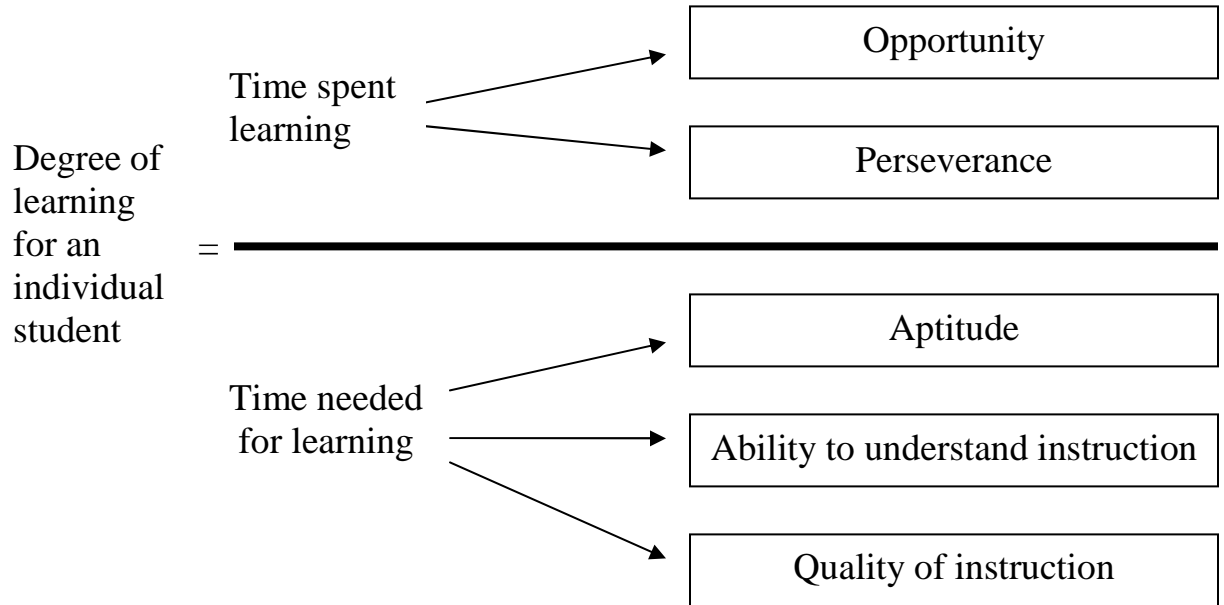
Recreational and developmental based programs often identify with a social and emotional learning (SEL) theoretical perspective. These programs assist students in the formation healthy relationships with peers and adults, the development of strategies to solve problems and manage emotions, and the ability to make informed and responsible decisions (Beland, 2007). The Collaborative for Academic, Social, and Emotional Learning (CASEL) (2003) identified five areas that are incorporated into SEL programs. They are: (1) self awareness, (2) social awareness, (3) self-management, (4) relationship skills, and (5) responsible decision making. Self awareness relates to knowledge about our own feelings in the present, whereas social awareness relates to our understanding what others are feeling or thinking. Self management relates to how an individual deals with their emotions so they do not impede completing a task, whereas relationship skills relate to controlling emotions within relationships. Finally, responsible decision making relates to making informed decisions based on all applicable factors (CASEL, 2003).

Recreational enrichment programs offer students with opportunities to participate in various structured activities while developing the five aforementioned competencies (Zins & Elias, 2006). Programs focusing on social and emotional learning assert that students will have increased social skills, higher levels of self-confidence, and lower levels of behavioral problems, depression, and anxiety as a result of participation (Little, Wimer, & Weiss, 2007).

Academically based and directed learning programs predominantly identify with a theory of learning proposed by Carroll (1963) that has been advanced by numerous colleagues (e.g., Wiley & Harnischfeger, 1974; Gettinger, 1985). Theoretical perspectives addressing the importance of students' interests have also influenced the design and content of after-school programs.

Carroll (1963) proposed a theoretical model where the amount of time available for learning served as the primary variable in students' achievement. The foundation of this theory is that "the learner will succeed in learning a given task to the extent that he spends the amount of time that he needs to learn the task" (p. 725). The model is depicted in Figure 1 on the following page and is comprised of five elements and accounts for differences in (1) aptitude, (2) comprehension ability, (3) perseverance, (4) opportunity to learn, and (5) instructional quality.

Figure 1. Carroll's Model of School Learning



The first three elements are considered student-dependent and promote that, even with ideal instruction, students learn at varying rates, comprehend instruction with diverse levels of ease, and are willing to exert different levels of engagement. The last two components are external in nature. The opportunity to learn can also be thought of as an estimate of time a student receives academic instruction (Graden, 1984). After-school program advocates utilize this concept to help justify and elicit support for after-school programs with an academic component. Simply stated, after-school academic activities increase students' opportunity to learn. Similarly, as mandated by NCLB, supplemental education services provided participants with increased instructional time. The final element, instructional quality, relates to the promising practice that emphasizes the

importance of hiring qualified staff and using program activities that complement the school day curriculum and students' academic needs.

Glaser (1968) and Bloom (1974) furthered Carroll's basic tenets, saying that time was the central variable to student learning. They suggested students learn at different rates of elapsed time from initial presentation of a learning unit to achievement of a specified level of mastery, which is relative to a specific point in the course. Glaser suggested a general ratio of 5:1 exists in learning rates to reach a set criterion of mastery in various subjects within the elementary school curriculum. Specifically, the fastest 5% of the learners take one fifth the time to learn a given item and reach a criterion level of mastery, compared to the slowest 5% of the learners. Bloom observed the difference in learning, or elapsed time, dropped to a ratio of 3:1 when students neared the end of an academic course. Bloom attributed this decrease to a decline in the amount of extra help and time needed by students as they near the end of a learning unit.

Wiley and Harnischfeger (1974) built upon Carroll's model by hypothesizing that the amount of instructional time is predictive of students' levels of academic achievement. The finding that students who receive upwards of 25% more instruction have an average two third's improvement in reading scores and a one third improvement in mathematics offered some support for their argument. Gettinger (1985) further evaluated Carroll's (1963) model by examining how variation of allocated learning time with respect to learning time needed influences academic achievement. Results suggest when allocated learning time was decreased to 58% of what was needed, student learning was 15.5% lower than established baselines. These findings imply that when time needed

for learning is decreased, student achievement is negatively impacted. Elements of Carroll's model and subsequent related research are apparent within the present justification for after-school programs, along with the design of after-school academic and activities programming (Valentine, Cooper, Bettencourt, & DuBois, 2002). Specifically, some students need additional learning time and resources which may not be available within their home environment. After-school programs provide such students with additional learning opportunities.

Learning occurs through formal instruction (e.g., traditional school day curriculum), but is also steered by a learner's interests. The selection of after-school program content is based on theoretical perspectives which suggest activities must be meaningful and interesting to participants for a program to be conducive to facilitating development. Educators must go beyond simply offering students with opportunities to learn. Students must also be actively engaged in learning opportunities, referred to as the students' amount of academic learning time (Fisher & Berliner, 1985). Gettinger and Seibert (2002) suggest that academic learning time is comprised of four variables. They are: allocated time, instructional time, engaged time, and successful and productive learning time. The authors described allocated time as the time set aside for instruction, instructional time as the proportion of instructional time actually used, engaged time as the proportion of time students are actively engaged in learning, and successful and productive learning time as the time students spend engaged on instructional tasks that yield success. Student motivation for learning has been identified as an enabler for increased engagement (Greenwood, Horton, & Utley, 2002). After-school programs



accomplish increased motivation for learning by offering students a variety of activities to choose from. This idea of student-choice learning lends to intrinsically motivated learning or learning that is under the control of the learner (Falk & Dierking, 2002).

Additionally, the theory of “developmental intentionality” advanced the understanding of interplay between student interests and learning environment (Walker, Marczak, Blyth, & Bordon, 2005). This perspective serves as a guiding framework in the design of after-school programming. The theory is based on three precepts: (1) intentionality, (2) engagement and (3) goodness of fit. The theory of developmental intentionality focuses on providing youth with effective learning activities. The first precept emphasizes the importance of selecting research-supported and best practice learning activities. The engagement precept refers to the degree youth are excited about and focused on the activities they are participating in. Finally, goodness of fit precept relates to how well learning opportunities available within the program represent a student’s needs.

These three precepts are believed to be inter-related. Specifically, when students’ needs are considered and are used to select programming activities, then students will be more engaged in the after-school program (Walker et al., 2005). Striking similarities exist between after-school promising practices and the theory of developmental intentionality. Previous after-school frameworks have identified similar components that should be considered when designing programs. More precisely, the practice of conducting a needs assessment of academic functioning and eliciting students’ programming interests can relate to the precepts of intentionality and goodness of fit.

### *Summary of Theoretical Orientations*

The following section is intended to present a brief summary of the theoretical perspectives detailed above. First, social and emotional learning perspectives strive to assist students with developing strategies to form healthy relationships, manage emotions and solve problems, and make informed decisions (Beland, 2007). Second, academic based perspectives strive to increase students' academic achievement. Theoretical perspectives with an academic focus frequently align with Carroll's (1963) theory which indicates the amount of time available for learning is the primary variable in achievement. The importance of time was further discussed relative to learning time allocated to learning time needed (Bloom, 1974; Glaser, 1968), academic learning time (Fisher & Berliner, 1985) and academic learning time being comprised of four variables; allocated time, instructional time, engaged time, and successful and productive learning time (Gettinger & Seibert, 2002). The importance of students' interests within their learning environment was further described as being an important perspective to consider in the arena of after-school programming (Walker et al., 2005). Apparent across the aforementioned theoretical perspectives is the desire to provide additional direct learning opportunities for students' to enhance and refine their skills.

#### After-school Program Influence: An Evaluation of Research

After-school programs attempt to promote their worth through their capacity to help increase student achievement. A review of research however suggests inconsistencies in the ability of after-school programs to positively influence participants' functioning in the areas of homework, academic achievement and school day attendance.

Specifically, while evaluations have suggested after-school programs fail to influence participant functioning, other programs were reported to have a significant and positive impact on participants.

In order to help ensure sustained after-school funding, continued examination of after-school programs is still needed to further clarify the degree of impact after school programs have on student academic achievement (Scott-Little, Hamann, & Jurs, 2002). Driven by current attention and accountability for increasing academic achievement, the following synthesis will focus on programs that offer academic activities after the traditional school day is completed.

#### *Measuring After-school Program Effectiveness*

Scott-Little, Hamann and Jurs (2002) conducted a meta-evaluation of the methodologies used in 23 evaluations of after-school programs. Results indicate that although evaluations are based on various sources of data, the majority used non-standardized measures. Examples of common measures used in evaluations include program and school day attendance rates, grade point average, course grades, student, parent, and teacher surveys addressing changes in homework completion, change in behavior, and standardized test scores (Little, Dupree, & Deich, 2002).

Fashola (1998) reviewed 34 after-school programs for effectiveness in improving student outcomes. Research within this domain was described as being in a “rudimentary stage” and frequently suffering from methodological problems such as selection bias (p. 54). Evaluations of after-school program effectiveness are often completed by external evaluators while the program is in operation as a component of ongoing assessment.

Results from program evaluations are used to track student progress against predefined goals to help determine the degree of the program's effectiveness (Fashola, 2002). Data are also used to identify program content that may be in need of refinement. Furthermore, evaluations of after-school programs rarely appear in peer-reviewed journals (Scott-Little et al, 2002; Gordon & Bridglall, 2005). A publication bias exists in that programs with significant findings are more likely to appear within peer-reviewed literature than do the evaluations which found no significant benefit for participation (Wayne & Youngs, 2003). Therefore, to fully evaluate and account for any potential benefits offered through participation in after-school programs, both published research and unpublished evaluations should be considered (Lauer, Akiba, Wilkerson, Apthorp, Snow, & Martin-Glenn, 2006). In particular, homework assistance programs, homework assistance and academic enrichment programs, homework assistance and directed learning, and supplemental education service programs will be examined.

#### *Homework Assistance Programs*

The completion of homework is a basic tenet within schools with research indicating that increased time spent completing homework is associated with higher grades (Cooper, Valentine, Nye, & Lindsay, 1999). The majority of after-school programs offer some type of homework assistance (Kugler, 2001). A critical element in whether or not a program succeeds is whether or not students find the program appealing (McElvain & Caplan, 2001). The clear benefit of receiving homework assistance from teaching staff has historically been identified as a component when recruiting participants (Lauer & Little, 2005; Noam, 2003). The emphasis on providing homework assistance

programming has further increased with the 21<sup>st</sup> Century Community Learning Centers program's emphasis on academic achievement (Rinehart, 2003). Based on a survey of over 1,500 students in an urban middle school it was found that over 90% of the respondents spend at least an hour working on homework after school, with students in higher grade levels spending more time on homework (Shann, 2001).

Evaluation literature offers partial support for the assertion that after-school programs have a positive influence on academic achievement. The selection of academic activities is rarely associated with a specific theoretical framework. For example, providing homework assistance is typically justified under the general premise that homework offers students additional opportunities to practice and review material to foster increased achievement (Cooper, Valentine, Nye, & Lindsay, 1999; Corno, 2000). The inclusion of homework assistance in programming is important because a number of latchkey kids are unable to complete homework without assistance (Owens & Vallercamp, 2003). Students' decisions to participate in after-school programs have also been related to homework assistance being offered (Casey, Sullivan, & Roble, 2000; Ferrari & Turner, 2006).

*Non-experimental research.* Findings generally support the inclusion of homework assistance in after-school programs as a method of facilitating increased achievement. A recent meta-analysis on the effects of homework on academic achievement supports the usefulness of homework assistance activities. Based on an evaluation of 50 studies with various degrees of scientific rigor, Cooper, Robinson and

Patall (2006) found that in general there was consistent evidence for homework having a positive impact on academic achievement.

Numerous descriptive studies have relied on parent, participant, and teacher report to verify positive academic results through homework assistance programming. For example, participants in the homework component of the long standing the Manchester Youth Development Program in Pennsylvania report that completing their homework helps to ensure they receive a proper education (Beck, 1999). Student surveys further reveal that at least 50% of participants report the homework component helped them become better students (Pechman & Suh, 2003; Smith, Zhang, Brimer & Rodriguez, 2000). Based on surveys from 609 students from grades 6-12, it was found that while over 50% indicated they prefer not to work on academic work after school they reported a positive benefit of homework programming (Gewertz, 2004). Parent reports suggest upwards of 85% of students have benefited from participating in homework assistance by completing more homework, improving academic skills, being better prepared for tests, and earning better grades (University of Illinois, 2003; Vang, 2007). Teachers report at least 40 to 50% of participants involved in homework assistance increased the amount of homework completed (EDSTAR, 2002; University of Illinois, 2003; Witt & Bradberry, 2000). Descriptive research has also evaluated pre and post tests with results showing participants increase their scores in the areas of reading (Hoffman, 2001; Evaluation Services Center, 1999) and math (Gray, Roole, & Whitaker, 1999; Hoffman, 2001; Evaluation Services Center, 1999).

*Quasi experimental research.* Numerous evaluations of after-school programs have utilized comparison groups to evaluate whether gains made by participants are significant relative to similar non-participants. These studies were conducted to help determine whether any participant gains can be associated with their involvement within the after-school program. Participants in structured homework assistance programs would be expected to have higher levels of homework completion than non-participants (Bissell, Dungan, Ford-Johnson, & Jones, 2002).

A number of programs analyzed have compared gains of participants and non-participants using standardized achievement tests. However, the influence of homework assistance activities remains unclear. Numerous studies have shown statistically significant gains on tests such as the SAT-9 and Iowa Test of Basic Skills (ITBS) (Foley & Eddins, 2001; Minicucci Associates, 2002; Monsaas, 1994). A number of programs have also reported participants improving their scores in reading (Hamilton & Klein, 1998; Lamare, 1998) and math (Hamilton & Klein, 1998; Lamare, 1998; White, Reisner, Welsh, & Russell, 2001) than their comparison group counterparts. Conversely, programs have also failed to demonstrate a statistical difference of gains between participants and non-participants (Prenovost, 2001; Ross, Saavedra, Schur, Winters, Felner, 1992; Whalen, 2007).

Student's course grades have also been commonly used as a performance indicator to help determine whether participants have improved academically (Cosden, Morrison, Gutierrez, & Brown, 2004) with significant differences existing for some after-school programs (Johnson, 1999; Girod, Martineau, & Zhao, 2004). However, evaluation

studies show inconsistent findings. One program which operated in rural community in the southeast was created to offer at-risk elementary students with additional educational activities (Neufeld, Smith, Estes, & Hill, 1995). Results for both first and second grade students indicated positive grade trends. Specifically, the GPAs for first and second grade participants increased by 0.32 points; whereas, the comparison group's increased by 0.25 points. Similarly, the GPA for third and fourth grade participants increased 0.15 points while the comparison group's GPA decreased by 0.05 points. While these results appear encouraging, the authors did not determine whether these differences were statistically significant.

A number of other studies have documented similar gains by their participants that did not reach the threshold of being statistically significant with respect to the comparison group (Trousdale, 2000; Kaiser & Lyons, 2001). Students participating in an after-school program in California made significant gains in reading, these accomplishments were not statistically significant when analyzed with relative to the matched comparison group (Bissell & Malloy, 2002). Based on continued mixed results, the degree of programming influence on homework completion and academic achievement remains indeterminable. Some inconsistencies within findings are indicated as being attributable to differences within the quality of program content and staffing (Bouie, 2007; Halpern, 2003; Manzo, 2006).

The staffing of a program with quality individuals is recognized as a difficult challenge, which is integral to the success of a program (Kugler, 2001; Wayne & Youngs, 2003). Survey results from school day teachers show participants in homework



assistance activities that are lead by credentialed teachers had ratings significantly higher for homework completion and improvement in the quality of work than programming lead by other staff (Bennett, 2004). Programs with staff composed of volunteers or undergraduate students did not display significant differences between participant and non-participant gains (Grossman, Price, Fellerath, Jucovy, Kotloff, Raley, et al., 2002). Interestingly, participants in one program with varied levels of trained staff reported a statistically significant preference for academic activities lead by certified teachers (Russell, Reisner, Pearson, Afolabi, Miller, & Mielke, 2006).

*Experimental research.* Concerns over selection bias prevent non-randomized after-school programs from claiming they are the reason for increased academic performance of participants. Researchers frequently mention this lack of randomization as a major limitation of non-experimental and quasi-experimental designs. More precisely, there is concern that inherent differences exist between students who participate in programs and those that do not. These concerns suggest that participants are more engaged with school, and some parents are more involved in their child's education (Riggs & Greenberg, 2004; Weiss, Little, & Bouffard, 2005). True experimental designs should be considered to further understand students' gains in academic performance in relation to participation in after-school programs (Valentine, Pierce, & Dadisman, 2005). A review of literature revealed that limited number of after-school programs have been implemented with randomization (Wimer, 2006). Similar to evaluations completed with less scientific rigor, evaluations with an experimental design revealed mixed results about the effectiveness of after-school programs. However, methodological concerns remain.

An examination of research revealed programs had different levels of impact on facilitating increased homework completion and academic performance. One program required students to participate in homework activities for 45 minutes at least three times a week. Data were collected for changes in homework completion, GPA and SAT-9 scores for 74 randomly assigned treatment and 72 randomly assigned control students, drawn from an urban elementary school in California. Statistical analyses revealed there were no significant differences between treatment and control groups (Cosden, Morrison, Albanese, & Macias, 2001).

Three evaluations of similar after-school homework assistance programs have also been conducted. However, only two programs allowed for sound analyses and interpretation of results to be conducted. The first program which allowed for sound analyses served high school students through homework assistance activities and community service outreach. The study randomly selected and assigned students identified at-risk for academic failure to treatment and control groups. The treatment group was comprised of 113 students and the control included 107 students (Hahn, Leavitt, & Aaron, 1994). Results indicated that standardized academic test scores for both groups decreased from the pretest to posttest. Findings illustrated the control group experienced a larger decrease in scores that approached the level of statistical significance ( $p < .10$ ).

The second program which allowed for sound analyses served students through homework assistance at 12 sites in 7 cities nationwide. These sites occurred across rural, suburban and urban settings. The program used random assignment to determine

treatment and control groups. Results of the 485 treatment and 456 control youth showed that participants were significantly more likely to report an increase in the quality and completion of their homework ( $p < .05$ ) (Philliber, Kaye, & Herrling, 2001).

The final program, which did not yield sound analyses, randomly assigned schools interested in the program to the treatment or control condition (Yin, Gutin, Johnson, Hanes, Moore, Cavnar, Thornburg, Moore, & Barbeau, 2005). Interested students then signed up to participate in the program without knowledge of their school's condition. However, the possibility of making causal inferences was compromised when recruitment continued even after each schools' assignment were revealed and schools failed to meet participation goals. Furthermore, because the program failed to obtain pretest scores, there was an inability to determine if there were any gains in student scores.

#### *Homework Assistance and Academic Enrichment Programs*

Although programs offering homework assistance is important, after-school program should offer programming beyond reinforcing basic skills (Miller, 2001).

*Non-experimental research.* After-school programs that couple homework assistance with academic enrichment activities appear to have higher levels of influence on academic achievement than programs that offer homework assistance alone. Focus groups conducted with students, teachers, and parents show the invested parties are all strong proponents of after-school programs and recognize their academic benefits (Massachusetts 2020, 2004).

Compared to homework only based programs, student surveys suggest an increase in the percentage of students who feel participating in an after-school program has positively influenced their performance in school (Anderson-Butcher, 2001; Illback & Birkby, 2001; Warren, Brown, & Freudenberg, 1999). Student surveys at the high school level indicate a small degree of benefit. Based on a survey of 1,238 high school students participating in one of 43 after-school programs located in the New York City area, only one third of the students indicated improved performance as a result of their participation (Russell, Vile, Reisner, Simko, Mielke, & Pechman, 2008). An increase in the percentage of parents indicating a positive impact from after-school participation is also apparent. Between 80 to 95% of students participating in programs with homework assistance and academic enrichment activities are reported by parents are more likely to be complete their homework and demonstrate academic improvement (Anderson-Burtcher, 2001; Fiester, White, Reisner, & Castle, 2000; Illback & Birkby, 2001; McCormick, Bojorquez, & Tushnet, 2001). Results of teacher surveys further indicated higher levels of academic achievement, with 67% of students having increased homework completion and 60% displaying academic improvement (Illback & Birkby, 2001; Jentleson & Westmoreland, 2004).

An evaluation of 29 after-school programs in New Hampshire completed by Frankel, Streitburger, and Goldman (2005) continues to illustrate positive benefits of homework assistance and academic enrichment programs. Based on teacher surveys, 59% of elementary and 62% of middle school regular participants demonstrated improved academic performance. Furthermore, of the 90% of participants identified as

being in need of academic improvement, 66% successfully improved. Additional support originates with the Building Educated Learners for Life (BELL) program, which has been in operation since 1992 and currently provides academic programming to over 7,500 students annually through its nearly 1,000 certified teachers. Findings suggest that 80% of participants achieve at or above proficiency levels in literacy and mathematics, whereas only 30% of their non-participating classmates demonstrated similar achievement (Phalen, 2006).

*Quasi-experimental research.* Quasi-experimental studies continue to show that programs based on homework assistance and academic enrichment activities yield various levels of influence on student performance gains based on various markers of student performance and academic gains (U.S. Department of Education, 2005b).

The National Association of Elementary School Principals (2005) profiled ten after-school programs located across the United States. These programs were located in both urban and rural communities and were described as serving high populations of at-risk students. Overwhelmingly, participants were described by parents, teachers, and principals as having made improvement in homework completion. A study of 283 youth from 15 different schools illustrated that program participants had higher grade averages in reading, history and science after two years of participation, when compared to similar non-participating peers (Schinke, Cole, & Poulin, 2000).

An evaluation of a six year after-school program demonstrated differences between participants and the comparison group. In mathematics, students demonstrated small benefits of participating for one year (effect size 0.13) and a large benefit of

participating two or more years (effect size 0.79) when evaluated relative to the comparison group (Reisner, White, Russell, & Birmingham, 2004). However, inconsistent findings continue to remain within the literature.

An after-school program in a large urban community offered students an average of 17 hours of after-school programming per week. Students participated homework support activities; academic and recreational enrichment; and social and emotional programming. Although increases in course grades were larger for participants than the comparison groups, these differences were not significant (Whalen, 2007). An examination of a three year program designed to foster increased achievement found the 86 participants had slightly higher reading scores than the similar group of 80 students comprising the comparison group. (Harlow & Baenen, 2001). However, these differences were not statistically significant.

Another example of an after-school program demonstrating success originates in California. In operation between the Fall of 2004 and Spring 2006, this program offered homework assistance and academic enrichment opportunities to over 2,000 students annually. Through parent surveys, evaluator learned that 75% of parents enrolled their child to help them do better in school. Of these parents, 95% reported the program was achieving its goal (Arbreton, Goldsmith, & Sheldon, 2005).

Quality of program staff remains an influential factor that after-school programs have on facilitating student gains (Woodland, 2008). In New York State there is a network of 242 after-school programs. Of those, a recent evaluation of The After-School Corporation (TASC) programs revealed sites with at least 25% college graduates as staff,

had significantly higher positive changes in homework completion and academic achievement than programs with lower proportions of staff holding 4-year degrees (Birmingham & White, 2005; NIOST, 2005). After-school programs that required staff to have a Bachelor's degree or higher also demonstrated significant gains on school day attendance and standardized measures of academic achievement (Espino, Fabiano, Pearson, 2004; Huang, Gribbons, Kim, Lee, & Baker, 2000; Mahoney, Lord, & Carryl, 2005). Findings show some programs without minimum staff qualifications were unable to influence an increase in performance to the level of statistical significance (Anderson-Butcher, Midle, Fallara, Hansford, Uchida, Grotevant, et al., 2003; Knutson, 2005).

*Experimental research.* The shortage of experimentally designed evaluations continues in the area of homework and academic enrichment based after-school programs.

One example is an after-school program that was implemented with the goal of providing at-risk elementary school students with additional learning opportunities (Bergin, Hudson, Chryst, & Resetar, 1992). A number of the evaluations that have implemented experimental methodology are based on small sample size. The treatment and control groups were each comprised of 12 students. Prior to participation in the after school both groups were performing below national norms on a standardized reading test. After participating in 16 months of the program, the treatment group was above the national norms while the control group remained below.

### *Homework Assistance and Directed Learning Programs*

A number of after-school programs offer activities that are similar to supplemental education services. However, there is a small, yet distinct, difference between directed learning after-school programs and supplemental education service providers. When the program occurs in the school, the ability to be a provider of supplemental education services is based on the schools' AYP classification.

Specifically, after-school programs may apply to their local education authority to have their directed learning program classified as a supplemental education service provider. However, in order for this to be approved the school applying must be achieving annual yearly progress. After-school programs that operate in schools not achieving AYP for three years can not approved the status of being a supplemental education service provider (Steinberg, 2006; Minnesota Department of Education, 2008). The after-school program should in turn be referred to as a directed learning program. In addition to providing directed learning activities in core curriculum, these programs also offer participants homework assistance activities.

*Non-experimental research.* Descriptive studies suggest programs offering homework assistance with directed learning have facilitated an increased student performance on pre/post measures. Programs offering academic remediation activities in reading and mathematics evidenced an increase of 8.5 percentage points for participants scoring above the 25<sup>th</sup> percentile on the SAT-9 Reading exam and 4.5 percentage points for students scoring above the 25<sup>th</sup> percentile on the SAT-9 Math exam (University of California at Irvine, 2001). Evaluations further suggest directed learning activities helped



nearly 70% of participants make significant gains on pre/post tests in reading (Arbreton, Goldsmith, & Sheldon, 2005; Sanderson, 2003; Terao, Morell, Stevenson, & Moulton, 2002) and mathematics (Abreton et al., 2005).

Participation in the Communities Organizing Resources to Advance Learning (CORAL) program, which are located throughout five cities in California, further demonstrate the benefit of participation in after-school programming and the importance of quality staff. Specifically, quality staff members were identified as individuals who used knowledge of their class composition to individually tailor the assistance provided to individual students, therefore representing best practice in working with a diverse student body. Lower quality staff members were individuals who did not tailor the assistance provided to individual students. Based on data from 402 youth, students who were in the higher quality literacy program demonstrated a gain of 0.45 in reading levels, whereas students in the lower quality programming increased 0.26 in reading levels (Goldsmith, Jcovy, & Arbreton, 2008).

The trend of mixed results continues for programs based on offering homework assistance and directed learning components. Various programs had participants with considerably higher gain scores on standardized tests than their non-participating counterparts. However, it was determined that these differences were not statistically significant (Bissell, Dugan, Ford-Johnson, & Jones, 2002; Chase & Clement, 2000; Smith & Zhang, 2001).

*Quasi-experimental research.* The Foundations After-School Program served 384 students in mathematics and 406 students in reading throughout three counties in

Pennsylvania, one county in New Jersey, and one county in Florida. Students were predominately in first through fifth grade and participated in curricula designed to reinforce skills in reading, writing, and mathematics. Results indicated a statistically significant improvement for both reading and math posttest scores. An effect size for reading scale scores for participants was reported as .76, whereas it was .35 for the comparison group. Effect sizes for math scaled scores for participants and the comparison group were .91 and .52, respectively (Klein & Bolus, 2002). Similar significant findings between groups have also been found in other programs emphasizing reading (Brown, McComb, & Scott-Little, 2003), mathematics (Bell, 2002; Brown et al, 2003), and science (Smith & Zhang, 2001).

Findings from the Chicago Summer Bridge program are especially interesting. In an effort to end social promotion, participation in this program is required of students scoring below a specified cutoff on the Iowa Test of Basic Skills. The cutoff score is dependent on grade level and subpopulation. The representative number of years below grade level is: 1 year for third graders, 1.8 years for sixth graders, 1.8 years for eighth graders, and 4 years for special education and ELL students. Results found that 3<sup>rd</sup> and 6<sup>th</sup> grade participants had slightly larger gains on the Iowa Test of Basic Skills, than students with similar pretest scores, but above the cutoff, who did not participate (Roderick, Engel, & Nagaoka, 2003). Although these students did not “catch” their non-participating counterparts and the difference in scores between groups’ remains significant, these findings show promise for additional learning opportunities in promoting increased academic achievement.

Similar to other programs, inconsistent findings are also apparent for homework and directed learning activities. A computer-assisted direct instruction program was implemented within a Michigan middle school (Finch, 1997). A group of 35 students were randomly selected from 60 student volunteers. The program operated daily before and after school for five weeks. At the conclusion of the program there were no statistical differences on standardized math and reading tests. A similar program was occurred in New York State (Gentilcore, 2002). Students who are identified for being at-risk for failing an English examination are mandated to receive direct instruction services. An analysis of 114 eight grade students, representing only 93% of the population, suggests there were no significant differences between treatment and comparison groups.

Finally, a study completed in a rural Georgia evaluated the success of 39 middle school students who participated twice a week in a 9-month after-school program (Lowe, 1998). Students demonstrated statistically significant gains on the Iowa Tests of Basic Skills in reading relative to the comparison group. No differences were found in the area of mathematics.

*Experimental research.* Although directed study after-school programs are somewhat more structured to remediate deficits in identified areas, the benefits of participation remain mixed. Likely the most recognized experimental study in this area was conducted in 2003 by Mathematica, as commissioned by the United States Department of Education. Results of this study have been associated with a federal decision to cut funding for after-school programming. Using an experimental design, the study was conducted on elementary students randomly assigned to treatment and control

groups from seven school districts. The study was partially conducted to determine the level of impact that 21<sup>st</sup> CCLC programs had on students' test scores and academic skills. Data analyzed were based on site visits, students' grades, SAT-9 math and reading scores, and school day attendance (U.S. Department of Education, 2003b). Parent, teacher and student survey data about participation and homework completion were considered (James-Burdumy, Dynarski, & Deke, 2007). Results suggest teachers were more likely to report that the treatment group had significant increases in academic effort ( $p < .01$ ), however there were no rating differences related to academic performance. Participants demonstrated significant increases in school day attendance ( $p < .01$ ) and differences in math scores were just under the level of statistical significance ( $p < .10$ ). No differences in the area of reading scores were found (U.S. Department of Education, 2003b).

Two after-school programs on the East coast focused their programming on providing directed academic instruction to improve students' academic performance. The first program took place across four sites in Maryland and served fourth through eighth grade students across urban and suburban settings. The program randomly assigned approximately 400 students to the treatment group and 400 to the control group. Students in the program participated in both academic and recreational activities. Data analyses were based on students' GPA and school day attendance data. Results showed no significant differences between groups (Weisman, Soule, & Womer, 2001). The second program operated at one site in New York City and two sites in Boston. Participants were chosen based on a random assignment of 1,917 third to seventh grade

students who expressed an interest in participating. The sample included 750 students in the treatment group and 835 in the control group. Data analysis was based on a standardized reading test. Results indicated a significant positive impact on the reading test for students who attended the program (Chaplin & Capizzano, 2006). A comparison of program characteristics for the two aforementioned programs revealed no apparent differences in the areas student demographics, staff quality, or program content.

One program, which took place in an urban elementary school in Pennsylvania, focused on facilitating increased academic achievement through homework assistance and directed instruction activities (Zief, 2005). School attendance, reading and math GPA data were collected for 40 randomly assigned treatment and 63 control youth. Similar to programs that utilized random assignment and had a homework assistance component, there were no significant differences between groups for school attendance or GPA. Similarly, some after-school programs have also failed to demonstrate a positive impact on students' test scores (Sun Evaluation Workgroup, 2001) with other program evaluations revealing statistically significant decrease on standardized test results (Minicucci Associates, 2001).

A program aimed at intervening with 283 at-risk kindergarten students took place across 6 schools in a large urban school district in Illinois (Hausner, 2000). Students participated in an accelerated literacy program for 2.5 hours daily. Prior to participation, participants scores were significantly lower than students in the control group. After 30 weeks of participation, the difference of scores between treatment and control groups was no longer statistically significant.

Another program was initiated in a large urban/suburban area to provide direct instruction to students identified as being at-risk for potential failure (Smeallie, 1997). Sixty-two students were randomly assigned to treatment and control groups, with the treatment group receiving direct instruction over seven weeks. An analysis of pre- and post-tests in the areas of science, English, social studies, and mathematics failed to reveal significant differences between groups.

A directed learning program was implemented for 48 first and second grade students who were achieving at below grade level (McKinney, 1995). Treatment and control group students were evaluated using pre and post-test administrations of the Stanford Achievement Tests. Treatment students participated in the Leap Frog program after-school over the course of two eleven week sessions. Results indicated there were no statistically significant differences between groups.

#### *Supplemental Education Services*

The *No Child Left Behind* (NCLB) Act of 2001 created a new type of after-school program known as supplemental education services (SES). The objectives of SES programs are to increase low income student's academic achievement in the areas of reading, math and language arts (Advocates for Children, 2003). School districts with schools which have failed to meet adequate yearly progress (AYP) for three consecutive years are required to allot 20 percent of their Title I Part A funds for SES and school choice-related transportation (U.S. Department of Education, 2004). Providers of SES then use these designated funds to offer free tutoring and evidence-based academic activities to the students from these schools (Chatterji, Kwon, & Sng, 2006). For the first

time, schools are required to contract with private organizations to provide SES (Burch, Steinberg, & Donovan, 2007). Furthermore, in an effort increase the level of privatization and competition in offering quality after-school programming SES providers may be for-profit organizations (Molnar & Garcia, 2007). Districts are required to inform parents of the availability of SES along with providing families information about local SES providers. These providers use a variety of marketing techniques to attract participants to their program through methods such as “advertisements in local newspapers, press releases and news conferences, public service announcements and interview on radio and television, fliers and calls to parents” (Vergari, 2007, p. 323). The level of competition for participants has risen partially because Federal funding for SES increased by 45% from the 2001 fiscal year (\$1.75 billion) to the 2005 fiscal year (\$2.55 billion) (Burch, Steinberg, & Donovan, 2007). Furthermore, it was estimated that nationwide 2.25 million students were eligible for supplemental education services in 2004-2005, with approximately 430,000 or 19% of the eligible students participating (U.S. House of Representatives, 2006; Gill, McCombs, Naftel, Ross, Song, Harmon, & Vernez, 2008; Vergari, 2007).

Similar to other types of after-school programming, research in the area of SES is inconclusive. Specifically, studies that have examined the effectiveness of SES have not offered clear and unyielding evidence about the benefits of participation on increasing students’ academic achievement. (Burch, 2007; Fusarelli, 2007; Sunderman, Kim & Orfield, 2005). The ambiguity of SES program effectiveness is further complicated by the understanding relatively few studies have been completed in this area (Sunderman,

2007). The ability to ascertain the quality and positive impact of programs is further limited by the understanding SES providers are not required to report their outcomes of raising student's academic achievement (Steinberg, 2006).

*Non-experimental research.* Similar to other after-school programs, evaluative studies of SES programs continue to document program satisfaction by students, parents, and school staff. More precisely, upwards of 90% of parents with children participating in SES programs report their child has demonstrated academic progress (Harnish, Sielke, Milton, & Prasuhn, 2005). Similarly, approximately 74% of student participants reported their grades had improved and confidence to complete schoolwork had increased since beginning their SES experience (Sielke, Harnish, & Thompson, 2006). Teachers further lend their support of the effectiveness of SES programs by indicating high portions of student participants improved academically (Center on Education Policy, 2006; Harnish, Sielke, Milton, & Prasuh, 2005).

An examination of SES programs across six states and nine school districts serving different student populations, locations and district sizes was conducted to evaluate the successes of student SES participation (U.S. Department of Education, 2004). On average, students in these programs participated for 1.5 hours twice a week for one semester. Although programming primarily consisted of additional reading instruction, students also participated in scripted lessons in alternate subjects and homework assistance. Four of the six states examined required providers to offer evidence that services aligned with state academic standards. However, these providers offered little evidence of such alignment. Results of parent surveys indicated that while



parents were happy to have their child enrolled in a SES program and earn better grades, they noted there was little difference between the SES programs and after-school programs which were already available.

One study was conducted to evaluate whether students who received services in the state of New Mexico made academic progress. The study utilized both New Mexico State and SES provider testing data for 1,716 students. Interestingly, SES provider data indicated that 80.8% of students demonstrated an increase in scores for mathematics and 84.8% in reading, whereas New Mexico state tests results indicated only 17.9% of students made progress in mathematics and 27.4% of students in reading (Center for the Education and Study of Diverse Populations, 2005). This finding further illustrates the difficulty in ascertaining whether or not participation in SES are academically beneficial. Numerous private providers have implemented pre- and post-test studies to evaluate student progress. These studies have frequently reported student gains associated with participation in the program (Education Industry Association, 2007). However, readers are cautioned that these studies evaluate participants without a comparison group. Therefore, these studies limit the degree to which benefits can be attributed to program participation compared to standard academic growth.

*Quasi-experimental research.* A few school districts and states have examined the impact of supplemental education services on academic performance within their respective jurisdictions. However, as demonstrated through quasi-experimental research, the level at which SES programs positively impact academic progress remains mixed.

An evaluation of nine urban school districts from various geographical regions examined students participating in supplemental education services during the 2004-2005 academic year. Results indicated that on average SES programs had a statistically significant positive effect on participants' achievement in the areas of reading and math, when compared to nonparticipants on statewide tests (Zimmer, Gill, Razquin, Booker, & Lockwood, 2007). Conversely, an evaluation of six school districts in Tennessee indicated there was no significant impact on academic outcomes when examining participants of an SES program in relation to a comparison group (Potter, Ross, Paek, McKay, Ashton, & Sanders, 2007).

Evaluations of SES programs have also occurred on a smaller scale. Specifically, the Los Angeles Unified School District (LAUSD), Chicago Public Schools and Minneapolis Public Schools have all evaluated the SES programs taking place within their boundaries and have resulted with differing results.

Supplemental education services offered in the Los Angeles Unified School District (LAUSD) have been examined numerous times across their operating years. In 2006, analyses were conducted to examine the academic achievement of students' participating in SES during the 2004-2005 school year. The results indicate low levels of participation among eligible students and no significant impact on the California Standards Test (CST) in either mathematics or English language arts (Rickles & White, 2006). A replication study was completed in 2007, based on 2005-2006 participation. Findings again suggested low levels of participation in SES by eligible students, at approximately 7%. Contrary to the findings from 2006, results suggested a positive, but

very small impact of participation on CST results (Rickles & Barnhart, 2007). Specifically, students who attended at least 90% of the programming days demonstrated a significantly higher, yet negligible, performance on the CST when compared to eligible students who did not attend SES programming. Finally, LAUSD conducted a study to evaluate any cumulative effects of the operation of SES from 2003 to 2007. Results indicated that participation among eligible participants remained low over time. Furthermore, participation in SES in 2007 only had a substantially small impact on student achievement, with no evidence of SES participation across multiple years (Rickles, Barnhart, & Gualpa, 2008).

The SES program offered through the Chicago Public Schools has also been evaluated over the course of its operation. In 2005-2006, there were approximately 230,000 students eligible for SES, with approximately 75,000 registering to participate in SES programming (Chicago Public Schools, 2007). Given limited funding, a total of 55,600 students were offered tutoring services across 43 programs, with data available for 41,645 students. Results found that students with lowest level of achievement, but who were not eligible for SES, showed the greatest improvement in reading and math. The results for participants found small, but significant improvement in reading, negotiable in math, when comparing participants, with nonparticipating eligible students. Conversely, results found negligible positive impact in the area of mathematics (Chicago Public Schools, 2007).

The Minneapolis Public School District represents the final example of a district that has completed a comprehensive evaluation of effectiveness of participation in SES.

The study examined students who participated in SES from a private vendor, Catapult Learning, with similar nonparticipating students. Results of the matched pair analysis found a “statistically significant, but practically small difference on Minnesota Comprehensive Assessments of reading in favor of Catapult Learning for grade 3 students” (Heistad, 2006, pg. 18). More precisely, the effect size was determined to be .08. There were no significant results for participants in either grade 5 or grade 7.

*Experimental research.* There is currently an absence of research in the area of supplemental education services that have been conducted from an experimental approach. A true understanding of the effectiveness of supplemental education services is illusive due to the lack of randomized designs within this arena (Sunderman & Kim, 2004).

#### Meta-Evaluations: Comparison across After-school Programs

A few meta-evaluations have been completed across quasi-experimental and experimental studies. These studies have also offered mixed results regarding the ability of after-schools programs to impact students’ levels of achievement and school day attendance.

A research synthesis by Redd, Cochran, Hair and Moore (2002) examining 12 quasi-experimental and 12 experimental studies indicated there are limited, but positive program effects on academic outcomes such as course grades. A meta-analysis by Lauer et al. (2006) also found such programs have small, but significant effects on students’ math and reading achievement. The examination reviewed 35 programs that used comparison and control groups to determine the effect of after-school programs on

increasing math and reading performance for at-risk students. Significant positive effects were found for reading and math achievement ( $p < .05$ ), with average effect sizes from .05 to .13 in reading and .09 to .17 for math. In addition, Kane (2004) examined the findings for both a national after-school program and two citywide after-school programs. All of these programs offered students with both homework assistance and academic enrichment activities in the areas of reading and math. Although a limited positive impact on math performance was found, there was no evidence these gains were of statistical significance.

Recently, Vandell, Reisner and Pierce (2007) completed a recent meta-evaluation of 35 programs that took place in schools or community settings; 19 programs served elementary students and 16 served middle school students. Data from 1,796 elementary school aged children and 1,118 middle school students were analyzed. The researchers found that elementary and middle school students who participated on a regular basis over two years demonstrated significant gains on standardized math tests. Program participation by elementary and middle school students was associated with gains of 12 percentiles on a math achievement test when compared to non-participants, with effect sizes equal to .52 and .55, respectively (Vandell et al, 2007).

#### Research Findings Related to Non-academic Impact

##### *School Day Attendance*

After-school programs are further thought to directly and indirectly impact students' academic achievement through increased attendance. Specifically, students who enjoy attending the after-school program are more likely to have increased school day

attendance and have higher levels of academic achievement. In relation, higher rates of after-school participation results in increased learning opportunities and the likelihood of a benefit for the student.

The degree to which after-school programs are effective is partially dependent on student after-school program attendance (Junge, Manglallan, & Raskauskas, 2003; Mahoney, Parente, & Lord, 2007). Three models of after-school attendance are commonly used to depict the associated academic benefits of participation. These models include: the threshold model, linear model and curvilinear model (Simpkins, Little, & Weiss, 2004, 2002). The threshold model indicates a specific number of days in which the student needs to attend a program to obtain the maximum benefits. This model is evident within the federal definition for 21<sup>st</sup> CCLC programs. Specifically, a student has to attend 30 or more days within the annual reporting period to be considered a regular participant. The second model is referred to as the linear model, which suggests that as student participation increases, student outcomes also increase. The third model is referred to as the curvilinear model and suggests that moderate attendance yields better outcomes than too little or too much attendance.

Results of quasi-experimental evaluations further support the importance of a student's level of participation in an after-school program, referred to as "dosage", which factors into the degree of student gains. Unfortunately, evaluation studies do not always use dosage data. A recent meta-analysis showed only 5 of the 35 studies evaluated report on this factor (Lauer, Akiba, Wilkerson, Apthorp, Snow, & Martin-Glenn, 2006). Nevertheless, Carroll's (1963) theory that increased learning opportunities facilitate

academic improvement lends credence to influence of dosage. Students participating on a regular basis over an extended period were shown to have statistically significant grade improvement when compared to participants with lower dosage and the comparison group (Lodestar Management/Research, 2005; Massachusetts 2020, 2004). Students participating more frequently, more than 75% days programming days had significantly higher scores in reading and math than students who attended less than 25% of the programming days (Hangle & McClanahan 2002; Texas Education Agency, 2004; Zavela, Battistich, Dean, Flores, Barton, & Delaney, 1997). Similarly, regular attendees (30 days or more) showed significant improvement on the Iowa Test of Basic Skills compared to non-participants (Jenner & Jenner, 2004). Related to an increase in learning opportunities, participation in after-school programs has also been associated with increased school day attendance. Some studies have found that parents and teachers report school day attendance increased as a result of students' participation in an after-school program (King, Lipsey, Shayne, & Hoskins, 1998; Nebraska Department of Education, 2007). Furthermore, school records indicate there is decrease in the number of unexcused absences for after-school program participants (McGuirk & O'Donnell, 2003). Conversely, several evaluations have shown after-school programs had no impact on participants' school day attendance (Bodilly & Beckett, 2005; Legro, 1990).

A review of non-experimental and quasi-experimental program evaluations continue to show inconsistencies with respect to after-school program influence on increasing participants' school day attendance. Reisner et al. (2004) indicated that participants demonstrated the highest gains at the elementary level (2.7 days), however,

the effect size was small (0.17). Although some comparison evaluations show significant attendance increases (Monsaas, 1994; Prenovost, 2001; Schinke, Cole, & Poulin, 2000; Texas Education Agency, 2004), other studies report there was little or no difference in school day attendance change between participants and non-participants (LaFrance, Twersky, Latham, Foley, Bott, & Lee, 2001; Locklear, Riley, Steinberg, Todd, Junge, & McClain, 1994; Weisman, Soule, Gottfredson, Lu, Kellstrom, Womer, & Bryner, 2005). The literature further shows that even though participants demonstrate higher levels of school day attendance than non-participant, the differences are not statistically significant ( Bissell, Ashurst, & Jones, 2001; Bissell & Malloy, 2002)

This continued disparity in findings is discouraging to after-school program advocates because it prohibits clear and consistent statements about the influence of after-school programs on school day attendance.

Similar to after-school programs, the effectiveness of SES programs in relation to providing services to the targeted students and increasing student achievement remains mixed. However, a majority of the research suggests there is little to no influence on achievement.

Supplemental education services are intended for low income students attending Title I schools that have not met their AYP goals for two consecutive years, with preference given to eligible students with the lowest levels of achievement (U.S. Department of Education, 2005a). However, while some studies have shown that eligible low income and low achieving students were the first to receive SES tutoring (U.S. Department of Education, 2007; U.S. Government Accounting Office, 2006), others have



found that high percentages of already proficient students have been receiving services (Ruggerio, Ysseldyke, & Tan, 2007).

A number of evaluations have also been completed to examine the effectiveness of SES tutoring on raising student achievement. A study conducted by the U.S. Department of Education (2007) examined SES programs in seven school districts and found a positive effect on reading and math achievement at a statistical level. Conversely, results from a study conducted in the Chicago Public School system highlight levels of uncertainty about the effectiveness of SES tutoring on increasing achievement. Based on a comparison of students who received services to students who were eligible, but did not receive services, it was found that participants showed only slightly higher gains on the state reading test than the nonparticipants (Chicago Public Schools, 2007). The authors did report that students who received at least 40 hours of tutoring performed better than all other students who attended received fewer hours of tutoring.

Similar results indicating limited differences in performance gains between SES participants and SES eligible nonparticipants were found in the Los Angeles School District. Although results showed a limited positive increase for students receiving tutoring, there were no significant differences between groups with respect to performance gains (Rickles & Barnhart, 2007). Another example of the limited effectiveness of SES tutoring is based on an analysis conducted by the Minneapolis Public Schools. The *Minneapolis Star Tribune* reported that a comparison between two groups of SES eligible students, those receiving tutoring and those not receiving tutoring, revealed no significant differences in achievement (Brandt, April 28, 2006).

An additional examination of SES tutoring effectiveness occurred in Tennessee. An examination of 33 providers of supplemental education services across six school districts indicated there were no statistical effects for any of the providers of SES in 2004-2005 (Potter et al., 2007). The authors indicated that an analysis of 2005-2006 data showed there was “insufficient information” to determine outcomes on student achievement for 31 of the 33 providers of SES. The ability to examine effectiveness of SES tutoring on academic achievement was also limited by the realization that teachers were not always informed when one of their students was participating in a SES tutoring program. Teachers reported that a lack of communication by SES providers, along with an inability to assist providers in tailoring instruction plans to meet individual student needs, are significant challenges to the effectiveness of SES tutoring (Sunderman & Kim, 2004; U.S. Department of Education, 2004).

Finally, from 2004-2008, various research studies were conducted by the University of Minnesota to examine Positive and Negative Consequences of No Child Left Behind for Students with Disabilities. Based on this set of national, state specific and LEA research studies, a list of general conclusions regarding the effectiveness of SES was created. The following is a list of general conclusions presented by Ysseldyke and Johnson (2009):

- It is clear that SES are not going to the intended participants. Very many of the students who receive SES are proficient in academic skills before participating in services.

- A limited percentage of eligible students participate in supplemental educational services. This is both a logistical and a resource allocation issue. The students do not get to the services, but if they did get there, the funding is not sufficient to provide enough services (in terms of duration) to make an impact.
- Parents are satisfied with tutoring services and believe that their children have benefited from these services, although many of them did not receive any information on their child's progress from the provider.
- Many teachers were not aware which students were receiving SES and did not receive any information on student progress. Alignment of tutoring to school curriculum is questionable as many teachers reported that providers had not communicated with them to develop an individual plan for students.
- Unlike parents, many teachers were hesitant to attribute student progress to SES.
- Low student attendance at tutoring sessions is a common problem identified by LEA and SES providers. As a result, it is difficult to measure impact of SES on student progress.
- Overall, it is not apparent that supplemental services have benefitted students. There is no statistical difference in proficiency when compared to students on FRPL (Minnesota study) and when compared to students who are eligible but did not participate in SES (Minneapolis study).

- SES may benefit certain AYP groups, e.g. African American student group and students in special education (St Paul study).
- There is some evidence that some students may have benefited more from the services – students who are the highest performing (Minneapolis study) and students who attend at least 40 hours of tutoring (St Paul study).
- LEA personnel, especially principals across multiple states have difficulty ensuring that students who would benefit the most receive services. Regular student attendance is a significant challenge. While parents and teachers report a lack of communication with providers, SES providers said that they updated parents on student progress in various ways. (p. 2-3)

A review of the aforementioned SES studies suggests that while some level of ambiguity remains surrounding the effectiveness of SES tutoring remains, the majority of research repeatedly shows that supplemental education service programs do not result in improved student achievement.

#### Summary of Research Findings

A review of research for academic based after-school programs reveals that evaluations have focused on six predominant types of programming. In particular, homework assistance programs, homework assistance and academic enrichment programs, homework assistance and directed learning, and supplemental education service programs were examined. After-school program evaluations have been implemented using a variety of research designs including non-experimental, quasi-

experimental, and experimental. The variety of after-school evaluations has illuminated the inconsistencies associated with the assertions after-school programs have the able to positively influence various forms of participants' functioning. Specifically, while some evaluations have shown programs have a positive impact on participants, others have offered evidence that programs fail to impact participants' homework completion, academic achievement and school day attendance.

### Conclusion

After-school programs exist in a variety of formats and offer an assortment of different activities. After-school programs offer students with additional learning opportunities in the areas of academics, recreation, and personal development (American Youth Policy Forum, 2007; Gardner, Cartledge, Seidl, Woolsey, Schley, & Utley, 2001). This premise relates to Carroll's (1963) theoretical model that posits the importance providing an adequate amount of time for learning to occur. After-school programs provide additional learning opportunities for students who may require additional time, and which also increase the likelihood of improved personal development and academic performance (Valentine, Cooper, Bettencourt, & DuBois, 2002). Directed learning programs have also been implemented and focus solely on increasing students' academic achievement. After-school programs offering directed learning activities have begun seeking classification as supplemental education service providers in order to obtain additional funding, which allow for more tailored programming (Flynn, 2002).

In recent years, after-school programs have experienced increased attention for their potential to increase students' academic achievement. As such, federal funding for

after-school programs has become increasingly linked to the programs' ability to produce academic improvement for students (Mahoney & Zigler, 2006). However, the degree to which after-school programs can influence increased academic achievement remains unclear (Granger, Durlack, Yohalem, & Reisner, 2007). Non-experimental, quasi-experimental, and experimental evaluations of after-school programs portray mixed results for participants' academic improvement (Redd, Cochran, Hair, & Moore, 2002). Test data and survey data have illustrated that after-school participants performed better academically and have increased rates of school day attendance and homework completion than non-participants (Cosden, Morrison, Albanese, & Macias, 2001; Reisner, Vandell, Pechman, Pierce, Brown, & Bolt, 2007; TASC, 2006; Williams, 2005). Conversely, other research and evaluation studies of after-school programs also suggest that there are limited or no impact differences between participants and non-participants on the same variables of academic outcomes, homework completion and school day attendance (U.S. Department of Education, 2005b; U.S. Department of Education, 2002).

#### Rationale for Current Study

Each year the United States educates approximately 50 million students (National Center for Education Statistics [NCES], 2007). Recent national estimates suggest as many as 6.5 million students participate in some form of after-school programming (Little, Wimer, & Weiss, 2007). The 21<sup>st</sup> Century Community Learning Center (CCLC) program alone provides after-school services to students through 9,634 school and community-based learning centers located across the country (After-school Alliance, 2007). On December 26, 2007 President Bush signed an ominous spending bill that will

provide the 21<sup>st</sup> CCLC program with a \$100 million dollar increase, resulting in a \$1.1 billion dollar budget for the 2008 fiscal year. In 2007, Minnesota served approximately 8,000 students through the 21<sup>st</sup> CCLC program. The number of students served is expected to increase to nearly 9,500 students during the 2008 fiscal year.

In recent years, after-school programs have gained attention for their potential to positively impact student achievement. However, federal funding has become increasingly dependent on a program's ability to produce positive academic change (Mahoney & Zigler, 2006; Surr, 2000). Although numerous studies have been conducted on the effectiveness of after-school programming, the literature base for after-school programming is relatively new and findings remain mixed (Chung & Hillsman, 2005; Granger, Durlack, Yohalem, Reisner, 2007; Redd, Cochran, Hair, & Moore, 2002). There is a need to continue the investigation on the effects of after-school programs on academic achievement to ensure program sustainability (Fashola, 2003).

After-school program evaluations have primarily occurred while the program was still in operation, with a paucity of literature evaluating the impact of after school programming on students' long term academic achievement and patterns of behavior. Various researchers suggest that while concurrent evaluation is important, benefits of participation may not appear immediately, but rather emerge over a period of time (Kane, 2004; Mahoney, Parente, & Lord, 2007; Welsh, Russell, Williams, Reisner, & White, 2002). Future research in the area of after-school programming should follow previous participants to help determine the extent to which there are long-term benefits of after-school participation.

### *Description of Current Study*

The present study was completed to increase the knowledge base in the area of potential long-term benefits of after-school program participation that may emerge over time. This follow-up study examined a matched pair sample of participants and non-participants of an after-school program that operated in eight inner-city schools from June 2000 to May 2003. Students were required to attend one hour of academic programming and one hour of recreational or cultural enrichment programming on each day of program attendance; nevertheless daily participation was voluntary. This study was guided by the following four research questions.

1. To what extent are there differences in long-term academic achievement for students who participated in an academic after-school program compared to similar matched non-participants?
2. To what extent are there differences in long-term attendance rates for students who participated in an academic after-school program compared to similar matched non-participants?
3. To what extent are there differences in long-term behavior referral rates for students who participated in an academic after-school program compared to similar matched non-participants?
4. To what extent are the differences in academic achievement, school day attendance, and behavior referral rates mediated by participation in an academic after-school program?



## CHAPTER THREE

### Method

Each year the United States educates approximately 50 million students (National Center for Education Statistics [NCES], 2007). Recent national estimates suggest as many as 6.5 million students participate in some form of after-school programming to obtain additional instruction (Little, Wimer, & Weiss, 2007). After-school programs offer students with additional learning opportunities in the areas of academics, recreation, and personal development (American Youth Policy Forum, 2007; Gardner, Cartledge, Seidl, Woolsey, Schley, & Utley, 2001).

In recent years, after-school programs have experienced increased attention for their potential to increase students' academic achievement. Although numerous studies have been conducted on the effectiveness of after-school programming, the degree to which after-school programs can influence increased academic achievement remains unclear (Granger, Durlack, Yohalem, & Reisner, 2007; Redd, Cochran, Hair, & Moore, 2002). Because after-school program evaluations have primarily occurred while the program was still in operation, there is a need to conduct program follow-up studies to better understand benefits of participation and help ensure sustainability of programs.

The present study was completed to increase knowledge about potential long-term benefits of after-school program participation that may emerge over time. This follow-up study examined a matched pair sample of participants and non-participants of an after-school program that operated in an urban school district from June 2000 to May 2003. Students were required to attend one hour of academic programming and one hour of

recreational or cultural enrichment programming on each day of program attendance; nevertheless daily participation was voluntary.

#### *Data Source*

The present study included follow-up data for students who have previously participated in a 21<sup>st</sup> Century Community Learning Center (CCLC) program and for similar non-participants. The *Pathways to Progress* after-school program was implemented in eight inner city schools, five elementary schools and three middle/junior high schools, in an urban Midwestern school district from June 2000 to May 2003. During its three years of operation the program served over 3,000 students, with one in every three students participating. Students were required to attend one hour of academic programming and one hour of recreational or cultural enrichment programming on each day of program attendance; nevertheless daily participation was voluntary. Staff of the academic programming consisted of licensed teachers, college students, and other community members with similar high levels of educational training.

The current study used baseline data from 1999 and evaluation data from the 21<sup>st</sup> CCLC program collected by the Center for Applied Research and Educational Improvement (CAREI) during the after-school program's operation during the school years from 2000 to 2003. To conduct the present study, current student data was obtained for the 2007 school year through the School District's Department of Research, Evaluation, and Assessment. An application to conduct research was submitted to the University of Minnesota's Institutional Review Board (IRB) and was approved.

### *Participants*

A matched-pairs study was conducted by The Center for Applied Research and Educational Improvement (CAREI) as part of its evaluation of the 21<sup>st</sup> CCLC after-school program in 2003. Participants in the original matched-pairs analysis were students from eight schools who participated in the after-school program for 30 or more days. The original study matched regular participants with non-participants on the following variables: school, grade, academic achievement, special education status, free/reduced lunch status, English language learner status, ethnicity, and gender. At the time of the original study there were 872 students who matched across the aforementioned variables. Because of missing data, the sample size decreased to 354 students to ensure complete data sets for students included in the analyses. The District's Office of Research and Evaluation estimated 228 of the original 354 students were still enrolled within the district.

Participants in the current study were 162 students, with nearly equal percentages of males and females, 49.4% and 50.6% respectively. The sample was comprised of 42.0% Asian Americans ( $n = 68$ ), 32.1% African American students ( $n = 52$ ), 14.8% Latino students ( $n = 24$ ), and 11.1% Caucasian students ( $n = 18$ ). The sample consisted of 48.1% students for whom English was not their home language and 92.6% who were eligible for free/reduced-price lunch. Approximately, 8% of the participants were receiving special education services ( $n = 12$ ). Finally, 1.2% of the students were in sixth grade ( $n = 2$ ), 34.6% were in seventh grade ( $n = 56$ ), 24.7% were in eighth grade ( $n = 40$ ), 22.2% were in ninth grade ( $n = 36$ ), 2.5% were in tenth grade ( $n = 4$ ), 9.9% were in

eleventh grade ( $n = 16$ ), and 4.9% were in twelfth grade ( $n = 8$ ). Given the matched pair design, the demographic breakdown was equal between participants and non-participants and was therefore not summarized.

### *Measures*

A variety of academic achievement and behavior measures were used to compare regular participants to similar non-participants over the course of the 21<sup>st</sup> CCLC program's operation and evaluation. Current data were collected for the present study on the following measures to examine any current differences between previous program participants and non-participants.

*After-school program attendance data.* The total number of program days a student attended during the operation *Pathways to Progress* was to represent student attendance. One program day represents participation in one hour of academic programming and one hour of recreational programming. Students who were included in the 2003 matched pair analysis were regular program participants and similar non-participants. Regular participation, as defined in federal guidelines, refers to individuals who have attended the program for 30 or more days of the program (U.S. Department of Education, 2003a). Non-participants are students who did not participate in any of the *Pathways to Progress* programming days. Similar to regular school day attendance, data for this variable represents the additional time available for learning to occur.

*Regular school day attendance data.* Students' school day attendance data were collected prior to and during the *Pathways to Progress* program. Data were collected for the number of school days each student could have attended, the number of school days

the student attended, and the number of school days the student was absent. To ensure comparability among students, a school day attendance variable was created to reflect the percentage of school days attended relative to the number of days the student could have attended. This current data on the aforementioned variables were obtained for the present study. Data for these variables are important based on Carroll's (1963) theory indicating the importance of time available for learning to occur. Specifically, the more school days students attend, the more opportunities there are to learn and more knowledge students are likely to acquire.

*Standardized achievement test results.* Results from the Minnesota Comprehensive Assessment – Second Edition (MCA-II) were obtained to examine and compare students' current levels of academic achievement in math and reading. The MCA-II reading and mathematics exams are used to measure student progress toward Minnesota's academic standards and to meet requirements of No Child Left Behind (Minnesota Department of Education, 2007). Current data were collected to assist in a statistical determination of whether significant differences in academic achievement exist between previous *Pathways to Progress* regular participants and non-participants. Vertical scaled scores were used for analyses because they indicate performance independent of the grade in which the student was tested (Saint Paul Public Schools, 2007).

*Discipline.* Data were collected on the number of suspensions assigned for each student during the *Pathways to Progress* program. Current suspension discipline data

were collected for students to investigate and compare any classroom behavioral differences that may have existed between participants and non-participants.

### *Procedure*

Extant data were obtained and used to answer the research questions. A data file obtained from the Center for Applied Research and Educational Improvement (CAREI) included variables in the areas of: demographics, attendance rates, behaviors, and academic achievement. These data were present for all students, regardless of their after-school program participation status, who were enrolled in any of the eight schools operating the *Pathways to Progress* after-school program. In addition, the data file contained an identified sample of matched pair students. The sample was present as a result of a post-hoc evaluation conducted in 2004. At that time, all regular participants (students attending 30 or more days of after-school programming) were matched with a similar non-participant according the following baseline variables: school, grade, gender, academic achievement, special education status, free/reduced lunch status, English language learner status, and ethnicity. These individuals were matched to examine any difference in academic achievement for regular participants who had participated in at least two years of the *Pathways to Progress* program compared to non-participants.

To conduct the present study, 2007 school year data were obtained by providing the school district's Office of Research, Evaluation, and Assessment with the student identification numbers for each individual in the matched pair sample. The author then merged the two data files into one using SPSS and the students' unique identification numbers. Once the files were merged, the author wrote syntax to select students with

complete 2007 data present for the following variables: school day attendance, behavior, and academic achievement in reading and math. In addition, the syntax limited the selection of students to those with a complete matched pair. That is, both the original regular participant and the corresponding matched participant were present and had data for the aforementioned variables. This select sample of matched pair students was used for the statistical analyses in the current study.

*Data Analysis: Current Study*

The previous study conducted by CAREI was based on student data collected while students were considered active participants in the after-school program. Unlike the previous study, current analyses were based on follow-up student data. Furthermore, previous analyses classified student participation status as a dichotomous variable. The present study classified participation status as a continuous variable to account for different levels of participation equal to or above 30 days of participation.

To answer the first question of the present study, a multivariate analysis of variance (MANOVA) statistical analysis was completed for each research question. Two separate t-tests were completed to answer the second and third research questions. The MANOVA and t-tests were selected to determine whether or not statistically significant variability exists among participants and non-participants on the dependent variables. All underlying assumptions were examined prior to running the aforementioned analyses and were upheld. Because two independent t-tests were being conducted, the Bonferroni correction was implemented to minimize the likelihood of a type I error. The researcher concluded that although the t-tests were conducted on separate data, a

corrected and more conservative p-value would be appropriate. More precisely, the school day attendance and negative behavior variables were believed to be related because each variable offer information on the amount of time available for students to learn.

To answer the fourth question of the present study, separate simultaneous hierarchical regression analyses were conducted. This type of regression analysis allows the researcher to treat the independent variables on an equal footing in the first step of the model. The second step includes the same independent variables and adds one or more independent variables. This sequence allows for an examination of the relative change in predictive power of the model ( $R^2$ ) between steps (Cohen & Cohen, 1975). Specifically, these analyses provided information about the relationship between several predictor variables and dependent variables. Furthermore, these analyses provided information about the relationship between the predictor variable of interest, students' frequency of after-school participation, and outcome variables. Assumptions of the statistical technique were evaluated prior to completing the analysis and were upheld. Students' current reading and math scores, along with current school day attendance and behavior referral rates, were the dependent variables for these analyses. The predictors included after-school program participation, baseline reading and mathematics scores, previous school day attendance data, and prior behavior referral data. After-school participation was derived by totaling student participation in the after-school program across years and was treated as a continuous variable. Because four regression analyses were completed, the Bonferroni correction was used to minimize the likelihood of a type I error.



## CHAPTER FOUR

### Results

Prior to conducting the planned t-tests, multivariate analyses of variance (MANOVA), and hierarchical regression analyses, the associated assumptions were examined. Because several t-tests were conducted, the Bonferroni correction was implemented to ensure a conservative p-value was used. A base p-value of 0.05 was chosen as the threshold for results to be considered statistically significant. This p-value was then decreased with respect to the two comparisons made and yielded a revised p-value threshold equal to 0.025 for the two t-tests. Similarly, because several hierarchical regression analyses were conducted an adjusted p-value was used to evaluate statistical significance of results.

#### *Research Question 1*

Research question 1 asked “To what extent are there differences in long-term academic achievement for students who participated in an academic after-school program compared to similar matched non-participants?” A multivariate analysis of variance (MANOVA) was conducted to evaluate whether differences existed between former *Pathways to Progress* program participants and matched-pair students who did not participate in the after-school program. This analysis examined potential academic achievement differences in mathematics and reading between groups. In addition, the MANOVA analysis accounts for any covariance between previous reading and mathematics on students’ follow-up mathematics and reading achievement scores. As summarized in Table 1, results of the MANOVA examining Minnesota Comprehensive

Assessment – II (MCA-II) scores in the areas of mathematics and reading suggest there were *no statistically significant differences* in academic achievement between former *Pathways to Progress* participants and similar matched- pair non-participants.

Table 1. MANOVA of achievement variables among participants and non-participants

Variable	Participants		Nonparticipants		F	p
	Mean	SD	Mean	SD		
<b>Academic Achievement</b>						
Math Vertical Scaled Scores	3880.38	246.45	3863.58	248.85	0.19	0.67
Reading Vertical Scale Scores	3838.35	292.58	3871.06	225.05	0.64	0.43

Note: p-value set a <.05

Results of the MANOVA imply that participants of the *Pathways to Progress* after-school program did not have different levels of academic achievement in mathematics or reading when compared to similar matched pair non-participating students (Wilks' Lambda = 0.989,  $F_{(2, 159)} = 0.913$ ,  $p = 0.403$ ). The main effect size for reading was small (Cohen's  $d = -0.125$ ). Similarly, the main effect size for math was small (Cohen's  $d = 0.067$ ).

The mean scores for participants and non-participants yielded an interesting comparison. Although findings were not significant, the examination of math scores suggests participants, on the average, performed slightly better than the non-participants within the sample studied. Conversely, non-participants scored slightly better than the participants on the reading exam, on the average. A further examination of results revealed the two groups performed more similar to each other on the math exam than

they did on the reading exam. This comparison suggests that given participants' lower mean score and the larger standard deviation value than non-participants on the reading exam, the afterschool reading interventions may have been less beneficial than math interventions. However, this assertion should be considered with caution due to the non-significant findings between groups for both math and reading exams.

### *Research Question 2*

Research question 2 asked "To what extent are there differences in long-term attendance rates for students who participated in an academic after-school program compared to similar matched non-participants?"

A t-test was conducted to examine any potential difference in school day attendance rates that may have existed between former *Pathways to Progress* program participants and matched-pair students who did not participate in the after-school program. Results of the t-test examining 2007 school day attendance data suggest there was *not a statistically significant difference* in attendance rates between former *Pathways to Progress* participants and similar matched-pair non-participants ( $t = 1.248, p = 0.214$ ). The effect size was determined to be small (Cohen's  $d = 0.197$ ).

These results imply that participants of the *Pathways to Progress* after-school program did not have significant different levels of school day attendance when compared to similar matched pair non-participating students.

It is interesting to note the mean percentage of school day attendance for participants (94.02) was slightly higher than non-participants (92.19) for this particular sample. Furthermore, the SD for participants (7.36) was smaller than the SD for non-

participants (10.95). It is important to reemphasize the difference between groups was not significant, but rather the difference is related to the standard error of differences between means. In relation to the group studied, the difference in variance suggests that, on the average, participants are more like one another with respect to their percentage of school day attendance. This finding may have implications for designing incentives to increase school day attendance. Specifically, because the variance for school day attendance was smaller among participants, they may respond to more frequently to the same type of attendance intervention than non-participants, who collectively have a higher degree of variance. If such a theory were supported through research, it may have financial implications for how interventions are delivered in the future.

### *Research Question 3*

Research question 3 asked “To what extent are there differences in long-term behavior referral rates for students who participated in an academic after-school program compared to similar matched non-participants?”

A t-test was conducted to examine any potential difference in behavioral referral rates that may have existed between former *Pathways to Progress* program participants and matched-pair students who did not participate in the after-school program. Results of the t-test examining 2007 suspension data suggest there was *not a statistically significant difference* in behavior referral data between former *Pathways to Progress* participants and similar matched-pair non-participants ( $t = -0.723$ ,  $p = 0.471$ , Cohen’s  $d = -.114$ , small). These results imply that participants of the *Pathways to Progress* after-school

program did not have different levels of behavior referrals than the similar matched pair-pair non-participating students.

An examination of the Mean and SD for participants (0.36, 1.06) and non-participants (0.48, 1.10) revealed participants had slightly lower levels of behavior referrals. Again it is important to note that these differences were not statistically significant. A further examination of results suggests that although participants had slightly fewer behavioral referrals within the group studied, the level of variance for non-participants was slightly higher. Similar to results from the school day attendance analysis, the difference in variance between participants and non-participants within the group studied suggests participants may respond more frequently to the same behavioral referral intervention than non-participants. Again, this conjecture should be considered with caution until future research supports such a theory given the difference between groups studied was not significant.

#### *Research Question 4*

Research question 4 asked “To what extent are the differences in academic achievement, school day attendance, and behavior referral rates mediated by participation in an academic after-school program?”

Statistical tests were conducted to evaluate the extent that any current differences between former *Pathways to Progress* program participants and matched-pair students were mediated by participation in the after-school program. Specifically, four separate hierarchical regression analyses were completed. Each of the four base models included data for students’ levels of functioning in the area of interest prior to the after-school

program's operation, students' prior school day attendance data, special education status, ethnicity, English language learner status, free/reduced lunch status, and gender.

Secondary models retained the base information and added after-school participation data. Based on the Bonferroni Correction, a new p-value was calculated with respect to the four separate analyses and the p-value was set to  $p < .0125$ .

*Analysis 1.* The first regression analysis examined the extent to which any difference in mathematical achievement was mediated by participation in an after-school program. Predictor variables in this analysis included: the students' standardized math and reading scores prior to enrollment, students' prior school day attendance data, special education status, ethnicity, English language learner status, free/reduced lunch status, and gender. Finally, the number of days that students participated in the *Pathways to Progress* after-school program across its three years of operation was included. Students' score on the Minnesota Comprehensive Assessment – II (MCA) math exam was the dependent variable. Results are shown in Table 2 on the following page. After-school program attendance did not account for a significant increment to  $R^2$  for achievement on the MCA-II math exam after controlling for demographic and baseline data in the first step. Specifically, demographic and baseline data accounted for 10.4% of the explained variance in achievement on the MCA-II math exam, whereas 12.7% of the explained variance was accounted for with the addition of after-school program participation data. The changes in standardized betas magnitudes were examined across step one and step two. When after-school program attendance was entered into the model, the changes to standardized beta magnitudes were minimal. Results further suggest that none of the

variables entered into the model were considered significant predictors of students' achievement on the MCA-II math exam during the 2006-2007 school year at the adjusted p-value of 0.0125.

A further evaluation of standardized beta weights ( $\beta$ ) for the Math MCA-II exam identified variables with larger relative contributions to math scores than other variables within the model, when the other variables are held constant.

The examination revealed that free/reduced lunch status has the largest  $\beta$  value when compared to all variables within the model. This suggests that within the group studied each standard deviation (SD) unit increase in the number of students who are not eligible for free/reduced lunch, there is related 1.688 SD increased in math vertical scaled scores, on the average. This finding implies that for this group, free/reduced lunch, a relatively fixed variable, has a higher level of relative influence on math achievement than other variables which may be more malleable through school based incentives, such as school day attendance. Conversely, the ethnicity variable was found to have the least relative contribution to the model, with respect to this sample. More precisely, for each SD unit increase, there is a 0.034 SD increase in math vertical scaled scores, on the average within this group.

It is an interesting finding that ethnicity, which is inherent to the individual and can not be change through support services, had the lowest  $\beta$  values and contribution to the model. Conversely, variables which may be influenced through support services, such as F/RL and ELL, have larger  $\beta$  values and relative contribution to the model. The

aforementioned comparisons suggest that support services, which are targeted in certain areas, may have the potential to positively influence math achievement.

Table 2  
*After-School Program Participation as a Predictor of Achievement on the MCA-II Math Exam*

Predictors	$\beta$	$\Delta R^2$
Step 1: Demographic and Baseline Data		0.104
Gender	0.11	
Ethnicity	0.034	
English language status	-1.095	
Special education status	-0.41	
Free/reduced lunch status	1.688	
Previous school day attendance	0.13	
Pre-participation reading score	0.085	
Pre-participation math score	0.171	
Step 2: After-School Program Participation		0.127
Gender	0.133	
Ethnicity	0.059	
English language status	-0.974	
Special education status	-0.694	
Free/reduced lunch status	1.798	
Previous school day attendance	0.129	
Pre-participation reading score	0.077	
Pre-participation math score	0.17	
Number of days participating in after-school program	-0.17	

*Note:* Standardized Beta weights are presented for each variable at each step of the model.

$\Delta R^2$  represents the incremental change to  $R^2$  when each block of variables are included in the model.

There were no significant predictors at the corrected level of  $p < .0125$ .

*Analysis 2.* The second regression analysis examined the extent to which any difference in reading achievement was mediated by participation in an after-school program. Predictor variables in this analysis included: the students' standardized math



and reading scores prior to enrollment, students' prior school day attendance data, special education status, ethnicity, English language learner status, free/reduced lunch status, and gender. Finally, the number of days that students participated in the *Pathways to Progress* after-school program across its three years of operation was included. Students' score on the Minnesota Comprehensive Assessment – II (MCA) reading exam was the dependent variable. Results are shown in Table 3 on the following page. No variables were found to be significant predictors of students' level of achievement on the MCA-II reading exam. After-school program attendance did not account for a significant increment to  $R^2$  for achievement on the MCA-II reading exam after controlling for demographic and baseline data in the first step. Specifically, demographic and baseline data accounted for 4.4% of the explained variance in achievement on the MCA-II reading exam, whereas 4.9% of the explained variance was accounted for with the addition of after-school program participation data. The changes in standardized betas magnitudes were examined across step one and step two. When after-school program attendance was entered into the model, the changes to standardized beta magnitudes were minimal. Results further suggest that none of the variables entered into the model were considered significant predictors of students' achievement on the MCA-II reading exam during the 2006-2007 school year at the adjusted p-value of 0.0125.

A further evaluation of standardized beta weights ( $\beta$ ) for the Reading MCA-II exam identified variables with larger relative contributions to reading scores than other variables within the model within this group, when the other variables are held constant.

Results suggest that special education status has the largest relative contribution within the model and related increase in reading vertical scaled scores, on the average for the group studied. Specifically, for each SD unit increase in the number of students identified for special education services, there is a 0.588 SD decrease in reading vertical scaled scores, on the average and for the sample studied. Conversely, the  $\beta$  value for gender suggests it is the variable with the lowest relative contribution within the model and related increases in reading vertical scaled scores. Specifically, for each unit increase in gender SD units, there is a 0.086 SD increase in reading vertical scaled scores, on the average within the group examined.

Similar to results for the Math MCA-II analysis, an inherently fixed variable, gender, had one of the lowest levels of contribution to the model. Again, variables which may be more malleable through support services, such as special education status and English language learner, had larger relative contributions to the model for this sample. The aforementioned comparisons suggest that interventions, which are targeted in certain areas, may have the potential to positively influence reading achievement. This assertion should be considered with caution because although some variables had a notable contribution to the model, none of the variables were determined to be statistically significant.

Table 3  
*After-School Program Participation as a Predictor of Reading Achievement*

Predictors	$\beta$	$\Delta R^2$
Step 1: Demographic and Baseline Data		0.044
Gender	0.086	
Ethnicity	-0.176	
English language status	0.43	
Special education status	-0.589	
Free/reduced lunch status	0.258	
Previous school day attendance	0.124	
Pre-participation math score	0.158	
Pre-participation reading score	0.113	
Step 2: After-School Program Participation		0.049
Gender	0.086	
Ethnicity	-0.185	
English language status	0.414	
Special education status	-0.588	
Free/reduced lunch status	0.275	
Previous school day attendance	0.127	
Pre-participation math score	0.155	
Pre-participation reading score	0.114	
Number of days participating in after-school program	-0.018	

*Note:* Standardized Beta weights are presented for each variable at each step of the model.

$\Delta R^2$  represents the incremental change to  $R^2$  when each block of variables are included in the model.

There were no significant predictors at the corrected level of  $p < .0125$

*Analysis 3.* The third regression analysis examined the extent to which any difference in school day attendance was mediated by participation in an after-school program. Predictor variables in this analysis included: the students' standardized math and reading scores prior to enrollment, students' prior school day attendance data, special education status, ethnicity, English language learner status, free/reduced lunch status, and

gender. Finally, the number of days that students participated in the *Pathways to Progress* after-school program across its three years of operation was included. The percentage of school days students attended during 2006-2007 school year was the dependent variable. Results are shown in Table 4 on the following page. After-school program attendance did not account for a significant increment to  $R^2$  for school day attendance after controlling for demographic and baseline data in the first step. Specifically, demographic and baseline data accounted for 1.0% of the explained variance in school day attendance, whereas 1.2% of the explained variance was accounted for with the addition of after-school program participation data. The changes in standardized betas magnitudes were examined across step one and step two. When after-school program attendance was entered into the model, the changes to standardized beta magnitudes were minimal. Results further suggest that none of the variables entered into the model were considered significant predictors of students' school day attendance during the 2006-2007 school year at the adjusted p-value of 0.0125.

A further examination of the variables revealed the previous school day attendance variable had the least relative contribution to the model for this sample, when all other variables are held constant. More precisely, for each SD unit increase in previous school day attendance, there is a related 0.023 SD unit increase in current school day attendance, on the average, within the examined group. Conversely, the F/RL variable had a  $\beta$  value of -0.919 and suggests that when all other variables are held constant that for each SD unit change in F/RL status, there is a -0.919 SD unit decrease in

school day attendance. This suggests that, on the average, when the number of students who qualify for F/RL increases, school day attendance decreases, within this group.

This finding is interesting in that one would expect previous school day attendance to have the largest contribution to the model predicting current school day attendance. Results showed this was not the case. Rather, previous school day attendance had the lowest relative contribution to the model for the group evaluated. These findings suggest that interventions to increase school day attendance would have less overall impact on increasing future school day attendance within this group than interventions focused on decreasing the number of students in need of free/reduced lunch. Again, this conjecture should be considered with caution given that none of the variables within the model were determined to be statistically significant.

Table 4

*After-School Program Participation as a Predictor of School Day Attendance*

Predictors	$\beta$	$\Delta R^2$
Step 1: Demographic and Baseline Data		0.01
Gender	-0.049	
Ethnicity	0.033	
English language status	0.619	
Special education status	0.237	
Free/reduced lunch status	-0.861	
Previous school day attendance	0.023	
Step 2: After-School Program Participation		0.012
Gender	-0.06	
Ethnicity	0.046	
English language status	0.657	
Special education status	0.262	
Free/reduced lunch status	-0.919	
Previous school day attendance	0.029	
Number of days participating in after-school program	0.056	

*Note:* Standardized Beta weights are presented for each variable at each step of the model.

$\Delta R^2$  represents the incremental change to  $R^2$  when each block of variables are included in the model.

There were no significant predictors at the corrected level of  $p < .0125$

*Analysis 4.* The fourth and final regression analysis examined the extent to which any difference in behavior referrals were mediated by participation in an after-school program. Predictor variables in this analysis included: the students' standardized math and reading scores prior to enrollment, students' prior school day attendance data, special education status, ethnicity, English language learner status, free/reduced lunch status, and gender. Finally, the number of days that students participated in the *Pathways to Progress* after-school program across its three years of operation was included. The

number of suspensions issued to the student during 2006-2007 school year was the dependent variable. Results are shown in Table 5. After-school program attendance did not account for a significant increment to  $R^2$  for suspensions after controlling for demographic and baseline data in the first step. Specifically, demographic and baseline data accounted for 1.9% of the explained variance in suspensions, whereas 2% of the explained variance was accounted for with the addition of after-school program participation data. The changes in standardized betas magnitudes were examined across step one and step two. When after-school program attendance was entered into the model, the changes to standardized beta magnitudes were minimal. Results further suggest that none of the variables entered into the model were considered significant predictors of students' suspensions during the 2006-2007 school year at the adjusted p-value of 0.0125.

A further examination of the variables revealed the previous school day attendance variable had the least relative contribution to the model and for the group studied, when all other variables are held constant. More precisely, for each SD unit increase in previous school day attendance, there is a related 0.009 SD unit decrease in suspensions, on the average. Conversely, the ELL status variable had the largest  $\beta$  value and suggests that when all other variables are held constant that for each SD unit change in ELL status, there is a -2.200 SD unit decrease in suspensions. This suggests that, on the average, when the number of students who are not eligible for ELL increases, the number of suspensions decreases, within this group.

This finding is interesting in that one would expect previous behavioral referral to have the largest contribution to the model predicting current suspensions. Results showed

this was not the case. Rather, the previous suspensions variable had one of the lowest relative contributions to the model. These findings suggest that interventions to decrease suspensions would have less overall impact on decreasing future school day attendance than interventions focused on decreasing the number of students in need of ELL services. Again, the theory should be considered with caution given that none of the variables within the model were determined to be statistically significant predictors.

Table 5  
*After-School Program Participation as a Predictor of Suspensions*

Predictors	$\beta$	$\Delta R^2$
Step 1: Demographic and Baseline Data		0.019
Gender	0.005	
Ethnicity	0.065	
English language status	-2.191	
Special education status	0.905	
Free/reduced lunch status	-0.001	
Previous school day attendance	-0.007	
Previous number of suspensions	-0.008	
Step 2: After-School Program Participation		0.02
Gender	0.01	
Ethnicity	0.066	
English language status	-2.2	
Special education status	0.892	
Free/reduced lunch status	-0.01	
Previous school day attendance	-0.009	
Previous number of suspensions	-0.01	
Number of days participating in after school program	0.03	

*Note:* Standardized Beta weights are presented for each variable at each step of the model.

$\Delta R^2$  represents the incremental change to  $R^2$  when each block of variables are included in the model.

There were no significant predictors at the corrected level of  $p < .0125$



## Chapter 5

### Discussion

The intent of this study was to increase knowledge about potential long-term benefits of student participation in an academic-based after-school program. This thesis evaluates historical and current data for a matched pair sample of participants and non-participants of an after-school program that operated in a Midwestern urban school district from June 2000 to May 2003. Historical data are comprised of statewide testing results in the areas of reading and mathematics, school day and after-school program attendance, and behavioral data. Student data for 2007 were obtained from the school district's Office of Research and Evaluation in the areas of statewide testing results for reading, mathematics, present levels of school day attendance, and school behavioral referrals. An examination of demographics reveals the original sample consisted of 872 students, with 436 students having 2007 data in the school district's database. However, only 162 of those students had the required matched-pairs data needed for current statistical analyses. Demographics for the original sample and follow-up data were further examined to ensure attrition rates between participants and non-participants were not statistically different. No significant differences between groups are found.

The underlying foundation for the present study is based on the theoretical model of learning, proposed by Carroll in 1963, which indicates the amount of time available for learning is the primary contributing variable in students' achievement. As depicted in Figure 1, Carroll's model suggests the degree of learning which occurs is impacted by the amount of time spent learning in proportion to the time needed to learn. Proponents of

after-school programs advocate that such programs increase the time available for learning to occur. Therefore, students who obtain additional instruction through participation in an academic based after-school program are expected to obtain higher levels of learning. However, a review of literature examining benefits of after-school program participation has revealed inconsistent research findings (Chung & Hillsman, 2005; Granger et al., 2007; Redd et al., 2002). The current study examines the extent to which there were long-term benefits between after-school participants and non-participants in the areas of academic achievement, school-day attendance, and behavior referrals. Additionally, the current study evaluates the extent to which there are significant differences in academic achievement, school-day attendance and behavior referrals, as mediated by participation in the after-school program. A number of statistical analyses are completed to examine the aforementioned areas.

A multivariate analysis of variance was conducted using Minnesota Comprehensive Assessment – II (MCA-II) results, in reading and mathematics, to evaluate the extent to which there were long-term benefits between participants and non-participants in the area of academic achievement. Results of the statistical analysis suggest there were no statistically significant differences between former after-school program participants and non-participants at follow-up. This finding implies that, although after-school program participants obtained additional academic instruction time from licensed staff after school hours, these students did not achieve academically at largely disparate levels from non-participating peers three years after the program was in operation. Although there was no significant difference between groups, it does not mean

additional learning did not occur. These results simply suggest that any academic benefits from participating in the after-school program were not captured in the MCA-II scores. This finding indicates that additional academic measures should also be used in future research.

A potential explanation for non-significant findings is the voluntary nature of the after-school program. Perhaps if participation is mandated and the instruction is more intensive in frequency and duration, a notable difference may have been present.

#### Quality of Program Implementation

A second consideration is the quality of program implementation, a variable often referred to as “implementation integrity”. The selection of strategies to evaluate program quality must be considered during planning stages and can not be an afterthought (Smith, Daunic, & Taylor, 2007). Bellg et al., (2004) lead an effort by the National Institutes of Health Behavior Change Consortium (BCC) to identified fidelity strategies and concepts to be used in the area of intervention research. Drawing on the work of Lichstein, Riedel, and Grieve (1994), the authors discussed the importance of evaluating (1) treatment delivery, (2) treatment receipt, and (3) treatment enactment when evaluating the quality of implementation for a program.

*Treatment delivery.* Treatment delivery refers to the understanding that the program was implemented as intended. In relation to the current after-school program, the discussion of treatment delivery was limited. The after-school program relied on reporting the credentials of activity leaders to affirm the quality of programming which was offered. Although a number of activities were offered to increase academic achievement, a

compilation of the individualized strategies used to increase achievement was not provided. The program documented that some of the activity leaders were credentialed as teachers and therefore classroom management and activities were likely very similar to the school day. However, a number of activity leaders were not credentialed as teachers. Because the ratio of credentialed to non-credential teaching staff was not recorded, the degree to which after-school activities were aligned to the school day curriculum must remain questionable.

Similar to supplemental education services, the purpose of this after-school program was to support and reinforce the information presented in the classroom. However, when there is a lack of communication between after-school program providers and school day teachers, the ability to tailor instruction after-school instruction to the student's needs is negatively impacted. As a result, the after-school program is likely less effective in influencing achievement. This explanation for the lack of achievement differences in the current study is consistent with that previously presented in the SES literature by Ruggiero, Ysseldyke and Tan (2008). The authors asserted that a lack of communication between SES providers and teaching staff negatively impacts the effectiveness of the SES tutoring, and as a result limits increased achievement. Results of the current study, along with SES research illustrate the need to find methods to facilitate communication between teachers and after-school personnel.

*Treatment receipt.* The concept of treatment receipt indicates that the targeted population must attend the program. The results from the original evaluation of this after-school program suggest it was relatively successful in reaching its targeted student populations

(Wahlstrom, Sheldon, & Lewis, 2004). Specifically, one in every three students attending one of the eight schools participated. This participation rate of approximately 33% is similar to rates of other different after-school programs (Mahoney et al., 2005; Walker & Arbreton, 2005). However, the rate is higher than those in the area of SES programs. Research in the area of SES suggests that approximately 7-18% of eligible students participate in programs (Chicago Public Schools, 2007; Rickles & Barnhart, 2007; Saulny, 2006). A possible explanation for the difference in participation rates is that SES programs are only available for specific students, whereas most after-school programs are open to the entire school population. The question of why more students do not participate in either type of program should be considered. One possible reason is that a number of students were not able to participate due to limitations in transportation. Specifically, because the program examined is located in neighborhood schools, the majority of students were able to walk home after the program, if a parent/guardian was unable to provide transportation. However, due to the cold climate in which the program operated, some parents may have prevented their children from attending the program for safety reasons. Because data were not collected regarding how the availability of transportation influenced a parent's decision about their child's participation, the importance of transportation on such a decision could only be theorized. A second consideration is related to the economic condition of the targeted populations. The after-school program and SES programs are intended to increase achievement for students at-risk. In order to participate in SES programs, students must be from low income families. A consideration related to this understanding is that some eligible students may provide

family support, such as providing child care for non-school age siblings after school. As a result, participation rates would be impacted because students are unavailable to attend programming after school.

In relation to current findings, additional consideration should be paid to the number of days students attended the after-school program and the corresponding hours of additional academic instruction obtained. In the program studied, participants attended a minimum of one hour recreational programming and one hour of academic programming during each day of attendance. Based on federal reporting guidelines for the after-school program, students attending 30 or more days of programming were considered regular participants (U.S. Department of Education, 2003a). It was believed that regular participants would demonstrate higher academic benefits than participants who attended fewer than 30 days. However, research in the area of supplemental education services suggests the minimum value of 30 academic hours may be too low and students benefit more from services when they receive a minimum of 40 hours of tutoring (Ysseldyke & Johnson, 2009). As previously indicated, students who received at least 40 hours of tutoring outperformed all other students who received fewer hours of tutoring (Chicago Public Schools, 2007; Ysseldyke & Johnson, 2009). This finding is applicable to the current after-school program because of its intention to increase achievement. However, unlike supplemental education services which limits the number of tutoring provided based on financial constraint, the after-school program does not have restrictions on the number of hours participants can attend. As such, the after-school program should have more readily influenced achievement, which was not the case.

Although the after-school program did not limit the number of days a student could attend, it likely faced difficulty facilitating participation. This explanation for limited participation is a challenge also faced by SES tutoring programs. For instance, the evaluation of SES programs in St. Paul Schools found that only about 1/3 of registrants attended more than 40 hours of programming. However, of larger concern is the understanding that approximately 1/3 of program registrants did not even attend one session (Ysseldyke & Johnson, 2009). Clearly, achieving regular attendance is a challenge for all types of after-school programming and to the goal of impacting achievement. The development of strategies to increase participation should be considered a high priority for future programming.

*Treatment enactment.* Finally, the concept of treatment enactment indicates that the information learned through an intervention must be applied. An evaluation of participants' coursework is one way to determine whether the information taught was implemented. Furthermore, participants could be surveyed to determine how the information they learned was helpful within the classroom setting. Unfortunately, steps were not taken during the after-school program to determine the level of treatment enactment which took place. Because of the lack of data within this area, the ability to discuss the quality of program implementation was greatly limited. Consequently, a level of uncertainty remains about the current results and the academic benefits offered through program participation.

A variety of other influential factors should also be considered as they relate to current results. These factors are discussed within the *directions for future research* section.

An examination of the long term impact on school day attendance was conducted under the pretense that increased rates of attendance would equate to increased time for learning to occur. A related hypothesis was that the students who gain the benefits from the after-school program would be more vigilant about their school attendance than the non-participants. Data analysis revealed there was no statistically significant difference between participants and non-participants. This finding informs that there were no statistical differences between groups three years after the program was in operation. Related to Carroll's model, results suggest that although after-school programs have immediate impact on increased instructional time, long-term there were no differences between groups as measured through school day attendance. Advocates of after-school programs would declare a significant difference should be present between groups. A number of outlying factors may contribute to non-significant differences between groups. For example, as students advance grades a number of additional extracurricular activities become available. A student's eligibility to participate in sports and club activities are often directly related to students maintaining adequate school day attendance. The desire to participant in these programs may have been large enough for students who would otherwise not attend school. This is an area for future exploration to determine if extracurricular activities impact school day participation for participants and nonparticipants.



To examine potential long-term behavioral benefits of participation in an after-school program, participants and non-participants were compared within this area. Specifically, an examination of suspension data was completed to increase knowledge about the possible differences learning time between groups, as impacted by negative behaviors. Simply stated, the more time students spend engaging in negative behaviors results in less time available for learning. Results revealed no statistically significant differences between groups, therefore indicating there was not any long-term impact of after-school program participation on the levels of negative behaviors exhibited by program participants. Although there were statistically significant behavioral differences between groups based on current results, it is important to recognize this determination was based on a single variable. Results solely indicated a difference between groups was not present based on students' suspension data. Between group differences may have emerged if additional forms of behavioral data were collected and used in the analysis. However, as discussed in the following limitations section of this document, the use of non-uniform district measures would create inequality among students. Clearly the area of potential long term program influence on participants' behaviors necessitates further consideration.

Finally, hierarchical regression analyses were completed to gain an understanding of the degree to which students' participation in an after-school program mediated differences in academic achievement, school day attendance and behavioral referrals, as measured through number of suspensions. The inclusion of students' frequency of after-school participation within the model did not yield significant results. This suggests the

frequency of program participation does not mediate changes in areas of math and reading academic achievement, school day attendance, and behavioral referrals to a significant degree. Although the current analysis examined the mediating impact of program attendance data, the results may have been limited by original data collection procedures. Specifically, summative attendance data was based on an entire calendar year of after-school programming. The data allowed for broad analyses based on attendance frequency, but prohibited more detailed analyses based on attendance intensity. The mediating influence of after-school participation may be more prominent for students who attend the program with more intensity. That is, the long term impact of participation may have be different for students who attended 30 program days within 3 months than for similar students who attended the same number of days over a longer duration. Regardless of this posit, frequency of attendance did not serve as a significant mediating variable when total summative attendance was analyzed.

#### *Limitations and Merits*

The results of this research must be viewed in light of specific study merits and limitations. This analysis allows the researcher to modify a study accordingly and subsequently strengthen the design. Because it is impossible to alleviate all possible limitations, a thorough discussion to recognize the merits and limitations which remain is warranted when discussing results. A discussion of merits and limitations also serves as a guide for future research.

A noteworthy merit of the current study was the use of objective data. Specifically, a portion of prior research in the area of after-school programming has

relied on subjective data which was provided by school day and after-school program staff. The information collected is beneficial and assists in furthering a comprehensive understanding regarding the benefits associated with student participation. However, the data can yield biased results when teachers were aware students were participating within an after-school program. The use of school day attendance and MCA-II scores increases the objectivity of the data; therefore decreasing bias within the data and subsequently the results of statistical analyses.

The current research study contained a number of limitations. The first limitation of this study was the use of a quasi-experimental design. Although no significant differences were found, the use of a quasi-experimental design in the current study would have prevented the ability of determining the effects of the school, the after-school program, or other outside factors. Specifically, because the current study was not based on an experimental design with random assignment, causation could not be inferred. Second, although a matched-pair design was used to help compensate for any inherent difference between participants and non-participants, a concern about additional academic support remained. Because the program occurred after-school hours, there was an inability to control or monitor the activities the non-participant students were involved in. Students may have participated in out of school activities ranging from specialized private tutoring to non-supervised time at home. Because activity data were not collected in this area, the ability to relate benefits to the after-school program was significantly limited, regardless of the research design.

The second limitation relates to the understanding that data were obtained through an extant database. The use of pre-existing data impacts the specificity of a study because the research is limited by a finite dataset and limitations of the data collection procedures. For example, the after-school program attendance data quantified the amount of additional academic instruction received by participants. However, although it was known that participants obtained an hour of academic enrichment for each day of attendance, no data were collected on the subject of academic for each participant and the quality and appropriateness of the instruction. The collection of this type of data would have allowed for an analysis which focused on the services received and the subsequent levels of growth in each academic area.

The use of MCA-II scores as a sole indicator of academic achievement was a third limitation of the current study. Specifically, MCA-II scores have a limited degree of sensitivity with respect to measuring students' academic growth when considering proficiency cutoff points. A student's achievement using the MCA-II data are often reported as: exceeds standards, meets standards, partially meets standard, and does not meet standards. However, although continuous scaled scores were used for analyses, the achievement categories encompass a continuum of scores. Therefore, although a student's MCA-II score may increase, the change may not be large enough to represent a change of achievement status for reporting purposes. Additionally, because MCA-II scores were the only academic measure used there may have been a decrease in number of individuals included in the analysis because either one of the matched-pair students were missing MCA-II data.

As noted previously, the area of behavior referrals represents another limitation of this study. Participants and non-participants were originally matched based on their school of attendance, among other variables, while the after-school program was in operation. Because of the district's high mobility rate, it was likely corresponding matched-pair students deviated from being enrolled in the same school over time. Although district policies guide decisions related to problematic behavior, concern about the level of uniformity across school buildings must be considered. Recognizing this potential limitation, a staff member from the school district's Office of Research and Evaluation was consulted with. It was advised that only students' suspension data be considered for analysis. This advisement came under the district recommendation that suspension information was the only variable believed to have a high degree of uniformity across school buildings. Specifically, the staff elaborated that behavior referrals resulting in suspensions are based on the district wide suspension policies. This understanding suggests that although there may be behavioral differences that existed between groups, the longitudinal data available were not sensitive enough to make a statistical distinction.

#### *Directions for Future Research*

The results and limitations of the current study drive recommendations for future research. First, future research should attempt to incorporate additional variables that would allow for a more intensive evaluation of potential participant benefits related to student behavior. Future studies should consider obtaining narrative reports for each behavioral referral and systematically coding the events in order to provide additional

behavioral data. In addition, although more subjective in nature, the use of teacher and student self-report rating scales should be considered. Such rating scales could be used to obtain additional information in the areas of academic performance and behavioral functioning.

Future evaluative studies should obtain and incorporate information regarding students' activities while they were not attending school. This information should be obtained for both participants and non-participants. This distinction is especially important because after-school participants may obtain additional academic support outside of the after-school program. Further, the data collected should include information on frequency and duration of any academic support activities, along with the academic subject of focus and training of activity leaders.

The concept of mandating participation in after-school programming was previously mentioned as an element that may have yielded notable differences between participants and non-participants. Although increased instructional time may play a role in increased academic gains, the data presented in this study reveals that it does not guarantee that increased learning will occur. Information about programming activities should be addressed in future studies. In addition, the quality of program staff and fidelity of the instruction presented should be considered within future studies. Furthermore, students' academic engaged time is an influential factor in increased academic success and should be considered in future studies. The inclusion of this data will help further the understanding of both short and long term benefits which may be associated with after-school program participation.

A final recommendation is that future research be longitudinal in nature and should adopt a proactive approach and track students' academic progress each year after they participated in an after-school programs for at least three years. Additional academic information should include both quantitative and qualitative data. Specifically, students' grade point averages should be collected for core academic subjects. Students' progress reports, completed by teachers, should be collected to provide supplemental qualitative information on students' success and academic growth over time. Student and parent reports of academic and behavioral functioning should also be incorporated in prospective research. Furthermore, due to high mobility rates across school districts it is advised that the students' state identification number be used to help ensure academic data could be obtained, regardless of the district they attend. This information will allow future researchers to have more comprehensive information about how students' academic performance and behavioral functioning may change over time.

#### *Practical Implications and Conclusion*

The current study did not show significant differences between after-school participants and similar non-participants. An initial reaction may include the consideration of discontinuing after-school programming. However, policy changes which would diminish funding and support for after-school programs should not be hastened. As indicated within chapter 2, a review of literature has shown that certain after-school programs yield positive academic benefits. Educating a student is a multifaceted approach. Thus, a better understanding of why some programs offer academic benefits and others do not should be gained before making changes to after-

school program policy. The information gleaned from future studies will help ensure continued advancements in after-school program delivery, and ultimately will help facilitate increased academic success for participants.



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