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An Analysis of the Effects of Types of Afterschool Program Participation on Elementary Student Academic Performance

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ABSTRACT

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Afterschool programs are seen as a solution to many of the problems facing our educational system today. In particular, afterschool programs are intended to help low income and at-risk students improve their academic performance. However, all afterschool programs are not created equally. Programs differ in the amount of time students participate, the length of time the program has operated, the types of activities offered, and programs vary depending on the school in which they operate. This paper will demonstrate the ways in which afterschool programs differ and the subsequent impact on academic achievement. Additionally, it will highlight the need for more focused regional analysis of the impact of afterschool programs on academic achievement.

Keywords: afterschool programs, school context, academic achievement

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INTRODUCTION

In 2007, it was estimated that nearly 6.5 million children and youth nationwide participate in some form of afterschool program (Little, Wimer, and Weiss, 2007). These numbers have been on the rise over the past several years, and this rise, coupled with legislative changes, has led to increased scrutiny over the effectiveness of these programs. The recent rise can be attributed, in part, to the increase in the number of mothers working full time, leaving children largely unattended from the hours of three to six in the evening (Capella and Larner 1999; Vandell and Shumow 1999). This is where afterschool programs step in, not only to provide supervision and a safe haven for children, but also to provide supplemental instruction to the typical school day. Additionally, this supplemental instruction is often aimed toward low income and at-risk students.

Afterschool programs are often seen as an avenue to bridge the achievement gap among disadvantaged children and their more affluent peers. All too often, instead of providing access to opportunities and being a great equalizer, education is a system of reproduction where the status quo is maintained (Demaine 2003; Hallinan 2001). Afterschool programs provide one solution to this problem. In addition, elementary years are particularly critical. If children do not learn basic skills early on, they are more likely to fail higher levels of schooling (Alexander, Entwisle, and Horsey 1997). This makes the role of afterschool programs all the more crucial in helping disadvantaged children at young ages catch up to their more affluent peers.

This paper will add to the research literature on afterschool programs and their impact on at-risk populations of students. In the following sections, I will discuss the history of afterschool programs, including the more recent impact of No Child Left Behind and the culture of accountability. This will set the stage for discussing the current research on afterschool

programs, specifically highlighting the gaps that this study will address. Finally, I will present an in depth case study of five schools within one school district participating in the 21st Century Community Learning Centers afterschool program.

This case study will demonstrate that not all afterschool programs are created equally. Additionally, it will show the need for more in-depth regional analyses of programs. In this paper, I will focus on three specific areas of afterschool programs that differ by site: type of participation; dosage differences; and finally, the impact of school context. This will make three contributions to the literature. First, it will provide information on the specific types of activities in which students are participating (enrichment or academic) and their impact on academic achievement. The second includes analyses of longitudinal data on student participation over a four-year period. This analysis will provide valuable insight into the dosage needed to effect change. Finally, the third contribution will focus on the impact of school context on academic achievement. To set the stage for these important contributions, I discuss the history of afterschool programs and the culture of accountability.

REVIEW OF LITERATURE

History of Afterschool Programs and the New Culture of Accountability

While the past several years have seen a dramatic increase in both the number of children participating in afterschool programs and the amount of funding the programs receive, it is not a new idea. The roots of afterschool programs can be traced back to the early 1900s. Children living in unsafe neighborhoods were seen as a societal concern and afterschool programs offered a logical solution. As maternal employment began to rise, so did enrollment in afterschool programs (Halpern 2002). Although the types of afterschool programs have varied over the years, and only recently has extensive research been conducted, the history and future of

afterschool programs are rooted in helping disadvantaged children. What does not have a long history is the new culture of accountability in which these programs are currently embedded.

Accountability rose to the forefront of public attention in 2001 with the No Child Left Behind Education Act (NCLB). How this act specifically affected the 21st Century Community Learning Centers will be discussed in greater depth later; the relevant point here is its impact on the practice of accountability. Test-based accountability is the idea that all students take standardized tests that can be used to identify educational needs or gaps, and can be used to improve public education and student performance (Grissmer, Kane, and Staiger 2002; Hamilton and Stecher 2002). The No Child Left Behind Act, which amends the Elementary and Secondary Education Act of 1965, increased accountability for teachers and schools nationwide through mandating testing and imposing penalties on low performing schools. President George W. Bush proposed the No Child Left Behind Act shortly after he took office. In the forward, President Bush stated his vision and purpose for the program:

> The quality of our public schools directly affects us all-as parents, as students, and as citizens. Yet too many children in America are segregated by low expectations, illiteracy, and self-doubt…children are literally being left behind. I plan to propose this blueprint. This blueprint will serve as a framework from which we can all work together…to strengthen our elementary and secondary schools. (p. 2)

The "blueprint" mentioned in the forward is a program in which states are required to assess all students based on standards that they set for themselves. Students and schools must show improvement from year to year on these assessments called adequate yearly progress (AYP). Schools that meet their goals receive increased federal monies; however, schools that do not meet goals are penalized (No Child Left Behind 2001).

The NCLB Act and the idea of test-based accountability have been heavily criticized and remain extremely controversial. One main argument against this type of testing concerns disadvantaged students, the very same students that many afterschool programs are targeting. Some scholars, such as Harris and Herrington (2006), argue that test-based accountability has produced an increase in the achievement gap for minority and low-income students. They argue that up until 1988 African Americans and Hispanics were closing the achievement gap due to increased exposure to content and time spent in school. However, the gap widened when school reform turned away from increased content, rigor, and resources for individual students and moved toward holding entire schools accountable and threatening government take-overs of low performing schools.

However, not all researchers agree with Harris and Herrington. In fact, some argue the opposite: that accountability structures are beneficial. Supporters believe that test-based accountability forces schools to confront shortcomings and help disadvantaged students that are often not meeting standards (Carnoy and Loeb 2002). Afterschool programs have been seen as one avenue to help these disadvantaged students achieve higher standardized test scores. Afterschool programs provide supplemental education to students in the form of tutoring, homework help, academic programs, and enrichment activities. While there are several different varieties of afterschool programs, the 21st Century Community Learning Centers is the program that the federal government has chosen to invest millions of dollars in. Additionally, it is the program at the center of this case study.

The 21st Century Community Learning Centers

In 1994, during the same time period that test-based accountability was on the rise, Congress authorized the 21st Century Community Learning Centers. The purpose of this program

was originally to open up schools for community use, meaning that students, their families, and community members would have access to schools between the hours of three and six for a variety of activities. However, in 1998 the program was refined to provide a combination of academic and enrichment activities for at-risk children. In the years following the reconstruction of the program, funding saw a significant increase (James-Burdumy et al. 2005; Jenner & Jenner 2007). According to the Afterschool Alliance, funding for the 21st Century program increased from 40 million in 1998 to 1.6 billion in 2010. This increase was, in part, due to No Child Left Behind and the commitment to helping schools serving low-income students.

As part of NCLB, Congress increased funding for Title I schools from $42.2 billion to $55.7 billion between 2001 and 2004 (U.S. Department of Education, 2011). Title I refers to a section of the Elementary and Secondary Education Act passed in 1965 (that NCLB refined) as part of the war on poverty. To qualify as Title I, a school must have at least 40% of its students from low-income families. Title I funding is then provided to low-income schools. Additionally, states must provide supplementary services to low-income students in Title I schools that do meet proficiency standards. A portion of the increase in Title I funding was designated specifically for programs such as the 21st Century Community Learning Centers.

The 21st Century Community Learning Center is an example of an afterschool program that specifically targets low performing, high poverty schools and it is the only program that receives federal funding to do so. The 21st Century program is designed to provide supplemental instruction in the form of both enrichment and academic activities. The intention is to help students meet state standards in core academic subjects, mainly math and language arts (U.S. Department of Education 2012).

Over the past several decades, there have been numerous studies examining the impact of afterschool programs on the children who participate in them. With billions of dollars being spent on helping millions of at risk students, the pressure is on to show that these programs are making a positive impact. Studies have focused on the question of program impact on academic achievement as well as social skill improvement and feelings of safety (Chappell 2006; Lauer et al. 2003; Miller 2003). However, much of the research on afterschool programs, up to this point, has been inconclusive, incomplete, and lacking in depth. Additionally, studies have failed to focus on program differences that could impact outcomes.

Afterschool Program Research

If the research on test-based accountability was a story of differing opinions, the story of afterschool programs is more of the same. Over the past ten years, afterschool programs have been the subject of numerous articles and several books. The vast majority of research on afterschool programs has focused on two main areas: first, is the impact of these programs, and the second, is the characteristics of high quality programs. As stated earlier, while much of the research on afterschool programs has been inconclusive, there is also some positive news that has come out.

The good news on afterschool programs is that there is a general consensus that afterschool programs can have positive impacts on some aspects of children's lives. Positive effects on health, lower participation in illegal activity, and social emotional development are being seen (Philliber, Kaye, and Herrling 2001; Taylor et. al. 1999; Weiss and Nicholson 1998). For example, an experimental study in Minnesota on the Girlfriend for KEEPS program, found that girls' intentions to stay healthy by eating properly and exercising were increased with program participation (Sherwood et al., 2003). In addition to overall health improvements,

afterschool programs can increase participants' time spent on specific activities. The Cooke Middle School After-School Recreation Program showed increases in the amount of time that students spent in strength training activities (Lauver 2002). Participation in afterschool programs has also led to a decrease or delay in student participation in risky behaviors such as teen sex, pregnancy, marijuana use, and alcohol use (Philliber et al. 2001; Weiss and Nicholson 1998).

Additionally, afterschool programs have shown positive impacts on social-emotional development. For example, students in Across Ages, a program aimed at academic support, showed increases in both self-control and self-confidence (Taylor et. al. 1999). In a meta-analysis of over seventy afterschool programs, researchers found that participation can increase self-esteem and improve social and personal skills (Durlak and Weissberg 2007). Besides focusing on program outcomes, research has also focused on characteristics of high quality programs.

Several characteristics have been shown to create high quality afterschool programs. These characteristics include proper time management, well-organized programs, and high quality staff. Results of a follow up study conducted by The After School Corporation program (TASC) showed that there are specific staff characteristics that create more positive atmospheres. These characteristics are that the staff models positive behavior, actively promotes student's skills, provides feedback to students, and establishes clear expectations (Birmingham et. al. 2005). In contrast, research has found that afterschool programs with negative staff engaging in punitive interaction lead to low quality programs (Mahoney, Larson, and Eccles 2005). Additionally, high quality programs had staff that students felt provided support for them and their aspirations (Grossman, Campbell, and Raley 2007).

While research has shown some positive impacts on students behavior and development and some consensus has been researched on what makes a high quality program, not all research is so conclusive. One area of research in particular that has produced mixed results is the impact of afterschool programs on academic achievement. This is a major concern considering the increased focus on accountability. In a meta-analysis of out-of-school-time (OST) strategies and their effectiveness, Lauer et al. (2003) found positive, although small, results on test scores. Effect sizes for math ranged from .06 to .13 and effect sizes for reading ranged from .09 to .17. The authors also noted that most of the research lacked a clear description of the afterschool program. This suggests that it is unclear exactly what types of activities students participated in and for how long. It is also unclear how programs were implemented and what important differences existed among programs. Thus, further, more in-depth research is needed to really understand the potential impacts of participation in afterschool programs on academic achievement.

Other studies have found similar results. A longitudinal study conducted by Vandell, Reisner, and Pierce (2007) on thirty-five after school programs in eight different states concluded that elementary and middle school students who participated in afterschool programs showed gains in standardized math scores. Students who participated in both afterschool programs and other activities showed gains of 20 percentiles in math (effect size = .73). Students who participated in only afterschool programs showed gains of 12 percentiles (effect size=.52). These results are based on comparisons to students who did not participate in afterschool activities. It is important to note that no gains were evident after only one year, and no gains were found in language arts.

Kane (2004) examined four major studies on afterschool programs and found mixed results as well. The four afterschool programs in the studies he examined were 21st Century Community Learning Centers, The After-School Corporation (TASC), Extended-Service School Initiative (ESS), and San Francisco Beacons Initiative (SFBI). Like other studies, no statistically significant impacts were found after students participated for only one year. However, some positive impacts were found. The most positive results came from the TASC evaluation, which found an increase in standardized math scores after two years of active participation (effect size = 0.79). Again, no impacts were found on language arts scores (Birmingham et. al. 2005). The remaining three evaluations did not show any increase in standardized test scores; however, the 21st Century evaluation showed an increase in social studies grades (James-Burdumy et al. 2003). In a separate evaluation done on LA's BEST afterschool program, Huang et al. (2008) found inconsistent results as well.

Huang studied the impact of long term attendance in LA's Best on academic outcomes. For math, findings indicated that regular attendance was associated with increased scores over a four-year period. However, results were not so encouraging for language arts. No significant language arts growth was seen due to intensity of attendance in the program. First, this indicates that afterschool programs may impact math and language arts differently. Second, these inconsistent findings among evaluations clearly highlight the need for further research. Additionally, none of the above studies specifically looked at the type of activities children were participating in and the impact on academic outcomes.

Birmingham et al. (2005) did not set out to study the impact of different types of afterschool activities but, instead, examined the shared features of high quality programs. Their study concluded that programs offering a broad array of enrichment activities provided students

the opportunity to experience something different and master a new skill, such as dancing or art. However, this study did not look at the impact on academic achievement. Redd et al. (2002), however, specifically assessed the impact of afterschool programs on academic achievement in twelve different after school programs. While results were "generally mixed and varied greatly," they concluded that programs focused exclusively on academics were not as effective and recommended a variety of activities. The need for more studies examining the effects of different types of activities is an important gap identified in the afterschool literature.

The following case study fills the void in the literature by focusing on more specific aspects of afterschool programs. This research will show that not all programs are created equally, and variations can have significant impacts on students' academic achievement. However, a compelling argument about the impacts of afterschool programs must also address the relative effects of other factors that have been shown to affect school achievement. Sociology of education research that has focused on inequalities in schooling outcomes (see Brint 2006; Fryer and Levitt 2006) has identified influences of several key types: student and family background characteristics; students' attitudes, participation, and school experiences; school context factors; and community influences. While all of these factors have been found to be important for school achievement, they have also been found to vary in their influence on different school populations, age groups, etc. (Boyd 1992; Lee 2000). Thus, while proponents of afterschool programs argue for the benefits and impacts of the program, it is important as well to identify in what ways other factors—school context and student characteristics, in particular—may impact academic achievement. These two types of influences are especially significant to examine because afterschool programs have been established to address the needs of students

with specific characteristics (e.g., low income and minority) and schools of specific types (e.g., Title I and low performing schools).

Student Characteristics

When assessing afterschool programs, student characteristics are important factors to consider. Two of the most important factors are socioeconomic status (SES) and race. Children from families with higher SES are more likely to participate in afterschool programs. In addition, they are more likely to participate more often and in a variety of different activities. That is not all; these children are also more likely to participate in enrichment based programs, while their lower income peers are more likely to be found participating in academic programs (Harvard Family Research Project, 2007). This participation difference has the potential to significantly impact academic outcomes, and needs to be studied further.

In addition to SES, race has been shown to be an important factor in school achievement. Fryer and Levitt (2006) found that despite efforts to the contrary, there are still gaps in achievement by race. These gaps are not only seen in higher education; Jencks and Phillips (1998) found that gaps may exist in children as young as kindergarten age and are substantial by third grade.

Student characteristics are not the only important factors. Similar to analyses of variables related to school performance in general, student participation is an important factor in assessing the impact of after school programs. Level of participation is one of the best predictors of academic gains. In an evaluation of 21st Century programs in Louisiana, researchers found that students who participated for at least 60 days had more growth on standardized reading tests. Results were even better for students that participated for 90 days (Little et al. 2007). McComb and Scott-Little (2003) found the same thing to be true: participation levels moderate the

effectiveness of afterschool programs. The study mentioned earlier, conducted by Huang et al. (2008), also found that participation over 100 days led to increases in math scores. Again, this represents an area where afterschool programs can differ. This study will examine the impact of program dosage on academic achievement.

School Context

Finally, school context plays an important role in student achievement. School context can encompass several different aspects of the school environment, such as the quality of the teachers, the social class of the students, parental involvement, class size, school leadership, ability grouping, and resources available to students. As Lee (2000) points out, school context is important because children's learning is impacted by the environment in which it takes place. Researchers have studied various aspects of school context and its impact on student achievement.

Some aspects of school context have been found to increase student achievement for low income and minority students. For example, Lee and Bowen (2006) found that parental involvement had positive impacts on student achievement. Boyd (1992) conducted a meta-analysis on school context and found that smaller schools are better for learning and increase the sense of community felt. Additionally, Boyd found that teacher turnover can negatively impact student achievement, and recommended that schools should decrease teacher dissatisfaction and increase opportunities for professional development. Lee (2000) developed a list of five aspects of school context that researchers generally agreed lead to greater achievement. These include: leadership focused on academic outcomes, positive expectations for students, orderly environments, purposeful social environments, and close monitoring of students work.

While some aspects of school context have been shown to have positive impacts on student achievement, others have had negative impacts. In some research, school context factors have been shown to affect how students value schooling. For example, students attending low income and predominantly minority schools may feel that education is less valuable to them (Huang et al. 2008). Lleras and Rangel (2009) found that aspects of the school context, particularly the availability and access to opportunities to learn, were significant factors in perpetuating inequalities across SES and racial groups. For example, low-income schools typically have fewer resources for their students. Also, schools that group students based on their abilities significantly limit opportunities for students. Finally, the same study mentioned earlier by Lee and Bowen (2006), found that while parental involvement can increase student achievement, parental involvement was less likely for low income and minority parents.

School context does not just influence learning inside the classroom and during the school day. Johnson (2005) found that low-income students can feel isolated and receive less support when it comes to participation in afterschool programs. Previously, studies have focused on the difference between afterschool programs. For example, the study mentioned earlier by Kane (2004) focused on four different afterschool programs and the variation among them. However, research has failed to focus on the differences among schools offering the same type of afterschool program. Research has also failed to focus on the difference in schools implementing the same program. Two schools that both have 21st Century programs may still be very different. This study provides a valuable contribution by looking at the effects of school context in five different sites all implementing the same program. Showing that, not only are all afterschool programs not created equally, but they are also not all implemented equally. Understanding the

role of school context will allow programs to implement the program more effectively and will provide greater depth of understanding to the literature.

PURPOSE STATEMENT

Currently, over one million children in America are participating in afterschool programs (Little et al. 2007). Perhaps even more important is that billions of dollars are being spent on these programs not only to provide a safe and supervised place for children in the late afternoon or evening, but also to provide supplemental instruction. Of particular interest is the impact that participation in afterschool programs can make on high risk students' academic achievement. However, research is currently insufficient to make conclusions and recommendations about the effectiveness of these programs. This case study adds to the research on the impact of afterschool programs on academic achievement. Specifically, this study will show that not all afterschool programs are created and implemented equally.

Most studies have examined different afterschool programs (21st Century vs. TASC); however, none have examined the variation in programs by site. This study will add a five site longitudinal case study to the current body of literature, specifically controlling for variations in the program. This provides three distinct benefits. First, I attempt to draw conclusions about what types of activities lead to the greatest academic impacts, allowing for some policy recommendations. Second, the impact of a program will be examined over time, allowing conclusions to be drawn about dosage (i.e. how long do students need to participate in order to see benefits). Finally, potential differences among school sites will be highlighted, illustrating the impact of school context.

METHODOLOGY

Study Population: District and School Characteristics

Data for this study comes from a school district located in a medium sized western city. Table 1 provides descriptive statistics for all schools in the district; as well as the five sample schools included in the study. The elementary schools in the district are largely white (64%). Hispanic is the second largest group represented (28%). All other minority groups account for less than ten percent of the population (7%). Of these students, 24% are considered limited English proficiency by federal standards. Nearly half of all students in the district are female (49%) and exactly half (50%) qualify for free or reduced lunch. Finally, 13% of students in the district are considered special education eligible (Provo School District Annual Statistical Report, 2009). For the purpose of this study, I will focus on only five of the elementary schools in the district.

(Insert Table 1 here)

These five schools were chosen because all five have participated in the 21st century afterschool program for at least four years. This is important due to the longitudinal nature of the study. Therefore, it is necessary to only include schools with several years of 21st Century participation. Analyses of programs that have at least four years of participation data addresses a needed gap in the existing literature to show program impacts on academic achievement over the course of multiple years of participation. Additionally, as mentioned earlier, schools must be Title I in order to qualify for federal funding for the 21st Century Program. This means that the five schools in this study differ from the overall school district in several ways.

First, students at the five schools included in this study differ in terms of ethnicity. Tables 2 and 3 provide additional information on the sample included in the study. Only 49% of

students in this study are white, while 44% are Hispanic. All other minority groups still account for less than ten percent of the population (7%). Of these students 34% are considered limited English proficiency by federal standards, which is 10% more than in the entire district. The percent of students that qualify for free and reduced lunches is larger in this sample as well. In the entire district 50% of students are considered low income, compared to the 69% of students in this sample. Finally, the proportion of special education students remains the same at 13% (Provo School District Annual Statistical Report, 2009).

(Insert Tables 2 and 3 here)

The Afterschool Program

This is a study of student participation in the 21st Century Community Learning Centers in five different elementary schools over four academic school years. Although the program may vary slightly from school to school the overarching goals remain the same, the main goal being to provide a safe and healthy environment for students after school. Additionally, the program strives to meet adequate yearly progress (AYP) standards, which is the primary focus of this study. Long term goals include helping more students graduate from high school. Along with child-centered goals, the program seeks to increase family involvement and family learning as well. These goals are accomplished through different activities.

Individual activities vary by school, but all fall into two broad categories (academic or enrichment). These categories will serve as an independent variable in this study. While previous research has studied the 21st Century program, none have focused explicitly on the difference between these two categories of activities. Academic activities include reading groups, math groups, tutoring, homework help, and study groups. Enrichment activities include; choir, drama, orchestra, ballroom dance, sports and art. Depending on the school students can participate in

two to four activities every day. All students in the school are eligible for enrollment in the afterschool program, although recruitment does vary by school. In most schools students needing academic help are recommended for the program by teachers. Teachers target students with the greatest perceived needs. Thus low income, limited English proficiency (LEP), and minority students who demonstrate academic need are often recruited.

Measures

Data used for this study were collected during the 2007–2008 school year through the 2010–2011 school year. These data are provided by multiple sources including the school district and the afterschool program itself. Table 4 provides a description of all variables. These data differ from data used in previous studies in a variety of different ways. First, this data are longitudinal. Students are followed over a four year period, thus allowing change to be assessed over longer periods of time. Also, data include information on the types, academic and enrichment, activities in which students participated. This means that not only can academic impacts be assessed by participation amount or dosage, but also by type. Finally, information on the school itself will allow school context to be considered in this study.

Academic achievement. For this study, the academic achievement measures used are similar to those used in other evaluations of the 21st Century Community Learning Centers (Kane 2004). This study uses a change model to assess improvements in students AYP (adequate yearly progress) scores from year to year. Each state, as part of No Child Left Behind, sets benchmarks in math and language arts which are measured on a four point scale. This study is measuring the relationship of the 21st Century program participation to changes in AYP scores over time. The dependent variable in this study will be AYP scores at time two. The AYP scores at time one will serve as an independent variable (Allison 1990).

In order to determine the impact of one year of participation in the afterschool programs on AYP scores, I will examine three different time periods for both math and language arts. First, math and language arts AYP scores for the 2008–2009 school year will be the dependent variables, AYP scores from the 2007–2008 school year will be an independent variable. I will also examine one-year changes in scores from 2008–2009 to 2009–2010 school year and from 2009–2010 to the 2010–2011 school year. There are two opportunities to measure changes over a two-year period; from 2007–2008 to the 2009–2010 school year and from 2008–2009 to the 2010–2011 school year. Again the score at time two will be used as the dependent variable, while the score at time one will serve as an independent variable. Finally, there is one opportunity to look at change over a three-year period; from 2007–2008 to the 2010–2011 school year. Student AYP scores in 2010–2011 will serve as the dependent variables. Effect sizes will be calculated for each model to determine the impact of participation in the 21st Century program on academic achievement. Additionally, several other variables will be included in the analysis. As mentioned earlier, school context plays an important role in academic achievement. Several variables were created to address school context.

School context. Each school is a unique organization, and while all the schools in this study are Title I schools, they still vary in important ways. For example, to qualify as Title I, forty percent of students in a school must qualify for free and reduced lunch. However, the percent of students who qualify for free and reduced lunch in the five schools included in this study vary greatly (54%–76%). Limited English proficiency also varies greatly between schools (17%–38%). Finally, ethnicity between the schools differs as well with anywhere from 37% to 57% of students identifying themselves as some race other than white. In addition to student

characteristics schools also differ in their staff and administration. Each school has different teachers and administrators which have an impact on academic achievement.

Three variables were created to address these variations among school; percent minority, percent low income, and percent special education. These variables are simply the percent of students in a school who are considered minority students, low income students, or special education students for each school in each year. Additionally, to control for differences between schools a hierarchal linear model is used. In this model students are nested in schools. Students represent level one and the school which they attend represents level two. Nesting students within their school is important to understanding the role that school context plays in academic achievement. Many afterschool studies have failed to consider school context in relation to impacts on academic achievement. However, based on the sociology of education research, I hypothesize that school context will impact academic achievement (Lee 2000; Lee and Brown 2006; Lleras and Rangel 2009). In addition to school context variables being included in the model, student characteristics will also be included.

Student characteristics. Data on gender, limited English proficiency (LEP), low income, special education status, grade, and ethnicity are provided by the school district based on both information provided by parents at registration and assessments conducted by the school. Gender, LEP, low income, and special education are all dichotomous variables. LEP is determined by assessment at the time of enrollment. Low income status is determined by the student's participation in free or reduced lunch programs. Special education status is determined by an evaluation conducted by the district. Grade level is the grade in which the student was enrolled during their participation in the afterschool program. Finally, ethnicity is made up of seven different categories; Asian, African American, Caucasian, Hispanic, American Indian,

Polynesian, and Other. For the purposes of this study, two dichotomous variables were calculated to capture ethnicity. Asian, African American, American Indian, Polynesian, and Other were grouped together due to the small number in each of these groups. The second dichotomous variable created was of Hispanic students. White students will serve as the reference group.

Time variables. School context and student characteristics have proved to be important factors when considering academic achievement generally. More specific to afterschool programs, time variables, have been shown to impact academic achievement. Three variables were created to get at different aspects of time and dosage.

First, schools reported the number of enrichment activities and the number of academic activities each student participated in during the school year. These were then summed to get the total number of activities each student attended for a given year. The natural log of the sum was then taken to account for the skew of the variable. This variable will account for dosage of the program. Another variable to account for amount of participation was also created. This variable accounted for the number of years a student participated in the afterschool program. A student could have participated from one to four years. Finally, a variable to account for program length was created. This variable is simply the number of years the afterschool program has been in operation. In addition to creating variables to measure amount of participation and program length, a variable was also created to represent type of participation.

Type of participation variables. While previous research has focused on the impact of varying amounts of participation in afterschool programs, few have focused on the impact of different types of participation. Students in the 21st Century program have the opportunity to participate in academic based activities and enrichment based activities. Until now research has failed to study if different types of participation lead to different outcomes.

A primary independent variable of interest in this study is a dichotomous variable indicating the type of activities a student participated in. Previous research has failed to focus on type of participation, but some are suggesting that enrichment activities may be more beneficial to students as they represent a departure from the typical school day, allow mastery of new skills, and provide added variety (Birmingham et al. 2005; Miller 2003; Reed et al. 2002). This study represents one of the first to take this a step further and hypothesize that participation in enrichment activities will be associated with an increase in academic achievement.

Students could be classified as one of two types of participants. First, students who participated in only enrichment activities were classified as enrichment participants. Second, students who participated in both enrichment and academic activities were classified as equal participants. Although it is important to note that not all participants classified as equal participated in exactly the same amounts of enrichment and academic activities, the label simply demonstrates that they participated in both over the course of a year.

(Insert Table 4 here)

Missing Data

The only source of missing data comes from AYP scores. For most students, at least one year of test scores was available. In most cases two or three years were available. Multiple imputations were used to account for missing AYP scores. Thus, no data was lost due to a missing score and any bias should be avoided.

Analysis

This study is measuring the impact of participation in the 21st Century Community Learning Center on academic achievement. Academic achievement will be measured by change in AYP scores over time. Therefore, AYP score at time two will serve as the dependent variable

and AYP score at time one will serve as an independent variable. Effect size will then be calculated using the mean and standard deviations of each group (time one and time two). Only students who participated in the 21st Century program are included in this study. Students will be nested within the school which they attend to control for variation in school. Five different models will be run for each time period. The first model will only have school included. The second model will add school context variables. The third model will add student characteristic variables. The fourth model will add time variables. Finally, the last model will add type of participation. The models can be seen below.

Model 1

Xtmixed (*Ymid-Score at Time 1*)= μ 0809School:

Model 2

Xtmixed (*Ymid-Score at Time 1*)=α + β*1s*X1s(Score at Time 2) + β*2s*X2s(School Context) μ 0910School:

Model 3

Xtmixed (*Ymid- Score at Time 1*)=α + β*1s*X1s(Score at Time 2) + β*2s*X2s(School Context) + β*3s*X3s(Student Characteristics) μ 1011School:

Model 4

Xtmixed (*Ymid- Score at Time 1*)=α + β*1s*X1s(Score at Time 2) + β*2s*X2s(School Context) + β*3s*X3s(Student Characteristics) + β*4s*X4s(Time) μ 1011School:

Model 5

Xtmixed (*Ymid- Score at Time 1*)=α + β*1s*X1s(Score at Time 2) + β*2s*X2s(School Context) + β*3s*X3s(Student Characteristics) + β*4s*X4s(Time) + β*5s*X5s(Participation Type) μ 1011School:

These same five models will be repeated for all three one-year changes, two-two year changes, and one-three year change; resulting in six time periods for math and six time periods for language arts each with 5 models. Again, this research will show that not all after school programs are created equally. The same program can differ by school, amount of participation, and type of participation.

RESULTS

The analyses results demonstrate how participation in the 21st Century afterschool program impacts academic achievement. Additionally, results illustrate how programs vary within different schools. I first report effect sizes for math and language arts scores over all six time periods. I then report findings according to how individual schools, school context, student characteristics, time variables, and participation type impact academic achievement.

Effect Size

This study uses scores at time two as the dependent variables and scores at time one as an independent variable. Score at time two was significant in every model and for every time period. Effect sizes were calculated for each time period. Effect sizes ranged from .05–.34 for language arts scores and from -.07–.25 for math scores. The largest effect sizes were seen after three years of participation for math and after two years of participation for language arts. This suggests that longer periods of participation are beneficial in increasing academic performance. The impact of time will be discussed more in depth later, but first I will discuss the impact of school on academic achievement.

School

Model 1 for all time periods illustrates the impact of school only on academic achievement. It is significant for every time period in the first model, although the effect of

school did differ for language arts versus math scores. For language arts scores, school is a significant predictor for model 1 only. The models illustrate that school accounts for two to five percent of the variation in language arts scores. For math scores, three to seven percent of the variation is accounted for by school. This is slightly higher than for language arts. Additionally, school remained significant through model 3 for certain time periods. School was significant through model 3 for the change in math scores between 0910 and 1011, 0809–1011, and 0708–1011. Each time, two to nine percent of the variation in scores is due to school. This illustrates that school may be more important for math scores than for language arts scores. However, when time and participation variables are added, school is no longer significant, which indicates that time and participation can moderate school effects.

School Context

Three variables were created to get at the idea of school context: percent minority, percent low income, and percent special education. Model 2 for all time periods illustrates the impacts of these variables on AYP scores. For language arts, the percent special education was significant in model 2 for two time periods (0708–0809 and 0708–0910). Not surprisingly, as the percentage of special education students in a school increases, AYP scores decrease. Percentage special education remained or became significant as more variables were added in subsequent models. This same pattern remained true for percent minority students. As the percentage of minority students in a school increased, AYP language arts scores decreased.

In contrast to language arts, for math AYP scores only one variable was significant in model 2 across all time periods. Percent minority was significant for the change between 0708 and 0910. For every one unit increase in the percentage of minority students attending a school, math AYP scores are expected to decrease .052 points. Similar to language arts, percent minority

remained or became significant in subsequent models for math. In later models, percent low income and percent special education also became significant. However, as the percentage of special education students in a school increased, math AYP scores were also expected to increase. Percent minority and math AYP scores have a negative relationship. As the percentage of minority students increases in a school, expected AYP scores decrease. Scores at most are expected to decrease .075 points. This is true for model five which takes participation dosage and type into account, suggesting that participation does not moderate the effects of school context. The implications are that programs may need to be implemented differently depending on the school context.

Student Characteristics

Seven variables were included to understand the impact of student characteristics on academic achievement. The variables are gender, ethnicity (Hispanic and Other), special education status, low income status, LEP, and grade. Gender was not significant for any language arts model. Ethnicity was only significant for one time period. Hispanic students are expected to perform lower on the language arts AYP test. Special education students are also expected to perform lower than non-special education students. This remained true through model 5. Low income students are also expected to achieve lower AYP scores. It is important to note that low income was only significant for one model 5 time period (0809–1011). This suggests that participation in afterschool programs can moderate the effects of low income. However, the same conclusion cannot be drawn about LEP. Limited English proficiency was significant in nearly every model for every time period. LEP students are expected to score .04–.4 points lower on the language arts test than their non-LEP peers. Finally, grade was significant

across all models and time periods. Students in higher grades are expected to score higher. This may be due to the fact that they are more comfortable with the testing process.

Results for math analyses proved to be quite similar to language arts. Gender and ethnicity were only significant for one time period (0809–0910). Female and Hispanic students are expected to have lower AYP scores. Special education was again significant across models and time periods. Again, with special education students can be expected to score lower .20 to .40 points lower than non-special education students. Low income was also significant across models; however, after three years of participation in afterschool programs, low income is no longer significant. This suggests that long term participation can help bridge the gap for low income students. The same cannot be said for LEP students, who even after three years of participation are still expected to score .2 point lower on the math AYP exam. Finally, grade was significant for math, just as it was for language arts. Students in higher grades are expected to perform better.

Time

Three variables were created to understand the impact of dosage on academic achievements. The first variable is the natural log of the total number of activities a student participated in. The second variable is the number of years a student participated in afterschool programs. The final time variable is the length of time the afterschool program has operated at a specific school. The total number of activities was significant in two of the language arts models. Surprisingly, students who participated in more activities were expected to score lower on the AYP test by .13–.31 points. This does not mean that students should not participate in afterschool programs. Many of the students who spend more time in afterschool programs represent the greatest need. These students are starting out lower than their classmates and need

extra time to adjust and see improvements. This same pattern can be seen with the number of years students participated. As number of years increased, expected scores decreased by .10–.15 points. Again, this could be due to the fact that students who participated the longest are those students who need the most help and are starting behind their peers. Finally, program length was positively associated with AYP scores, suggesting that the longer a program has been established the better it becomes at meeting student needs.

Dosage did not prove to be a significant predictor of math AYP scores; however, program length was. Every one year increase in program length is associated with an expected .42–.52 increase in AYP scores. This again suggests that different factors influence language arts vs. math scores and illustrates the need for more in-depth research.

Type of Participation

Finally, type of participation was examined. Students could be classified as enrichment participants or equal participants with academic participants serving as the reference group. Enrichment participation proved to be a significant predictor of language arts scores for all time periods except 0809–0910. Enrichment participation was associated with increases in AYP scores by .28–.80 points. The largest increase (.80) was after three years of participation. Equal participation was significant across four time periods. Again, equal participation was associated with increase in AYP scores by .14–.55 points. This is slightly smaller than the impact of enrichment participation.

Similar findings were illustrated for changes in math scores. Enrichment participation was significant across all six time periods. Enrichment participants were expected to score between .20–.78 points higher than academic participants. Again the largest change was over a three year time period. Equal participation was not significant for any of the two year time

periods, but was significant for all two and three year periods. Students who participated equally in enrichment and academic activities were expected to score .29–.43 points higher than academic only participants. Again, this suggests that long term participation is the most beneficial.

(Insert Tables 5 through 16 here)

CONCLUSION

These findings both support and extend the existing literature surrounding afterschool programs and academic achievement. First, effect sizes in this study are similar to those found in other studies. Lauer et al. (2003) conducted a meta-analysis and found effect sizes between .06–.13 in math and .09–.17 for language arts. Effect sizes for this study were similar at -.07–.25 for math and .05–.25 for language arts. The slightly higher effect sizes may be due to the longitudinal nature of this study.

Another finding that this research supports is the notion that participation in afterschool programs has different impacts on math and language arts. Huang et al. (2008) conducted a longitudinal study on a specific afterschool program in a particular area. They found that participation did not have an impact on language arts scores, but did on math. Similarly, results from this study illustrate that impacts are not the same for math and language arts. For example, school context and program length proved to be much more influential for math scores than language arts scores. These studies together illustrate the need for more studies that examine the different impacts on specific types of academic achievement. However, the most important impact these findings illustrate is that all afterschool programs are not created equally.

This study presents an in-depth look at one afterschool program in a single school district, taking school attended and school context into consideration. Also, the use of

longitudinal data highlighted the impact of multiple years of participation and program length on academic achievement. Finally, this study looked specifically at the impact of different types of participation on academic achievement.

Afterschool programs differ by school, school context, program length, and type of participation. Findings show that students in high minority and high special education schools are expected to score lower on AYP tests. This suggests that schools with these risk factors could take extra effort to help students. One way to help students is to have well established programs. As program length increases, so do AYP scores. The longer a program has to get established the better. One unsettling finding, related to time, is that the more activities a student participated in and the more years students participated, the lower expected AYP scores. This could be largely due to the fact that these students may be participating more because they, their parents, or their teachers recognize that they are behind. Therefore, they are starting much further behind than their peers.

The most positive finding is the fact that enrichment participants, and to a lesser degree equal participants, are expected to have higher AYP scores. Two different things could be accounting for this. First, these participants could be starting out at a higher level than their peers and, therefore, are selected by teachers to participate in enrichment activities as opposed to solely academic activities. However, another explanation is that enrichment activities are beneficial because they allow students to master new skills and provide a departure from the normal school day. Allowing all students to participant in at least some enrichment activities does appear to be beneficial.

Suggestions for Future Research

While this study added to the existing literature, it also highlights the need for future research. First, results highlight the need for in-depth regional analyses of afterschool programs. Each school and district has unique challenges and strengths. Even the same program in the same district varies by site. Previous studies typically have included national or large area samples and have examined the impacts of programs more generally. However, this study highlights the need for smaller, more in-depth and localized studies.

Another focus area for future research expands the contribution this study made concerning types of participation. This study focused on the impact of enrichment participation on both language arts and math scores. Future studies could address this in even more specific ways by asking such questions as, what types of enrichment participation improve math and language arts scores? For example, does dance or art have a larger impact on AYP scores? Additionally, do different activities impact math scores differently than language arts scores?

One final area of focus for future research is school context. This study showed that the specific school attended does impact academic performance. Future research could focus on two related questions. First, what school context factors impact academic achievement: staff, culture, student characteristics, etc.? A second question could ask, how does school context impacts afterschool programs?

Understanding as much as possible about the relationship between afterschool programs and academic achievement is vitally important to the education of the nearly seven million children that participate in these programs each year. The 21st Century program alone receives billions of dollars in federal funding. This funding is for the purpose of increasing the academic achievement of students attending Title I schools. Considering the amount of money and the

number of children affected by these programs, understanding what will make them the most effective is a necessity. The more that is understood about what factors are associated with the greatest impact on academic achievement will ensure that money is will spent in improving the lives of children.

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Table 1. Descriptive Statistics for Sample and District Based on District Data

Variables	5 Sample Elementary Schools	All Other Elementary Schools in District	All Elementary Schools in District
Race			
White	49%	75%	64%
Hispanic	44%	26%	28%
Other	7%	7%	7%
Gender			
Female	50%	50%	49%
Male	50%	50%	51%
Student Characteristics			
Low Income	69%	46%	50%
Special Education	13%	13%	13%
Limited English Proficiency	34%	14%	24%

Table 2. Descriptive Statistics for Schools in Sample2006-2010 Based on District Data

Variables	School 1104	School 1106	School 1107	School 1108	School 1109
Race					
White	42%	58%	44%	60%	42%
Hispanic	53%	34%	47%	34%	51%
Other	5%	7%	10%	5%	7%
Gender					
Female	53%	49%	48%	48%	50%
Male	47%	51%	52%	52%	50%
Student Characteristics					
Low Income	78%	62%	75%	57%	75%
Special Education	14%	12%	12%	13%	13%
Limited English Proficiency	44%	26%	41%	30%	30%

Table 3. Descriptive Statistics for Schools in Sample Across Year Based on District Data

Variables	2007-2008	2008-2009	2009-2010
Race			
White	52%	52%	54%
Hispanic	41%	40%	39%
Other	7%	7%	7%
Gender			
Female	49%	49%	50%
Male	51%	51%	50%
Student Characteristics			
Low Income	64%	62%	60%
Special Education	14%	12%	13%
Limited English Proficiency	33%	35%	33%

Table 4. Description of Variables

Variables	Description	Coding	N	Range	Mean	Std. Dev.
Dependent Variable						
Math 2007–2008	Math AYP score for the 2007–2008 school year	1–4	1194	1–4	3.12	1.09
Math 2008–2009	Math AYP score for the 2008–2009 school year	1–4	1079	1–4	2.97	1.10
Math 2009–2010	Math AYP score for the 2009–2010 school year	1–4	1124	1–4	3.05	1.07
Math 2010–2011	Math AYP score for the 2010–2011 school year	1–4	856	1–4	3.23	1.01
Language Arts 2007–2008	Language Arts AYP score for the 2007–2008 school year	1–4	1194	1–4	2.84	1.01
Language Arts 2008–2009	Language Arts AYP score for the 2008–2009 school year	1–4	1079	1–4	3.04	0.990
Language Arts 2009–2010	Language Arts AYP score for the 2009–2010 school year	1–4	1124	1–4	3.09	0.940
Language Arts 2010–2010	Language Arts AYP score for the 2010–2011 school year	1–4	856	1–4	3.17	0.913
School Context						
Percent Minority 2008–2009	The percent of minority students in each school in 2008–2009	Continuous variable of percent minority	1074	40%–61%	50%	8.820
Percent Minority 2009–2010	The percent of minority students in each school in 2009–2010	Continuous variable of percent minority	1121	38%–57%	51%	8.261
Percent Minority 2010–2011	The percent of minority students in each school in 2010–2011	Continuous variable of percent minority	856	38%–57%	50%	8.399
Percent Low Income 2008–2009	The percent of low income students in each school in 2008–2009	Continuous variable of percent low income	1074	56%–79%	68%	8.071
Percent Low Income 2009–2010	The percent of low income students in each school in 2009–2010	Continuous variable of percent low income	1121	54%–77%	67%	8.657
Percent Low Income 2010–2011	The percent of low income students in each school in 2010–2011	Continuous variable of percent low income	856	54%–77%	67%	8.774
Percent Special Education 2008–2009	The percent of special education students in each school in 2008–2009	Continuous variable of the percent special education	1074	10%–14%	12%	1.338
Percent Special Education 2009–2010	The percent of special education students in each school in 2009–2010	Continuous variable of the percent special education	1121	11%–14%	12%	0.991

Percent Special Education 2009–2010	The percent of special education students in each school in 2009–2010	Continuous variable of the percent special education	856	11%–14%	12%	0.982
Student Characteristics						
Gender	Child Sex	0=Male 1=Female	2281	0–1	0.52	0.499
Minority Status	Ethnicity of child	0=White 1=Minority	2281	0–1	0.435	0.496
Low Income	Whether or not a student qualifies for free or reduced lunch	0=Not low income, 1=Low income	2281	0–1	0.789	0.408
LEP	School designates child as limited English proficiency	0=Not LEP 1=LEP	2281	0–1	0.428	0.495
Special Education	School designated child as special needs	0=Not Special Ed. 1=Special ED	2281	0–1	0.369	0.483
Grade 2007–2008	Child Grade in 2007–2008	2–6	966	2–6	3.96	1.43
Grade 2008–2009	Child Grade in 2008–2009	2–6	922	2–6	3.98	1.39
Grade 2009–2010	Child Grade in 2009–2010	2–7	1089	2–7	3.99	1.38
Grade 2010–2011	Child Grade in 2010–2011	2–7	827	2–7	4.50	1.08
Time Variables						
Log Sum 2008–2009	The natural log of the total number of activities a student participated in for 2008–2009	Continuous variable of the number of activities a student participated in for 2008–2009	994	0–6	3	1.14
Log Sum 2009–2010	The natural log of the total number of activities a student participated in for 2009–2010	Continuous variable of the number of activities a student participated in for 2009–2010	1103	0–6	4	1.21
Log Sum 2010–2011	The natural log of the total number of activities a student participated in for 2010–2011	Continuous variable of the number of activities a student participated in for 2010–2011	854	0–6	4	1.19
Log sum (2008–2009 and 2009–2010)	The natural log of the total number of activities a student participated in from 0809–0910	Continuous variable of the number of activities a student participated in from 0809–0910	1112	0–7	4	1.19
Log Sum (2009–2010 and 2010–2001)	The natural log of the total number of activities a student participated in from 0910–1011	Continuous variable of the number of activities a student participated in from 0910–1011	856	0–7	4	1.15
Log Sum (2008–2009, 2009–2010, & 2010–2011)	The natural log of the total number of activities a student participated in from 0809–1011	Continuous variable of the number of activities a student participated in from 0809–1011	856	0–7	5	1.15
Years 2008–2009	The number of years a student has participated	1–4 years of participation	1074	1–2	1	0.575
Years 2009–2010	The number of years a student has participated	1–4 years of participation	1121	1–3	2	0.770
Years 2010–2011	The number of years a student has participated	1–4 years of participation	856	1–4	2	0.995
Program Length 2008–2009	The number of years the afterschool program has operated	2–6 years of program operation	1074	2–4	3	0.874
Program Length 2009–2010	The number of years the afterschool program has operated	2–6 years of program operation	1121	3–5	4	0.891

Program Length 2010–2011	The number of years the afterschool program has operated	2–6 years of program operation	856	4–6	5	0.902
Type						
Enrichment 2008–2009	If the student was an enrichment participant in 2008–2009	0=non-enrichment participant 1=enrichment participant	1074	0–1	0.252	0.425
Enrichment 2009–2010	If the student was an enrichment participant in 2009–2010	0=non-enrichment participant 1=enrichment participant	1121	0–1	0.091	0.288
Enrichment 2010–2011	If the student was an enrichment participant in 2010–2011	0=non-enrichment participant 1=enrichment participant	856	0–1	0.254	0.435
Enrichment 0809–0910	If the student was an enrichment participant in 0809 and 0910	0=non-enrichment participant 1=enrichment participant	1121	0–1	0.079	0.270
Enrichment 0910–1011	If the student was an enrichment participant in 0910 and 1011	0=non-enrichment participant 1=enrichment participant	856	0–1	0.119	0.324
Enrichment 0809–1011	If the student was an enrichment participant in 0809, 0910, and 1011	0=non-enrichment participant 1=enrichment participant	856	0–1	0.103	0.304
Equal 2008–2009	If the student was an equal participant in 2008–2009	0=non-equal participant 1=equal participant	1121	0–1	0.145	0.353
Equal 2009–2010	If the student was an equal participant in 2009–2010	0=non-equal participant 1=equal participant	1121	0–1	0.335	0.472
Equal 2010–2011	If the student was an equal participant in 2010–2011	0=non-equal participant 1=equal participant	856	0–1	0.367	0.482
Equal 0809–0910	If the student was an equal participant in 0809 and 0910	0=non- equal participant 1= equal participant	1121	0–1	0.529	0.500
Equal 0910–1011	If the student was an equal participant in 0910 and 1011	0=non- equal participant 1= equal participant	856	0–1	0.591	0.412
Equal 0809–1011	If the student was an equal participant in 0809–1011	0=non- equal participant 1= equal participant	856	0–1	0.640	0.480

Table 5: Change in Language Arts Scores from 2007–2008 to 2008–2009

Language Arts AYP Score 2008–2009	Model 1	Model 2	Model 3	Model 4	Model 5
Language arts AYP score 2007–2008		0.562***	0.554***	0.544***	0.523***
Percent Minority 2008–2009		-0.007	-0.018	-0.022	-0.023
Percent Low Income 2008–2009		0.006	0.019	0.021	0.016
Percent Special Ed 2008–2009		-0.041	-0.016	-0.026	-0.003
Gender			0.061	0.056	0.045
Hispanic			0.031	0.026	0.036
Other Minority			-0.016	0.021	0.040
Special Ed			-0.138	-0.104	-0.097
Low Income			-0.141*	-0.124	-0.101
LEP			-0.420***	-0.440***	-0.415***
Grade 2008–2009			0.030	0.030	0.033*
Log Days 2008–2009				0.143	0.125
Years Participated 2008–2009				-0.018	-0.010
Program Length 2008–2009				-0.029	-0.100
Enrichment Participation 2008–2009					0.318***
Equal Participation 2008–2009					0.046
School					
Random Intercept	0.0438***	0.0009	5.92e-22	3.25e-22	2.59e-22
Residual	0.9377	0.6182	0.4410	0.4455	0.4344

*p<.05
**p<.01
***p<.001

Table 6: Change in Language Arts Scores from 2008–2009 to 2009–2010

Language Arts AYP Score 2009–2010	Model 1	Model 2	Model 3	Model 4	Model 5
Language arts AYP score 2008–2009		0.567***	0.456***	0.463***	0.460***
Percent Minority 2009–2010		0.008	0.001	0.012	0.012
Percent Low Income 2009–2010		-0.018	-0.008	-0.019	-0.021
Percent Special Ed 2009–2010		-0.080**	-0.068*	-0.092*	-0.092*
Gender			-0.011	-0.012	-0.016
Hispanic			-0.121*	-0.114*	-0.109*
Other Minority			-0.119	-0.113	-0.109
Special Ed			-0.227***	-0.225***	-0.219***
Low Income			-0.102	-0.114	-0.109
LEP			-0.176**	-0.163**	-0.162*
Grade 2009–2010			0.045**	0.049**	0.048*
Log Days 2009–2010				0.036	0.039
Years Participated 2009–2010				-0.047	-0.051
Program Length 2009–2010				-0.035	-0.029
Enrichment Participation 2009–2010					0.099
Equal Participation 2009–2010					-0.003
School					
Random Intercept	0.0394***	6.77e-22	1.97e-24	1.19e-22	1.47e-23
Residual	0.8460	0.5466	0.4997	0.4992	0.4986

*p<.05
**p<.01
***p<.001

Table 7: Change in Language Arts Scores from 2009–2010 to 2010–2011

Language Arts AYP Score 2010–2011	Model 1	Model 2	Model 3	Model 4	Model 5
Language arts AYP score 2009–2010		0.634***	0.561***	0.557***	0.523***
Percent Minority 2010–2011		-0.023	-0.027**	-0.046***	-0.076***
Percent Low Income 2010–2011		0.024	0.029**	0.050***	0.076***
Percent Special Ed 2010–2011		0.069	0.056	0.129**	0.203***
Gender			0.026	0.037	0.034
Hispanic			-0.024	-0.022	-0.004
Other Minority			-0.157	-0.148	-0.118
Special Ed			-0.193**	-0.188**	-0.177**
Low Income			-0.059	-0.063	-0.025
LEP			-0.205**	-0.198**	-0.182**
Grade 2010–2011			0.070***	0.072***	0.067**
Log Days 2010–2011				-0.009	0.003
Years Participated 2010–2011				-0.001	-0.008
Program Length 2010–2011				0.090*	0.212***
Enrichment Participation 2010–2011					0.406***
Equal Participation 2010–2011					0.142*
School					
Random Intercept	0.0157***	0.0076	0.00004	3.83e-23	3.65e-24
Residual	0.8163	0.4956	0.4412	0.4392	0.4237

*p<.05
**p<.01
***p<.001

Table 8: Change in Language Arts Scores from 2007–2008 to 2009–2010

Language Arts AYP Score 2009–2010	Model 1	Model 2	Model 3	Model 4	Model 5
Language arts AYP score 2007–2008		0.450***	0.285***	0.267***	0.273***
Percent Minority 2009–2010		0.019	0.009	0.017	-0.001
Percent Low Income 2009–2010		-0.036	-0.022	-0.027	-0.015
Percent Special Ed 2009–2010		-0.133**	-0.100*	-0.092	-0.057
Gender			-0.009	0.000	-0.013
Hispanic			-0.115	-0.116	-0.114
Other Minority			-0.037	-0.041	-0.021
Special Ed			-0.535***	-0.516***	-0.470***
Low Income			-0.173*	-0.175*	-0.113
LEP			-0.040	-0.035	-0.038
Grade 2009–2010			0.063**	0.076***	0.067**
Log Days 0708–0910				-0.054	-0.049
Years Participated 0708–0910				-0.078	-0.145*
Program Length 2009–2010				-0.051	-0.018
Enrichment Participation 0708–0910					0.582***
Equal Participation 0708–0910					0.280***
School					
Random Intercept	0.0419***	6.33e-22	1.47e-21	2.45e-21	2.22e-21
Residual	0.8434	0.6243	0.5414	0.5369	0.5215

*p<.05
**p<.01
***p<.001

Table 9: Change in Language Arts Scores from 2008–2009 to 2010–2010

Language Arts AYP Score 2010–2011	Model 1	Model 2	Model 3	Model 4	Model 5
Language arts AYP score 2008–2009		0.526***	0.391***	0.384***	0.356***
Percent Minority 2010–2011		-0.032*	-0.043**	-0.026	-0.056**
Percent Low Income 2010–2011		0.023	0.043**	0.028	0.054**
Percent Special Ed 2010–2011		0.047	0.049	0.072	0.106
Gender			-0.031	-0.004	-0.008
Hispanic			-0.020	0.027	0.023
Other Minority			0.001	0.056	0.032
Special Ed			-0.316***	-0.268***	-0.275***
Low Income			-0.163	-0.218**	-0.187*
LEP			-0.263**	-0.213*	-0.186*
Grade 2010–2011			0.093**	0.111***	0.105***
Log Days 0809–1011				-0.126***	-0.151***
Years Participated 0809–1011				-0.102*	-0.129**
Program Length 2010–2011				-0.005	0.054
Enrichment Participation 0809–1011					0.276
Equal Participation 0809–1011					0.357***
School					
Random Intercept	0.0182**	6.95e-23	9.14e-23	5.91e-24	6.78e-24
Residual	0.83179	0.5732	0.4992	0.4772	0.4606

*p<.05
**p<.01
***p<.001

Table 10: Change in Language Arts Scores from 2007–2008 to 2010–2011

Language Arts AYP Score 2010–2011	Model 1	Model 2	Model 3	Model 4	Model 5
Language arts AYP score 2007–2008		0.399***	0.217***	0.187***	0.157**
Percent Minority 2010–2011		-0.080*	-0.098**	-0.093**	-0.123***
Percent Low Income 2010–2011		0.075*	0.010**	0.101**	0.124***
Percent Special Ed 2010–2011		0.017	0.059	0.158	0.234**
Gender			0.063	0.129	0.109
Hispanic			-0.050	-0.009	-0.038
Other Minority			0.018	0.037	0.039
Special Ed			-0.417***	-0.330***	-0.336**
Low Income			-0.247*	-0.271*	-0.163
LEP			-0.254	-0.312*	-0.258*
Grade 2010–2011			0.119**	0.127***	0.104**
Log Days 0708–1011				-0.293***	-0.313***
Years Participated 0708–1011				0.063	-0.012
Program Length 2010–2011				-0.032	0.087
Enrichment Participation 0708–1011					0.800***
Equal Participation 0708–1011					0.546***
School					
Random Intercept	0.02995**	2.01e-21	4.02e-22	1.95e-21	3.17e-22
Residual	0.8771	0.703	0.5693	0.5340	0.5003

*p<.05
**p<.01
***p<.001

Table 11: Change in Math Scores from 2007–2008 to 2008–2009

Math AYP Score 2008–2009	Model 1	Model 2	Model 3	Model 4	Model 5
Math AYP score 2007–2008		0.555***	0.466***	0.478***	0.456***
Percent Minority 2008–2009		0.011	-0.002	-0.002	-0.009
Percent Low Income 2008–2009		0.005	0.014	0.016	0.012
Percent Special Ed 2008–2009		-0.025	-0.013	-0.016	-0.010
Gender			-0.023	-0.021	-0.037
Hispanic			-0.047	-0.064	-0.053
Other Minority			-0.165	-0.197	-0.178
Special Ed			-0.187*	-0.207*	-0.190*
Low Income			-0.214**	-0.199**	-0.181*
LEP			-0.394***	-0.323***	-0.310***
Grade 2008–2009			0.018	0.015	0.015
Log Days 2008–2009				0.001	0.009
Years Participated 2008–2009				0.022	0.030
Program Length 2008–2009				-0.008	-0.006
Enrichment Participation 2008–2009					0.322***
Equal Participation 2008–2009					0.136
School					
Random Intercept	0.0454***	5.66e-21	1.29e-21	9.67e-22	8.96e-22
Residual	1.1158	0.8016	0.6397	0.6476	0.6361

*p<.05
**p<.01
***p<.001

Table 12: Change in Math Scores from 2008–2009 to 2009–2010

Math AYP Score 2009–2010	Model 1	Model 2	Model 3	Model 4	Model 5
Math AYP score 2008–2009		0.530***	0.412***	0.416***	0.412***
Percent Minority 2009–2010		-0.020	-0.028*	-0.014	-0.017
Percent Low Income 2009–2010		0.010	0.023*	0.008	0.008
Percent Special Ed 2009–2010		-0.062	-0.021	-0.069	-0.064
Gender			-0.171***	-0.179***	-0.185***
Hispanic			-0.228***	-0.231***	-0.222***
Other Minority			-0.193	-0.191	-0.185
Special Ed			-0.398***	-0.406***	-0.390***
Low Income			-0.037	-0.046	-0.036
LEP			-0.170*	-0.161*	-0.159*
Grade 2009–2010			0.041*	0.037	0.033
Log Days 2009–2010				-0.001	0.005
Years Participated 2009–2010				0.005	-0.002
Program Length 2009–2010				-0.065	-0.53
Enrichment Participation 2009–2010					0.201*
Equal Participation 2009–2010					0.039
School					
Random Intercept	0.0381***	4.57e-22	4.33e-21	2.51e-22	1.97e-22
Residual	1.1054	0.7883	0.6877	0.6899	0.6874

*p<.05
**p<.01
***p<.001

Table 13: Change in Math Scores from 2009–2010 to 2010–2011

Math AYP Score 2010–2011	Model 1	Model 2	Model 3	Model 4	Model 5
Math AYP score 2009–2010		0.658***	0.574***	0.574***	0.546***
Percent Minority 2010–2011		0.019	0.014	-0.041**	-0.071***
Percent Low Income 2010–2011		-0.013	-0.005	0.055***	0.082***
Percent Special Ed 2010–2011		0.038	0.054	0.285***	0.366***
Gender			-0.032	-0.028	-0.036
Hispanic			-0.105	-0.103	-0.085
Other Minority			-0.112	-0.106	-0.077
Special Ed			-0.219***	-0.220***	-0.206***
Low Income			-0.099	-0.010	-0.056
LEP			-0.117	-0.116	-0.010
Grade 2010–2011			0.051*	0.049*	0.045*
Log Days 2010–2011				-0.013	0.003
Years Participated 2010–2011				0.017	0.011
Program Length 2010–2011				0.236***	0.361***
Enrichment Participation 2010–2011					0.414***
Equal Participation 2010–2011					0.130
School					
Random Intercept	0.0347***	0.0177***	0.0183***	3.00e-24	1.27e-23
Residual	0.9770	0.5432	0.5014	0.4989	0.4827

*p<.05
**p<.01
***p<.001

Table 14: Change in Math Scores from 2007–2008 to 2009–2010

Math AYP Score 2009–2010	Model 1	Model 2	Model 3	Model 4	Model 5
Math AYP score 2007–2008		0.515***	0.388***	0.388***	0.373***
Percent Minority 2009–2010		-0.052*	-0.056**	-0.054*	-0.073***
Percent Low Income 2009–2010		0.049	0.059*	0.061*	0.073**
Percent Special Ed 2009–2010		0.006	0.064	0.105	0.137*
Gender			-0.081	-0.067	-0.082
Hispanic			-0.261***	-0.257**	-0.261***
Other Minority			-0.096	-0.092	-0.077
Special Ed			-0.366***	-0.348***	-0.310***
Low Income			-0.001	-0.005	0.051
LEP			-0.236*	-0.240*	-0.267*
Grade 2009–2010			0.059*	0.067**	0.059*
Log Days 0708–0910				-0.062	-0.064
Years Participated 0708–0910				-0.015	-0.080
Program Length 2009–2010				0.008	0.033
Enrichment Participation 0708–0910					0.486**
Equal Participation 0708–0910					0.292***
School					
Random Intercept	0.0313***	4.17e-22	3.82e-21	3.72e-21	3.41e-21
Residual	1.0479	0.7422	0.6328	0.6318	0.6182

*p<.05
**p<.01
***p<.001

Table 15: Change in Math Scores from 2008–2009 to 2010–2011

Math AYP Score 2010–2011	Model 1	Model 2	Model 3	Model 4	Model 5
Math AYP score 2008–2009		0.513***	0.388***	0.382***	0.365***
Percent Minority 2010–2011		-0.002	-0.006	-0.051*	-0.075***
Percent Low Income 2010–2011		0.003	0.015	0.067**	0.085***
Percent Special Ed 2010–2011		0.004	0.050	0.283***	0.321***
Gender			-0.068	-0.047	-0.061
Hispanic			-0.042	-0.012	-0.013
Other Minority			-0.026	0.008	0.008
Special Ed			-0.369***	-0.340***	-0.323***
Low Income			-0.192*	-0.221*	-0.163
LEP			-0.148	-0.134	-0.097
Grade 2010–2011			0.098**	0.109***	0.101***
Log Days 0809–1011				-0.068	-0.067
Years Participated 0809–1011				-0.060	-0.094
Program Length 2010–2011				0.40***	0.318***
Enrichment Participation 0809–1011					0.534***
Equal Participation 0809–1011					0.314***
School					
Random Intercept	0.0488***	0.0120*	0.0169*	2.15e-22	1.74e-22
Residual	0.9721	0.6976	0.6154	0.6026	0.585

*p<.05
**p<.01
***p<.001

Table 16: Change in Math Scores from 2007–2008 to 2010–2011

Math AYP Score 2010–2011	Model 1	Model 2	Model 3	Model 4	Model 5
Math AYP score 2007–2008		0.411***	0.247***	0.242***	0.228***
Percent Minority 2010–2011		-0.006	-0.009	-0.093**	-0.117***
Percent Low Income 2010–2011		0.009	0.020	0.116**	0.133***
Percent Special Ed 2010–2011		-0.073	-0.012	0.411***	0.472***
Gender			0.099	0.124	0.100
Hispanic			-0.097	-0.091	-0.111
Other Minority			0.158	0.179	0.185
Special Ed			-0.412***	-0.382**	-0.381**
Low Income			-0.161	-0.158	-0.056
LEP			-0.333*	-0.338*	-0.283*
Grade 2010–2011			0.117**	0.123**	0.104*
Log Days 0708–1011				-0.092	-0.097
Years Participated 0708–1011				0.012	-0.053
Program Length 2010–2011				0.424***	0.522***
Enrichment Participation 0708–1011					0.781**
Equal Participation 0708–1011					0.425**
School					
Random Intercept	0.0768***	0.0542**	0.0622***	1.47e-21	1.98e-21
Residual	0.9799	0.8009	0.6557	0.6419	0.618

*p<.05
**p<.01
***p<.001