
Electronic Theses and Dissertations, 2004-2019

2009

The Influence Of Social Capital Factors On African-american And Hispanic High School Student Achievement.

Jacqueline L. Davis
University of Central Florida



Part of the [Education Commons](#)

Find similar works at: <https://stars.library.ucf.edu/etd>

University of Central Florida Libraries <http://library.ucf.edu>

This Doctoral Dissertation (Open Access) is brought to you for free and open access by STARS. It has been accepted for inclusion in Electronic Theses and Dissertations, 2004-2019 by an authorized administrator of STARS. For more information, please contact STARS@ucf.edu.

STARS Citation

Davis, Jacqueline L., "The Influence Of Social Capital Factors On African-american And Hispanic High School Student Achievement." (2009). *Electronic Theses and Dissertations, 2004-2019*. 1507.
<https://stars.library.ucf.edu/etd/1507>



THE INFLUENCE OF SOCIAL CAPITAL FACTORS ON AFRICAN-AMERICAN
AND HISPANIC HIGH SCHOOL STUDENT ACHIEVEMENT

by

JACQUELINE L. DAVIS
B.A. Herbert H. Lehman College, 1993
M.A. University of Arizona, 1995

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the Department of Educational Studies
in the College of Education
at the University of Central Florida
Orlando, Florida

Summer Term
2009

Major Professors: Cynthia J. Hutchinson
E. Lea Witta

© Jacqueline L. Davis

ABSTRACT

The underachievement of African American and Hispanic students has been an ongoing problem for schools in the United States. The purpose of this investigation was to add to the existing body of knowledge concerning social capital of African American and Hispanic high school students' academic achievement. Using a nationally representative sample from the Educational Longitudinal Study of 2002 (ELS: 2002), base year through the first follow-up year database, 551 high school students, the researcher assessed indicators (school-sponsored activities, out-of-school activities, and parental involvement) within the construct of social capital, to see whether social capital could serve as a predictor of academic achievement among African American and Hispanic high school students.

Data were analyzed through Repeated Measures analysis and Multiple Regression analysis controlling for gender, race, and socioeconomic status. The main effects revealed a statistically significant difference between the social capital factors in school-sponsored activities, out-of-school activities, and parent involvement. The results showed an increase in the first follow-up year. Socio-economic status, race and gender were statistically significant social capital factors. Females and African Americans were found to have higher levels of social capital in school-sponsored activities. Out-of-school activities revealed males had higher levels of social capital. Parent involvement indicators showed that female and Hispanic students were affected by social capital. Differences in math scores revealed an increase in the first follow-up year, showing males outscored

females. Also, Hispanic students' scores were higher than African American students. Finally, the strongest predictors for academic achievement were gender, race, and participation in school sponsored activity in the base year and first follow-up year. In addition, parent involvement was also found to be a strong predictor of achievement in the follow-up year.

This work is dedicated to my parents, Rebecca and Loren Davis. Your guidance and parenting molded me into setting high standards for myself and working hard to achieve the unachievable. I want you to know that your support and prayers during this endeavor is greatly appreciated. In addition, I would like to acknowledge my brothers and sisters Marlene Bennett, Joan McGregor, Earl Wilson, Leony Dixon, Paul Davis, Jullet Davis, Melbourne Davis, and Carla Davis . This endeavor would not have been possible without your love, support, and encouragement. You all have touched my life in a significant way and I only hope that I can influence your life as much as you have influenced my life. Finally, I would like to give all honor and adoration to the Almighty God. The Lord who is the provider of all good things; I thank you for the grace that you have bestowed on me to complete this work successfully.

ACKNOWLEDGMENTS

First, I would like to thank my dissertation committee--Dr. Witta, Dr. Hutchinson, Dr. Grauerholz, and Dr. Jones for guiding me through this process. My Co-Chairs Dr. Witta and Dr. Hutchinson have been particularly instrumental in this research. They read many drafts (and rewrites), met with me and accommodated me in their busy schedules. A special acknowledgement goes to Dr. Witta whose educational guidance and expertise were vital in my statistical design and analysis.

Also, I give thanks and honor to God who has led me to this point in my life. He had a plan and I followed. This manuscript could not have been completed without God. Many times throughout this journey He proved His unconditional love and destined purpose in guiding and directing me in situations I was unable to handle myself. Without His help I would not have been motivated to complete this journey. This entire journey has been about my personal testimony to my faith in God and my willingness to be used as an instrument so He would be glorified to the utmost highest.

A special thanks to my professors: Dr Boote, Dr. Holt, Dr. Allen, I appreciated your guidance and expertise in expanding my knowledge and wisdom in education related matters. A special thanks to my family who have always provided me with the encouragement to complete this task. They have always reminded me the importance of maintaining balance, while fulfilling this goal. My sister, Juliet has always been supportive all the way to the end, you built my confidence in statistics..

My cohort members you all were incredible! It was such a pleasure taking classes with you all. Darlene and Edie, you both were extremely great in our monthly dinners at

Smokey Bones, getting caught up on each other's lives. Edie it was always fun taking time out for movies and Darlene, cruising with you was really fun. Dan you were very supportive, and your laptop came in handy during defense. Stephanie, you too were a part of my journey. I appreciated the times you took just spending time chatting and laughing, especially when I needed it. Finally I would like to thank everyone who believed in me and supported me throughout the process, my friends far and near--you all know who you are. I have been very blessed!

TABLE OF CONTENTS

LIST OF TABLES.....	x
LIST OF ABBREVIATIONS.....	xii
CHAPTER 1 THE PROBLEM AND ITS CLARIFYING COMPONENTS.....	1
Introduction.....	1
Statement of Problem.....	6
Purpose of Research.....	8
Research Questions.....	9
Relevance of Study.....	10
Assumptions of the Study.....	12
Limitations of Study.....	12
Definition of Terms.....	13
Organization of the Dissertation.....	15
CHAPTER 2 LITERATURE REVIEW.....	16
Introduction.....	16
Social Capital Theory.....	16
Social Capital and Academic Achievement.....	21
Mathematics Achievement.....	24
Race/Ethnicity and Mathematics Achievement.....	26
Gender and Mathematics Achievement.....	28
Generation X and the Millennial Generation.....	30
Forms of Social Capital.....	32
School-Sponsored Activities (SSA).....	32
Out-of-School Activities (OSA).....	43
Gender and School-Sponsored and Out-of-School Activity.....	51
Race/Ethnicity and School-Sponsored and Out-of-School Activity.....	56
Parent Involvement (PI).....	60
CHAPTER 3 METHODOLOGY.....	70
Introduction.....	70
Research Design.....	70
Sample.....	72
Instrumentation.....	75
Assessment Battery.....	78
Mathematics Achievement.....	79
Socio-Economic Status (SES).....	83
Gender.....	85
Race.....	86

School-Sponsored Activities.....	86
Out of School Activities.....	87
Parent Involvement.....	88
Data Processing.....	88
Within-Subjects Factors.....	89
Between-Subjects Factors.....	89
Research Questions.....	89
Data Analysis.....	90
CHAPTER 4 FINDINGS.....	93
Introduction.....	93
Descriptive Statistics.....	93
Inferential Statistics.....	96
Research Question 1.....	96
Research Question 2.....	107
Research Question 3.....	109
Research Question 4.....	111
Summary.....	112
CHAPTER 5 SUMMARY, DISCUSSION, AND RECOMMENDATIONS.....	114
Introduction.....	114
Purpose of the Study.....	114
Summary of Findings.....	114
Research Question 1.....	115
Research Question 2.....	117
Research Question 3.....	117
Research Question 4.....	118
Discussion.....	118
Implications for Practice.....	128
Recommendations for Future Research.....	131
Summary.....	134
APPENDIX INSTITUTIONAL REVIEW BOARD APPROVAL.....	135
LIST OF REFERENCES.....	137

LIST OF TABLES

Table 1 Mathematics Items in ELS: 2002 Base Year, by Content Area: 2002	82
Table 2 Mathematics Items in ELS: 2002 Follow-up Year, by Content Area: 2004.....	82
Table 3 Mathematics Items per Skill/Cognitive Process area in ELS: 2002 Base Year, by Process/Skill Specifications: 2002.....	82
Table 4 Mathematics Items per Skill/Cognitive Process Area in ELS: 2002 First Follow-up Year, by Process/Skill Specifications: 2004.....	83
Table 5 Means: Education of Father/Guardian and Mother/Guardian	84
Table 6 Means: Family Income	84
Table 7 Means: Occupation of Father/Guardian and Mother/Guardian	85
Table 8 Variables and Repeated-Measures Analysis of Covariance Description.....	92
Table 9 Descriptive Statistics of Categorical Variables	95
Table 10 Descriptive Statistics for Continuous Variables.....	96
Table 11 Repeated-Measures, Analysis of Covariance of School-Sponsored Activities	100
Table 12 Results of Means for School-Sponsored Activities (SSA).....	101
Table 13 Results of Repeated-Measures Analysis of Variance for Out-of-School Activities.....	103
Table 14 Results of Means for Out-of-School Activities (OSA).....	103
Table 15 Results of Repeated-Measures Analysis of Covariance for Parent Involvement	105
Table 16 Results of Means for Parent Involvement (PI)	107
Table 17 Results of Repeated-Measures Analysis of Variance of Mathematics IRT-Estimated Number Right Score	109
Table 18 Summary of Base Year Mathematics Regression Analysis (N = 551).....	110

Table 19 Summary of Follow-up Year Mathematics Regression Analysis (N = 551).. 111

LIST OF ABBREVIATIONS

ELS	Educational Longitudinal Study of 2002 base year through first follow-up year
Math IRT	Mathematics Item Response Theory
NCES	National Center for Educational Statistics
NCLB	No Child Left Behind
NELS: 88	National Educational Longitudinal Study of 1988
OSA	Out of School Activities
PI	Parent Involvement
SSA	School Sponsored Activities
SPSS	Statistical Package of Social Science

CHAPTER 1 THE PROBLEM AND ITS CLARIFYING COMPONENTS

Introduction

Policy makers, districts, schools, educators and parents have become increasingly aware of the high dropout rates and the low academic achievement of many minority high school students. Researchers have continued to show that high school completion among minority students has been at lower rates than white students (Orfield, Losen, Wald & Swanson, 2004). “In fact, 46 percent of African-American students and 39 percent of Hispanic students attend high schools with about a 50 percent graduation rate” (Herlihy & Quint, 2006, p. 2). This downward trend has not only resulted in fewer Black and Hispanic students attending higher education institutions compared to their white counterparts, but when they have enrolled they have been less likely to obtain a degree (Nevarez, 2001).

This decline in outcomes has had significant implications not only for the minority student, but also for society at large. In the United States, as each cohort of students moves through secondary school to college, the percentage of African-American and Latino adolescents shrinks. Students who do not graduate from high school are more likely to earn less money, to be unemployed, to fall below the poverty line, to receive public assistance or to be in prison; and if female they are more likely to have children at younger ages (National Center for Education Statistics, 1999; Orfield et al., 2004). Furthermore, geographic regions with high concentration of minorities may experience both low productivity and high demand for expensive services (Weiher & Tedin, 2006).

Eventually these students will be less likely to compete successfully in the increasing global economy.

Although there is compelling evidence that academic achievement problems exist at all levels or race/ethnicity, gender, and socioeconomic levels, there is a growing concern for the success of African-American and Hispanic students. The challenges seen in performance level during high school have led to initiatives for improving mathematics standards. Mathematics achievement scores among African-American and Hispanic students have increasingly shown decline overtime during the high school years. Reports by the National Center for Educational Statistics (NCES), National Assessment of Educational Progress (NAEP, 2005) have noted that students make larger gains earlier rather than later in high school. Consequently, seniors have been performing below required expectations. The decline in performance as students move towards their senior year suggests that students may have less knowledge of advanced topics in math. As a result of the low performance of American high school students, new legislative acts, such as the *No Child Left Behind Act (NCLB)*, have been developed as a response to gaps in academic achievement that have been observed along the lines of race, ethnicity and income (National Center for Education Statistics, 2000). Under this legislation, high schools have been required to make “adequate yearly progress” against state-defined standards that must take into account graduation rates and student progress in reaching proficiency in reading and math.

Although efforts have been made to lessen the decline in mathematics learning overtime, researchers have begun to shed light on the influence of adolescents' social capital in providing a basis for student learning (Coleman, 1990). Social relationships comprise an important context when considering academic achievement. Social ties made within schools are important psychologically, developmentally and even academically. During the high school years, the social world of adolescents is changed as students go to and from different classes and as they progress to different grade levels. For American high school students, the desire to fit in among their peers and have attachments to groups has been found to be crucial during the adolescent years (Langenkamp, 2007). Some researchers have drawn a link in family, school, and peer support as resources for improving academic achievement. Other researchers have stressed that school outcomes are strongly affected by the neighborhoods in which students live, their family life, the schools they attend, and the resources that are available to students personally and through the school (Hofman, Hofman, & Guldmond, 2003). Given the increasing changes that can occur in the social life of high school students, an in-depth understanding of factors that influence academic achievement is needed.

Coleman (1988) brought the concept of social capital to sociologists and educational researchers by describing social capital as a function rather than an entity. He identified social capital as any aspect of social relationships and structures that functions as a resource for individuals (1988). Coleman's conceptualization of social capital was flexible enough to include students' conversations with parents, family's socioeconomic

background, and social ties between family members, peers, community, or other social institutions. The construct of social capital focuses on ways that social organizations, mainly small networks of relationships, enhance productivity of people (Coleman, 1988, 1990). The underlying premise of social capital relating to human behavior is that some people are more successful than others because they can rely on other individuals for assistance. Additionally some groups of people are more effective than others because they find it easier to work together in achieving goals.

Change is crucial to the social capital approach. Because social capital is multidimensional, it has been suggested that students' level of social capital may change over time as students shift from one grade level to the next and as students shift between formal and informal institutions. Moreover, Langenkamp (2007) noted in her dissertation that students often face various transitions during high school that can interrupt students' path through school and affect the school-based social relationships. The changes in school-based relationships can strongly impact academic success. Similarly, math achievement scores can also be influenced by various factors; therefore, being able to access and compare changes over time between years provides a basis for examining potential influences.

Assessing change requires more than one measurement. There must be a minimum of two measurements--one at entry and one at exit using the same or similar instruments or techniques. At the entry point, the researcher is able to see the effect at an earlier time period. At the exit point, the researcher can see if the same influences have

the same effects at a later time. While some researchers have attempted to measure similar variables at several points during the high school years, using two measurements, one at the sophomore year and one at the senior year, has been commonly practiced as evidenced in the review of the literature.

In this study, the researcher defined social capital as resources stemming from adolescents' social connections. Social capital refers to high academic standards set by parents and other adults and the supportive relationships between adults and adolescents that enable success in school by promoting positive behavior and attitudes that encourage successful performance in school. Social capital was operationalized as participation in school-sponsored activities, out-of-school activities, and parent- involvement, which are examples of social networks that transmit social capital. Specifically, these involvements may provide access to resources inside and outside of the family, as well as positive experiences with supportive adults who may assist in achieving academic goals (White & Gager, 2007). In this research it has been suggested that social capital is associated with academic achievement. Unlike previous research that has examined the role of social capital on academic achievement, this study specifically addressed minority students' use of social capital including gender, race, and social class differences over time. Although it is important to examine the patterns that have emerged in academic achievement, examining the changes that have occurred over time provides deeper understanding for seeing the influence on academic achievement. The findings of the study should be of

value to legislators, educators, policy holders, and parents wishing to apply social capital theory in educational settings.

Statement of Problem

Research on social capital has shown that it has been a crucial mechanism for influencing academic achievement; yet limited studies have shown the influence of social capital during the high school years. A problem exists in the low academic achievement among minority students which continues to affect the U.S. society. It has been well documented that certain minority groups tend to be at a higher risk for succeeding in math, therefore American high schools struggle to find ways of improving the chances of academic success for African American and Hispanic students. The decline seen in students' math skills as they progress in high school can lead to limited life opportunities or even limit career fields. Although social capital found through social interactions of high quality can provide the basis for supporting learning among students and improving math scores, students' social capital can vary during the high school years. Therefore, comparing the change in students' social capital from the sophomore year to the senior year was viewed as useful for understanding the degree to which academic achievement is affected by social capital.

Signer, Beasley, and Bauer (1997) suggested that differences in mathematics achievement are more evident during the high school years. The National Center for Educational Statistics (2000) reported that students' tend to show little gains in math as they progress their senior year. Because previous research has indicated that mathematics

scores decline from the sophomore to the senior year, this study was conducted to examine whether this population would have the same results as previous studies of lower math scores in their senior year. This information would provide a greater understanding for assessing factors that may influence math score change. In a time of high stakes testing, social capital is seen to be a stronger influence on student performance than race, poverty or educational levels on student SAT performance (Putnam, 2000). The researcher sought to provide a more comprehensive, quantitative understanding of the predictors of academic achievement in African American and Hispanic high school students.

The impact of parental involvement has been found to have a positive relationship in mathematics achievement (Crane, 1996; Muller, 1998; Peressini, 1998; Shaver & Walls, 1998). As parents pursue resources through the school and community networks, it can increase the chances for educational success. In the study of Furstenberg and Hughes (1995) social capital measured as parents' social investment in their children and community, increases students' odds of graduating from high school and attending college.

In the 1988 National Educational Longitudinal study, Jordan and Nettles (2000), found a positive relationship between out of school activities and achievement by grade 12. Using a nationally representative sample, High School and Beyond data, Marsh (1992) studied total extracurricular activity participation (TEAP) during the last two years of high school and found that extracurricular activity participation had a small but

statistically significant relationship with 17 of the 22 seniors. The outcomes included social and academic self-concept, educational aspirations, coursework selection, homework, absenteeism, academic achievement, and subsequent college attendance.

Some researchers have expressed the belief that race and ethnicity can affect the kinds of schools and the kinds of peer networks in which students participate. This, in turn, can affect the odds for choosing peer groups that promote or discourage learning (Stanton-Salazar, 1997). Often, students tend to have peer networks that include other people from the same racial and ethnic background. Since both African American and Hispanic students have different educational achievement patterns, the tendency for students to associate with peers who have higher educational achievement may vary by race and ethnicity (Kao, 2005). More research concerning social capital factors is needed to reveal trends about academic achievement and African Americans and Hispanic students.

Purpose of Research

The purpose of this study was to examine how social capital factors influence academic success of African American and Hispanic high school students. Educational researchers have explored social capital as a means of understanding social, educational, and behavioral outcomes. This researcher aimed to determine the influence of social capital factors identified as school-sponsored activities, out-of-school activities, and parental involvement on mathematics achievement, using mathematics IRT – estimated number right scores of high school students.

Research Questions

To investigate the impact of social capital and academic achievement among African-American and Hispanic high school students, social capital was defined as (a) school sponsored activities, (b) out of school activities, and (c) parent involvement. This research was conducted to examine data from two time periods: base year and the first follow-up year. The base year data used nationally representative high school 10th grade students who were followed in 2-year intervals (12th grade). Data from the base year of the study were collected in the spring of 2002. Data from the first-follow-up year were collected in the spring of 2004.

The research questions addressed in this study were:

1. When adjusting for SES, is there a difference in social capital factors reported from the base year (2002) to its first follow-up (2004) based on gender, race, or the interaction of gender and race? The social capital factors are school-sponsored activities, out-of-school activities and parent involvement.
2. When adjusting for SES, is there a difference in mathematics –IRT estimated number right scores from the base year (2002) and the first follow-up (2004) based on gender, race, or the interaction of gender and race?
3. Is there a predictive relationship between mathematics –IRT estimated number right scores and gender, race and social capital factors for the base year (2002)?

4. Is there a predictive relationship between mathematics –IRT estimated number right scores and gender, race and social capital factors for the first follow-up year (2004)?

Relevance of Study

The national dialogue about the achievement gap can help policy makers and educators find ways to better serve African-American and Hispanic minority students. Investigating the relationships between social capital and academic achievement was important for both practical and theoretical reasons. From a practical perspective, it provides ideas on ways to increase academic achievement. From a theoretical perspective, it tests the findings of a number of studies that pertain to the relationship between social capital and academic achievement. Overall the theory of social capital is useful because:

Social capital is increasingly proposed by political and educational leaders as a solution to persistent educational and social problems, and in turn it becomes increasingly important to critically examine the existing literature to determine the role(s) social capital may play in the educational and psychological development of children and youth (Dika & Singh, 2002 p. 35).

Few studies examine social capital resources that may be operating within the school, home or community. This study was conducted to provide an understanding of its influence on academic achievement.

Mathematics has been one of the many indicators of academic achievement measured by schools and has also been the primary component of formal academic learning in the United States. Mathematics has been and continues to be a core subject

that is taught. Mathematical laws have been more standard than the rules for reading and writing, and math scores have been seen to be a more reliable and valid measure of academic achievement (Bonnet, 2002). The literature has shown a positive linear relationship between social capital and math scores (Bassani, 2006; Morgan & Sorensen, 1999). The focus on variation within the Hispanic and African American populations, however, has been limited. Testing the Social Capital Theory among these populations was a good way to assess the theory's applicability. Comparing the effect of social capital within the population is one way to understand the differences in youth achievement levels. While there have been studies on math achievement, this study examined math achievement from a social capital approach, allowing researchers to gain a more complete picture on factors that help or impede academic achievement for African American and Hispanic high school students.

Given these associations, such an investigation had the potential to inform and impact both practice and school policy decisions. For example, the knowledge gained from this study was intended to inform policymaking decisions regarding the allocation of funds and resources; it can guide efforts to improve school programs targeted at African-American and Hispanic students; and it can provide parents with the insights that will enable them to make decisions regarding their children's activities relevant to desired academic achievement outcomes. Therefore, examining group differences in American high school students was intended to help parents, educators, and policymakers to gain a better understanding of significant factors that will enhance achievement in the African-

American and Hispanic student population. Additionally, it was anticipated that the study would also provide useful information regarding school characteristics that may need to be altered to provide more equitable distribution of educational opportunities for all students.

Assumptions of the Study

1. African American and Hispanic students learn various skills from their home and community environment that can be advantageous for enhancing academic achievement.
2. Statistical methods assume that the variables have normal distributions.
3. The Educational Longitudinal Study of 2002 statistical data and original research design is valid and reliable.
4. The results of this study can be generalized to the population used in this study.

Limitations of Study

1. The ELS: 2002 dataset was limited in the continuity in the kinds of questions asked of the respondents over waves of data collection. Some potentially important questions for longitudinal analyses were asked only once. For example, in certain instances when students were asked specific questions in the 10th grade, these questions were not revisited in the 12th grade. This

resulted in the inability to examine differences across time because the questions were asked at only one time point.

2. The study was limited to pre-existing groups (i.e. African American and Hispanic students) and variables within the dataset from the Educational Longitudinal Study.
3. The social capital factors were limited to school sponsored activity, out-of-school activity, and parent involvement. This study did not allow for a wider range of variables for studying broader social capital factors.
4. Students' responses were self-reported; therefore, different conditions may have contributed to their responses.
5. Mathematics was the only assessment measure utilized in this study.

Definition of Terms

Academic Achievement: measured by earning a passing standardized math test score.

Black or African American: A person having origins of any of the black racial groups of Africa.

Closed-ended: A type of question in which the data provider's responses are limited to given alternatives (as opposed to open-ended questions).

Cognitive test battery: One of two parts of the student survey (the second part being the student questionnaire).

Cohort: A group of individuals who have a statistical factor in common, such as year of birth, grade in school or year of high school graduation.

Hispanic or Latino: A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.

Longitudinal survey: Similar measurements of the same sample of individual, institutions, households etc. that were taken at multiple time points.

Parental involvement: A broad concept that entails having discussions or conversations with students about their academics.

Oversampling: Deliberately sampling a proportion of the population at a higher rate than the remainder of the population.

Social capital: Features of social relationships, such as interpersonal trust, norms of reciprocity, and membership in civic organization, which act as resources for individuals and facilitate collective action for mutual benefit.

Social networks: An enumeration of the relationships that exist between groups of individuals or organizations (i.e., who knows whom). The structure of these networks and the character of these links between those individuals (or nodes), influence such things as how effectively the network can produce various results, its vulnerability, whether the network is well integrated or balkanized, etc. In a schematic social network, the nodes are people and the lines are social ties from one node (person) to another.

Target population: In ELS base year the target population was spring term 2002 sophomores in all regular public and private schools with 10th grades in the 50 states and the District of Columbia.

Organization of the Dissertation

The dissertation is organized as follows: Chapter 1 has presented an overview of the study. Chapter 2 contains a review of the literature on social capital, academic achievement, school-sponsored activities, activities outside-of-school and parental involvement. The literature review discusses previous research concerning academic achievement of high school students, gender, race, and social/ethnic background. Chapter 3 presents the methodology used in the study. Included are descriptions of research design, assessment battery, and the appropriate statistical procedure for testing the hypotheses. Also included is a description of the investigation process of important variables that influence academic success among African American and Hispanic high school students. Data analysis results are presented in Chapter 4. In Chapter 5, research findings, implications as well as recommendations are offered.

CHAPTER 2 LITERATURE REVIEW

Introduction

This chapter contains a review of the literature related to social capital theory and its background, relevance and relationship to academic achievement, mathematics achievement, gender and race. The forms of social capital discussed are school-sponsored activities, outside-of-school activities and parental involvement. Coleman's social capital theory, well known by social theorists, has gained a widespread research in educational literature and will begin the review.

Social Capital Theory

Bourdieu (1986) established the foundation for future work on the social capital theory. While there have been many conceptualizations of social capital, Bourdieu identified it as “the aggregate of the actual or potential resources which are likened to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition – in other words, to membership in a group” (p. 283). He further stated that social capital exists beyond just a group of people who know each other and extends through established connections that must be reciprocating, trusting, and positive (Bourdieu).

Coleman (1988) later built on Bourdieu's earlier work by describing social capital as having two interconnected components: the structural (who is in the group) and the functional (how the people in the group interact). The social structure of groups can serve

as resources for individuals (Coleman, 1988). Within a group, through social networks people develop trust and exchange information that can serve as resources for support, “. . . family relations and community/social organizations are useful for cognitive and social development of a child or young person” (Coleman, 1990, p. 300). Although the types of social structures can encourage social capital between adults and students, the quality of information exchanged in a group depends on the function of the relationship and the degree that the group builds trust, maintains effective norms, and promotes cooperation (Coleman, 1988; Goddard, 2003). Different types of social situations cultivate different levels of capital because the different interactions produce ties, trust, reciprocity, and a sense of belonging that can vary among people. Because certain types of social interactions are designed to bring people together by having a specific purpose for gathering, these types of associations are more likely to transmit social capital than others.

Social capital has often been conceived as the “social cohesiveness” or “fraternity” (Putnam, 2000, p. 251) that is often present when people are socially engaged with each other. Although there are varying levels of capital, social capital can be created from very basic interactions through very intense interactions. For example, social capital can be cultivated when “neighbors borrow ingredients for cooking; when people gather for worship; or even when people send out greeting cards” (Putnam p. 94). Social capital can be found in friendship networks, neighborhoods, churches, schools, civic

associations, and also bars. The motto used in the television program Cheers “where everybody knows your name” highlights an important aspect of social capital.

Coleman (1988) identified three ways in which social relationships become social capital and act as resources. First, individuals may expect obligations to be repaid because of inherent trustworthiness between each other. Second, social capital may give individuals access to information that otherwise would not be available. Third, norms are a form of social capital which facilitate individual action. The construct of social capital highlights the premise that social relationships create the basis for individual and cooperative action (Coleman).

The World Bank and the Organization for Cooperation and Development (OECD) (2001) has defined social capital as “networks with shared norms, values and understandings that facilitate co-operation within or among groups” (Cote & Healy, p. 41). The World Bank has stated that this definition suggests horizontal associations between people, involving social networks and associated norms that impact community productivity and well being. The World Bank offered the following more expansive definition:

Social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society’s social interactions. . . .Social capital is not just the sum of the institutions which underpin a society--it is the glue that holds them together (Cote & Healy, p. 62).

This definition differs from the previous definition by accounting for the positive and negative aspects between people by including vertical associations between people that occur in institutional settings.

Coleman (1988) has been a well known theorist within the social capital paradigm. A difference between Coleman and other theorists is that he, along with Bourdieu, considered social capital as an attribute in the individual. Stanton-Salazar (2001) supported Coleman's perspective on social capital in the following statement:

Social capital is a set of properties existing within a socially patterned associations among people that when activated, enable them to accomplish their goals or to empower themselves in some meaningful way. Such associations can occur in various ways: between two individuals (e.g., teacher and student), between individuals in a group (e.g., parents in a neighborhood), and between groups within a community (e.g., parents, school personnel, police). (p. 256)

Coleman (1988) identified three forms of capital known as, human capital, physical capital and cultural capital. All of these can be acquired through the social ties within the network. Coleman believed that social capital differs from the other forms of capital because social capital comes from the links between people, whereas, the other forms of capital lie within the individual. For example, for parents to increase the cognitive development of their adolescent the parent must possess human capital in the form of knowledge. Social capital must also exist between the parents and adolescent as shown by parents' feelings of obligation to teach their adolescent. Parents possessing physical capital will seek out resources for facilitating learning (i.e., books, tutorial resources, or computers), and parents possessing cultural capital will seek out useful ways within the institutional system for enhancing the chances of student success or even become advocates for their children (Rueda, Monzo & Arzubiaga, 2003).

The benefit of acquiring social capital impacts various areas of a person's life. Research has shown that people who have greater levels of social capital tend to feel

optimistic about their future, feel more empowered, and have a healthier outlook on life (Putnam, 2000). They exhibit more control in the direction and future of their lives and are likely to accrue other forms of capital when compared to people with limited levels of social capital (Coleman, 1988; Putnum). People with high levels of social capital are, therefore, more likely to be actively involved in their community because information provides “the basis for action” (Coleman, p. 104). People who are involved will be more likely to influence what happens in their community.

Although there has been evidence that communities with an ample source of social capital are more likely to benefit from lower crime figures, better health, higher educational achievement, and better economic growth (Stanton-Salazar, 1997), the same characteristics of social capital that promote beneficial and productive outcomes can also lead to potentially negative outcomes. The significance of the negative aspects of social capital was first examined by Portes (1996) in his discussion of the dimensions of social capital. Groups and organizations with high levels of social capital can work to exclude and subordinate others members (Morrow, 1996; Portes). In this way, social capital has been seen as constraining a person’s action or choice. Other researchers have discussed potential downsides of social capital as: (a) fostering behavior that worsens rather than improves economic performance; (b) acting as a barrier to social inclusion and social mobility; (c) dividing rather than uniting communities or societies and (d) facilitating rather than reducing crime, education underachievement and health-damaging behavior (Morrow, 1996; Putnam, 2000).

Social Capital and Academic Achievement

Researchers have shown that social capital provides positive education-related outcomes that benefit students (Bourdieu, 1986; Bourdieu & Wacquant, 1992; Coleman, 1988, 1990; Stevenson, 1988). Specifically, increases in academic achievement have been found for students acquiring social capital (Coleman, 1988, 1990; Coleman & Hoffer, 1987; Croninger & Lee; Dika & Singh; Goddard, 2003; McNeal, 1998; Rosenfeld & Richman, 1999; Smith-Maddox, 1999; Stanton-Salazar, 2001; Yan, 1999).

Coleman (1988) examined the relationship between educational achievement and social capital and found that having social capital accounted for achievement gains in school children compared to students with less social capital. Social capital has been important in education as the socialization of students shifts from the family to the school (Coleman, 1988, 1999). Other researchers suggested that schools are a source of social capital because the environment promotes social interaction (White & Gager, 2007). Coleman believed that schools become effective with students when families pursue meaningful relationships with schools. Therefore, it is likely that the student's level of academic success can be influenced by the social capital that is accessed.

Coleman (1988) argued that parent involvement is associated with academic achievement because it largely impacts the students' supply of social capital. Other researchers (Putnam, 2000) have also agreed with Coleman and have suggested that parent involvement in the home influences performance at school, and parent involvement in school influences overall educational achievement. Putnum reiterated the

strong correlation between parental involvement and adolescents' educational progress by stating that, "When parents are involved in their children's education at home, their children do better in school. . . when parents are involved at school, their children go further in school, and the schools they go to are better" (pp. 303-304).

Dika and Singh (2002) explained that social capital has been linked historically to education and has been positively related to educational attainment, educational achievement, and other education related factors such as, educational aspirations and parental involvement. In addition, other researchers have suggested that family social capital can be significant for promoting adolescents education (Crosnoe, 2004; Furstenberg & Hughes, 1995). For example, Crosnoe examined the interplay between family and school social capital. He found that when students had high levels of family capital they benefited more from school capital, and in instances where there was lower family capital, students benefited less. Rosenfeld and Richman (1999) had similar findings with African American and Hispanic males and explained that when males experienced good, supportive relationships with their parents, they were more likely to seek out assistance from other male friends. However, when they had less supportive home relationships, they were less likely to seek out other supportive relationships. Schools and families have been closely linked and have played an enormous role in the social capital process of education (Coleman, 1988). Coleman and Hoffner (1987) emphasized in an earlier study that school and community social networks could improve students' mathematics and verbal performance, especially in instances where home

capital was limited. These researchers have suggested that social capital can function to buffer educational success.

There have been numerous researchers supporting the value of the social capital framework for accessing support from teachers, counselors, students' peers, and family related to academics (Stanton-Salazar, 1997; Stanton-Salazar & Dornbusch, 1995). A common drawback in much of the existing studies is that they differ in identifying how social capital influences behavior and other reports show little agreement when identifying social capital in the school context (Portes, 1998). Other criticisms reported have been that little research has addressed the influence of individual characteristics on the acquisition of social capital (Morrow, 1999). Moreover, Lin (2001) suggested that more research attention should focus on gender and race/ethnicity, which can potentially create differential access to social capital. There have been limited studies in which measures of social capital have been reported to address various contexts where adolescents have opportunities to acquire social capital or access to key resources (Bianchi & Robinson, 1997; Gager, Cooney, & Call, 1999; Morrow, 1999). These factors are important because a key component of social capital has been seen in the number and type of associations a student has, not only inside the family but especially outside the family, which can be seen through using time-use data (White & Gager, 2007). It was emphasized in this study that social capital theory has merit in framing the analysis regarding academic achievement as evidenced through school-sponsored activities, out-of-school activities and parent involvement.

Mathematics Achievement

Some researchers have argued that standardized test scores are a reliable and valid measure of academic achievement (Bonnet, 2002). At the time of the present study, colleges continued to use standardized test scores for other purposes such as college admissions or scholarship information. An increasing amount of evidence has shown, however, that standardized test scores have been used for predicting achievement. Voyer (1996) suggested that these measures are inappropriate. While there have been reports of inconsistent or contradictory findings in the research related to standardized tests, several meta-analysis studies suggested that the contradictory results may be attributed to different populations' gender, age, knowledge and skills assessed by tests, and whether the sample was self selected, representative, or available (Hyde & Linn, 1988; Hyde, Fennema & Lamon, 1990; Linn & Hyde, 1989).

Mathematics achievement has been nationally reported and shown achievement trends for various age ranges. According to the National Center for Education Statistics (NCES), National Assessment of Educational Progress (NAEP) (2007) mathematics achievement of 9 and 13-year-old students in the United States was higher in 2004 than in previous years. In 2004, the performance of 17-year-olds on mathematics assessments was not measurably different from their performance in 1971 or 1999. Despite the early gains, there appears to have been subsequent drops in mathematics achievement. The Nation's Report Card of Mathematics 2000, published by NAEP stated that:

Fourth-, eighth-, and twelfth-grade students had higher average scores in 2000 than in 1990, the first assessment year in which the current mathematics

framework was used. Fourth- and eighth-graders showed steady progress across the decade. Twelfth-graders made gains from 1990 to 1996, but their average score declined between 1996 and 2000 (p. 58).

In 2000 the National Assessment Governing Board (NAGB) identified Basic, Proficient and Advanced levels of achievement that students should perform in the 4th grade (26%), 8th grade (27%), and 12th grade (17%) (NCES, 2000). For each grade, students performed higher in 2000 than in 1990. Despite the gains, it was noted in the report that from 1996 to 2000, the percentage of 12th graders performing at the Basic level declined.

The decline in performance of 12th-grade students indicated that American high school students were performing below required expectations in mathematics. In 2005, the National Assessment of Educational Progress (NAEP) indicated that only 23% of 12th graders scored at or above the “proficient” level. African American and Hispanic students performed even lower (NCES, 2007). A report profiling American high school seniors in 2004 stated that only 35% “showed an understanding of intermediate-level mathematical concepts” and only 4% “exhibited a mastery of complex multistep word problems” (NCES, 2005, p. 5). These figures have continued to demonstrate the steady decline in mathematics learning.

Unfortunately, the decline in mathematic scores has not been limited to the United States. It has been seen in areas outside the United States. International comparisons of performance of the United States to that of other nations also revealed a similar decline at grades four and eight (NCES, 2008). The decline in scores has been of widespread

concern and has led to a call for improving the standards in mathematics. The National Commission on High School Senior Year (NCHSSY), whose goal was to advance high school education by improving alignment, raising achievement and providing alternatives to seniors, found that 24% of all college students required remediation in mathematics (NCHSSY, 2001). It is possible that the proportion of college students needing remediation continues to increase.

Race/Ethnicity and Mathematics Achievement

Ethnic minority groups such as Hispanics have made substantial gains in mathematics achievement tests. African Americans, however, have exhibited less improvement, particularly when compared to Hispanics (NCES, 2001; Thomas, 2000). Still, researchers have indicated some inconsistencies among Latino scores and suggested that limited English language skills accounted for low scores on achievement tests (Morales & Saenz, 2007).

The National Assessment of Educational Progress (2008) explained that the percentage of students considered as ethnic minority grew from 22% in 1972, to 31% in 1986, then to 41% in 2006. In 2006, Hispanic students represented 20% of the public school enrollment, which was a 6% increase in 1972 and 11% increase in 1986. Since 1986, the proportion of Hispanic public school students has exceeded that of the proportion of Black students or other minority students. The assessment explained that the growth continued in 2002 and showed Hispanic student enrollment to be higher than that of Black student enrollment. By 2006, Black students were 16% of the public school

enrollment, a slight decrease from 17% in 1986. Regional differences indicated that in 2006 the percentage of Hispanic students exceeded the percentage of Black students in the West, yet for the South and Midwest the percentage of Black student enrollment exceeded Hispanic student enrollment (NAEP, 2008).

The Mathematics Report Card (2000) showed significant increases in mathematics scores during grades 4 and 8. Although Black and Hispanic students' scores were higher in 2000 than in 1990 or 1992 during grade 12, scores indicated the smallest increase among grade levels in mathematics performance (NCES, 2000). The average scores for both groups in 2000 were similar to the scores in 1990, showing no evidence of a narrowing of racial/ethnic group score gap (NCES, 2000).

The Condition of Education (2008) reported that in 2004, the average mathematics scores of Black and Hispanic 9-year-olds were higher than they were in previous assessment years. The average scores for Black and Hispanic were higher in 2004 than in the early 1970s, at which time Black student performance had exceeded that of Hispanic students between 1973 and 2004. The report explained that between 1973 and 2004, Black 17-year-olds' scores improved 15 points in mathematics, while Hispanic 17-year-olds' scores improved 12 points. Contrary to previous studies (NCES, 2001; Thomas, 2000), Black students had higher scores than Hispanic students during the high school years in 2004.

Gender and Mathematics Achievement

Literature on gender and performance in mathematics indicated that males have outperformed females in math during high school in the areas of problem solving, reasoning, and high level thinking tasks (Doolittle & Cleary, 1987; Hyde, Fennema, & Lamon, 1990). Researchers, using national database samples, have indicated that females outperform males in standardized reading tests assessments. Males, however, have tended to outperform females in mathematical tests (Keith & Lichtman, 1994; Morales & Saenz, 2007; NCES, 2003). Specific item features such as content format, context and cognitive process required have shown that males outperformed females in content areas of geometry, ratio proportion, percent, and arithmetic/algebraic reasoning (involving real world context), while females performed better in algorithmic or computational skills (Doolittle & Cleary, 1987). Consistent with these results, the Nation's Report Card in 2005 reported that male scores were higher than female scores in two areas: number properties and operations; and measurement and geometry (NCES, 2007). Although it has been suggested that males fare better than females in math (Fan, Chen, & Matsumoto, 1997; Matsumoto, 1995), females have been shown to outperform males when other factors such as classroom grades are used for measuring achievement (Gadzella & Davenport, 1985).

While higher grades in mathematics for females have been associated with the content of tests and different learning styles between males and females (Kimball, 1989), some researchers noted that increased performance by boys has been due to course-taking

patterns. The suggestion has been that boys take more advanced math courses than girls (Pallas & Alexander, 1983). Other reports have suggested that the out-of-classroom activities that boys participate in influence their math achievement. Downey and Yuan (2005), and Kimball (1989) have suggested that out-of-classroom activities may provide boys with an advantage over girls because boys tend to be involved in activities requiring numerical information, such as sports, computer games or videos, while girls are more likely to be involved in activities that promote verbal and reading skills. In addition, another factor influencing girls' disadvantage over boys has been that girls have tended to score poorer on timed tests, often the basis of standardized tests (Sprigler & Alsup, 2003). When time constraints are not used, however, females have outperformed their male counterparts (Gallagher, 1989).

Other national results have found achievement differences in gender as students' progress in grade level. The Mathematics Report Card (2000) reported that the scores for gender and student achievement for grades 4, 8, and 12, were higher in 2000 than in 1990 (NCES, 2000). The overall national results showed that male and female students made achievement gains in grades 4 and 8 between 1990 and 1996. Despite these gains, there was a decrease in scores during grade 12 (NCES, 2000). Since 1996 there was a decline in 12th-grade achievement scores. Gains were not seen between genders through 2000 (NCES, 2000).

Generation X and the Millennial Generation

At the time of the present study, the United States population consists of people who could be categorized into five generations: the G.I. Generation (1901-1924), the Silent Generation (1925-1942), The Boom Generation (1943-1960), Generation X (1961-1981), and the Millennial Generation (1982-2002) (Elam, Stratton, & Gibson, 2007). Howe and Straus (2000) defined the Millennial Generation as people who were born after 1982. This generation is described as “hardworking, achievement- focused, team-oriented, highly-scheduled and structured, and good at multitasking” (Dumais, 2009, p. 78). Millennial students also have shared the quality of having parents who are strongly involved in having their children participate in activities (Dumais, 2009). Unlike the Millennial Generation, the Generation X students have been exposed to electronics such as TV, Atari, and personal computers. They have been less likely to have their time spent in planned activities (Kundanis, 2003).

There are generational differences in participation in extracurricular activities and the ways activities have been associated with educational outcomes (Dumais, 2009). For example, Millennial Generation students have been characterized as highly team-oriented; they have been presumed to be more likely to participate in activities that may be less appealing to Generation X students. Millennial Generation students have tended to be more involved in school-sponsored or structured activities and less involved in unstructured activities (Dumais, 2009). Although, as previous researchers have indicated, over involvement in activities may still have negative outcomes on academic

achievement (Cooper, Valentine, Nye, Lindsay, 1999; Marsh & Kleitman, 2002). It has been presumed that Millennial students may be more inclined to take advantage of the benefits of participation.

Parents of the Millennial adolescents take an active and supportive role in education by providing “passive encouragement to the aggressively protective parent who assumes an active role in their child’s educational experience” (Elam, Stratton, & Gibson, 2007, p. 22). Not only would these parents be highly involved in their adolescents’ academics, but they would have high expectations for their adolescents’ success by seeking out opportunities that benefit their schooling. This aligns with the work of Rueda, Monzo and Arzubiaga (2003), in which it was suggested that these parents would be likely to access physical and cultural capital for enhancing their adolescents’ cognitive development. In addition, these parents might be expected to pay closer attention to future education or career aspirations of their adolescent.

The growing gap between males and females in achievement may suggest that females may be more involved in structured or academic activities. Consistent with other literature, Dumais (2009) explained that when comparing gender, females from the Millennial Generation would be more likely to be involved in school activities than leisure activities. This coincides with other research that has shown a higher incidence of female participation in activities that are academically focused (Eccles and Barber, 1999; McNeal, 1998).

In summary, mathematics achievement has continued to steadily decline in the United States. Although national reports have noted gains made in the earlier grades, there has been a decline in scores as students progress to the 12th grade. Previous findings indicated that similar trends have been seen in race and gender. Black students have continued to score lower than Hispanics during the high school years. In addition, males have outperformed females on standardized tests. Although there have been countless factors that may account for the score-gap difference, generational factors may account for some differences seen in students' scores. The next section will explain the forms of capital known as school-sponsored activities, out-of-school activities, and parent involvement.

Forms of Social Capital

School-Sponsored Activities (SSA)

School-sponsored activities generate social capital and can provide a challenging setting to students outside of academics (Feldman & Matjasko, 2005). Authors have argued that the social behaviors of youth can often be influenced by their connection to social contexts (Brown & Evans, 2008). For example, Hendrix, Sederberg and Miller (1990) argued that having a sense of connection has been associated with increased academic performance. School-sponsored activities, commonly referred to as extracurricular activities, provide access to social capital that facilitates academic achievement because they encourage adolescents to see their relationship with school

more positively (Finn, 1989; Gerber, 1996). Through participation, students can develop mentoring or coaching relationships, develop strong relationships with peers who share similar interests, and interact with adults from the school or neighborhood community, who may be supportive of students' endeavors (Feldman & Matjasko, 2005; Lamborn, Brown, Mounts, & Steinberg, 1992).

For adolescents, social ties influence educational success by providing social control as well as “a source of dissemination of information and resources” (Coleman, 1988 p. 98). Coleman (1988, 1990) suggested that social ties are important for both cognitive and social development of adolescents because they create a means for accessing information from resources. He believed that social ties may also influence human capital through educational resources and by transmitting relevant information that is useful for students' academic achievement. For example, students involved in a particular activity can exchange useful information about the standards of behavior, school norms, and educational resources which can be useful for achieving academic goals (Coleman). The relationships that develop between students, teachers, and other adults can serve as a mechanism for important educational information and resources that might be otherwise unavailable to students.

Participation in school-sponsored activities allows students to develop social capital through supportive networks with friends and adults (Feldman & Matjasko, 2005; Mc Neal, 1999). The interaction students have provides a context for students to relate to adults who can reinforce academic achievement and engagement in school (Glanville,

Sikkink & Hernandez, 2008). In addition, participation can lead to students who become integrated into a community where conventional norms and prosocial (positive) behaviors promote further participation in other activities (Glanville, Sikkink & Hernandez, 2008). While the effects of participation can vary between individuals, it becomes effective for students when they can adhere to the goals of the organization.

The relevance of school-sponsored activities has been widely acknowledged in literature, and considerable attention has been devoted to adolescents between the ages of 12 and 18 (Mahoney, Larson, & Eccles, 2005). School-sponsored activities are characterized as activities involving structure, adult-supervision, and activities having an emphasis on skill-building (White & Gager, 2007). Some common activities often found include extracurricular activities (sports, clubs, and fine arts), after-school programs (programs targeted to the community with adult supervision which offer opportunities for academic assistance, recreation, and/or enrichment learning), and community-based programs and youth organizations (e. g., 4-H, Boys & Girls Clubs of America, and Girls, Inc) (Mahoney, Larson, & Eccles, 2005).

Feldman and Matjasko (2005) stated that 75% of high school students in the United States participate in school sponsored activities. In 2001, the National Center for Educational Statistics noted that the percentage of high school seniors that reported participating in athletic teams was 39%, music/performing activities, 25%; academic clubs, 15%; student council/government, 11%; and newspaper/yearbook, 10%; (NCES, 2005) In addition, seniors who reported participating in clubs/school activities were 35%

(NCES). These numbers increased in 2002 showing that 25% of high school seniors participated in academic clubs; 43% participated in athletics; 8% participated in cheerleading or drill team; 19% participated in school newspaper or yearbook; 28% participated in music, drama, or debate; and 18% participated as members of vocational clubs (NCES, 2005). By 2008, 70% of adolescents interviewed in the National Longitudinal Study of Adolescent Health reported participating in at least one school-based extracurricular activity. Given the increasing number of high school students who have been involved in school sponsored activities, understanding the contextual influence these activities can have on academic achievement remains critical.

Researchers have noted a few methodological problems in examining the findings of school-sponsored activities. Marsh (1992) explained three main problems with research relating to school sponsored activities as: (a) having limited generality due to small-scale samples; (b) having an overemphasis on sports participation, resulting in ignoring other types of extracurricular activities; and (c) previous research is based largely on white, male, high school senior athletes. All of these factors are critical when considering findings and implications of the effects of school-sponsored activities.

Previous researchers have reported that participation in school-sponsored activities are associated with increased academic achievement (Broth, 2002; Gilman, 2001), better social adjustment and higher self-concepts (Mahoney, 2000; Marsh, 1992), increased rates of high school completion, and less engagement in delinquent activities (Mc Neal, 1995). School-sponsored activities have tended to target the after-school hours

which is the time where risky behaviors occur. It has been anticipated that participation in activities that reinforce socially acceptable behaviors may protect students from school failure (Brown & Evans, 2002). An additional result of participation is that it may increase the chances of students to connect with other social activities.

Research using longitudinal data has shown that social capital gained from extracurricular activities in high school has social benefits that can explain educational advantages. Broh (2002) used the social capital model to explain the effects of extracurricular activities on high school achievement. He analyzed the National Educational Longitudinal Study of 1988 (NELS: 88) and found that social capital attributed to sports participation, helped students to improve their grades by accounting for almost half the effect on math grades; and increased English grades, accounting for over one-third the effect. Social capital was found to account for one-fifth the effect on math scores. Broh (2002) explained that certain extracurricular activities instill characteristics that align with academic values and outcomes. He suggested that through participation, students have a greater chance of developing social capital from the increased interaction between other students, peers, or teachers. In addition, students can be part of a peer group involving high achievers which can positively influence high academic outcomes.

Glanville, Sikkink and Herrnandez (2008) suggested that because participation in school-sponsored activities can provide discipline and structure to the students' daily routine, it is more likely to enhance educational success. For example, they explained that

discipline used when preparing for, attending, and sitting through an activity can transfer to the discipline needed for the academic learning environment. Therefore, students may tend to gain skills, content knowledge, and support beyond what is available in basic courses (Olszowski-Kubilius & Lee, 2004).

Although an enormous number of studies on school-sponsored activities used sports participation with high school students, only limited research has been conducted focusing on the effects of other types of extracurricular activity involvement. Both Marsh (1992) and McNeal (1995) examined the effects of participation in a large number of extracurricular activities using a nationally representative sample. Marsh (1992) examined the effect of total extracurricular activity participation (TEAP) on educational outcomes by summing up dichotomous scores for 16 categories of participation, which included sports, drama, and music, to create a TEAP score. After controlling for background variables, his findings showed that TEAP was associated with several measures such as improved grade point average, higher educational aspirations, increased college attendance, and reduced absenteeism. McNeal (1995) also looked at different types of extracurricular activity participation and examined the effects that participation had on the risk of dropping out of school by categorizing participation in four groups (sports clubs, fine arts, academic clubs, and vocational clubs). The result showed that only sports clubs significantly reduced the risk of dropping out of school compared to the other activities explored in the study. Both Marsh's (1992) and Mc Neal's (1995) findings suggest the value of examining other types of school-sponsored activities. While

these studies showed that school-sponsored activities can have different effects on achievement based on different types of activities, the extent to which certain activities may benefit students more than others remained unclear.

Although the literature on school-sponsored activities suggested that participation can have a variety of positive effects on the students' educational success, Hanson and Kraus (1998) expressed their belief that school-sponsored activities can provide a learning environment that emphasizes success, hard work, deferred gratification, planning, competition, and organization; all of which can influence success in other areas. Through participation, students can acquire attitudes, skills and values that are relevant for future success. When students create networks with other students who are achievement-oriented in activities that are heavily based on achievement, the achievement goal is likely to impact other areas of academics (Hanson & Kraus).

Participation Over Time

Reviewing research on school-sponsored activities revealed that there were relatively few studies that linked participation in organized activities over multiple years and educational outcomes. Some authors suggested that the positive educational outcomes can be attributed to the influence of the relationships that are developed with adult leaders, peers, and organizations (Gardner, Roth, Brooks-Gunn, 2008). Therefore, students who participate more frequently may earn greater benefits of emotional support and encouragement from the supportive networks they establish over time (Marsh, 1992) which can provide the motivation needed for improving academic performance.

The work of Darling, Caldwell, and Smith (2005) emphasized the effect of school sponsored activities on achievement over time, by comparing the difference in academic achievement for students who did participate and students who did not participate in school sponsored activities. The findings revealed that there were no differences in grades or attitudes in one year. Students who participated in school-sponsored activities for two or three years, however, earned higher grades; had more positive attitudes toward school; and had greater academic aspirations than students who did not participate.

Other researchers have found that participation in extracurricular activities have multiple positive outcomes over time. Zaff, More, Papillo and Williams (2003) examined the impact of participation in extracurricular activities for predicting (a) attending college (academic achievement), (b) voting in national and regional elections, and (c) volunteering for community and religious organizations. In the National Educational Longitudinal Study (NELS), 1988, four waves were used: 8th grade, 10th grade, 12th grade, and 2 years out of high school or the equivalent. Using a sample of 8,599 adolescents, this study controlled for family SES, student ethnicity, student gender, family composition, number of siblings, student reading and math test score composite, whether the student had ever repeated the eighth grade, emotional disability and student disability. Process variables used were individual-level (locus of control, religiosity, turbulence, and private school attendance), parenting, school (extracurricular activity), and peer measures. The results of a bivariate analysis showed that there was a linear relationship. This means that students who participated in extracurricular activities from

8th grade to 12th grade were more likely to attend college (70.4%), vote (66.4%), and volunteer (51.1%), than students who occasionally (48%, 51.8%, 32.3%) or never participated (16.4%, 38.8%, 14.9%). While this study showed that participation in extracurricular activities from 8th grade through 12th grade predicted academic achievement and prosocial behaviors in young adulthood, it did not reveal the specific type of extracurricular activity that was relevant for achievement.

It has been suggested by some researchers that multiple roles, such as different forms of extracurricular activities, can influence the academic outcomes for students based on the extracurricular learning that occurs. Hunt (2005) examined how participation in eight different types of extracurricular activities (athletics, cheerleading/pep club, church, community, hobby/vocational, performance activities, subject matter clubs, and total number of activities) during sophomore year affected grades and educational expectations in the senior year. Participation was measured as either participant or non-participant. Using longitudinal design, the sophomore cohort of High School and Beyond (HSB): 1980, 1982, 1984, 1986, a stratified sample of 13, 152, the study controlled for race, sex, socioeconomic status, and attitudinal measures such as self esteem or locus of control. The results showed very few causal effects of participation. Participation in extracurricular activities showed inconsistent academic effects showing a reverse causal ordering. Participation in extracurricular activities did not improve grades or educational expectations; however, as students' grades increased in sophomore year, increased participation in extracurricular activities was seen in the

senior year. These findings suggested that students' grades influenced the types of extracurricular activities they engaged in.

Other researchers have disagreed about the positive relationship between participation in school sponsored activities and academic achievement over time, suggesting that high levels of participation may be associated with adverse academic outcomes (Cooper, Valentine, Nye & Lindsay, 1999; Marsh & Kleitman, 2002). Specifically, some researchers have reported that more time spent on organized activities distracts students from family time and schoolwork and adversely affects academic performance (Marsh & Kleitman, 2002). Mahoney, Harris, and Eccles (2006), explained the zero-sum concept noting that when there are high levels of intensity, extracurricular activity commitments compete with academics and that this can adversely affect academic performance. In 2006, Mahoney, Harris, and Eccles conducted an analysis of adolescents' time diaries and predicted slightly lower scores and student well being (self esteem and frequency of parent-child discussion) for African American students participating in more than 20 hours of organized activities. However, for students having less than 20 hours a week of participation, less frequent participation predicted better well being (reading achievement, psychological adjustment, lack of substance use, and good parent-adolescent relationship). The authors suggested that moderate participation can be associated with better chances for success.

Participation rates can vary depending on the type of activity in which students are involved. Mc Neal (1995) explained that previous participation in earlier grades can

predict future access in the activity. He emphasized that certain activities (specifically athletics, cheerleading, and fine arts) require early access (sometimes as early as middle school); therefore, students who have not been involved in these programs will have a difficult time gaining access during high school. However, other activities such as academic clubs, newspaper/yearbook, and student service/government activities are more open for new student access. Consequently, when students have a predisposition of gaining access in an earlier grade level, it provides future access in a later grade level.

Other literature has detailed a decrease in participation rates as students progress from the sophomore and senior years, noting that participation tends to decline as students progress towards the upper grades (Hanson & Kraus, 1998; Passmore & French, 2001). According to Hunt, students tend to participate more in school-sponsored activities as sophomores as a way to enhance their prospects for college (Hunt, 2005). Since colleges use participation in school-sponsored activities as one selection criterion, students are more likely to have increased participation during the sophomore year in order to have opportunities for obtaining recommendation letters for college (Hunt, 2005).

Hunt (2005) explained that students' grades also influenced participation. He explained that students having low grades will tend to have less participation in activities sponsored by their school while students who do well academically tend to be more involved in activities. Students' level of participation can also be decreased depending on their post high school aspirations. Students who are not college bound tend to become

focused on non academic ventures such as, hobby and vocational clubs, which often leads to them putting less emphasis on involvement in academic clubs (Hunt, 2005).

Out-of-School Activities (OSA)

Within educational literature it has been commonly known that classroom structure and instructional content in the classroom are major influences on academic achievement. There are, however, other variables such as the way students spend their out-of-school time that are important factors influencing school success (Cooper, Valentine, Nye, & Lindsay, 1999). Although much has been said about school-related extracurricular activities, less focus has been placed on social capital transmitted from out-of-school activities related to academic success (Marsh & Kleitman, 2003). Social capital as a form of out-of-school activities can mediate the effects of achievement by the presence of supportive adults and peers who can encourage students to achieve their goals (White & Gager, 2007). When students become engaged in out-of-school activities they develop positive connections through social and civic activities in the community. By participating in out-of- school activities, students increase their chances for social capital because they are likely to have access to resources in the community that can enhance their educational achievement (Isreal, Beaulieu, Hartless, 2001).

Although there are many kinds of out-of- school activities, community service has been very common among high school students, either through service-learning or through voluntary work in the community not linked to the course curriculum (Niemi, Hepburn, & Chapman, 2000). According to the National Household Education Survey

(NHES) completed in 1996, over half of 9th through 12th graders reported participating in community service or volunteer work. The trends in student characteristics showed that students in the 11th and 12th grades were more likely to participate in community service activities than were students in the 9th and 10th grades during 1996 and 1999 (NHES, 1999). Some reports have explained the annual participation rates of high school students in community service or volunteer work to be as high as 67% (Niemi, Hepburn, & Chapman, 2000).

While limited data were available on volunteering patterns over-time, surveys in 1992 and 1996 resulted in reports of no change in the proportion of teenagers who participated in volunteer activities (Niemi, Hepburn, & Chapman, 2000). Other reports examining volunteer patterns of students who volunteered two years and eight years after scheduled high school graduation reported notable patterns. Planty, and Regnier (2003) found a 25% percent decline in community service participation over-time and they explained that even when 44% percent volunteered during high school, 8 years later (in 2000), only 33% remained as volunteers.

Studies using longitudinal datasets have reported an increase in the participation rates for volunteer work and community service. For example in 2001, the National Center for Education Statistics reported a growth in the number of high school seniors participating in community affairs or volunteer work at least once or twice a month. This represented an increase from 24% in 1980 to 34% in 2001 (NCES, 2005). In 2001, the growth patterns showed that 3% of seniors participated in community affairs or volunteer

work daily, 10% participated weekly, and 20% participated once or twice a month (NCES). This suggests that the rates of volunteering and community service have been increasing among students.

Participating in out-of-school activities can provide students with skills that facilitate learning such as organization, planning, and time management that are important for school success (Dotterer, McHale, Crouter, 2007). However, it is clear that not all out-of-school activities have had the same effects on achievement. A few studies were conducted to examine time spent out-of-school more generally. For example, Schreiber & Chambers (2002) analyzed the relationship of participation in non-academic activities on academic achievement. Using the NELS: 88 study, the authors found that non-academic activities, in spite of whether they were organized (supervised by an adult) or not organized (not supervised by an adult), were not related to academic achievement.

When researchers have used different classifications for out-of-school activities, such as structured (adult-led activities) and unstructured (leisure) activities, different results have been observed. McHale, Crouter, and Tucker (2001) examined the relationship between participation in structured and unstructured activities and school grades. These authors sought to compare the effects of structured and unstructured out-of-school activities on achievement. Reportedly, a positive relationship was found between structured activities, such as sports, and school grades. Yet unstructured activities were negatively associated with increased school grades. Clearly, the results

relating to the effects of out-of-school activities have been mixed. Different types of activities have been known to have differential effects on student achievement.

Given the types of activities that are available for youth participation, several other studies have been conducted to investigate why youth participate in a variety of organized activities ranging from extracurricular activities (e.g., sports, art, science, and civic activities), community-based organizations (e.g., Boys & Girls Clubs, Girls Inc., YMCA), and after-school programs (Fletcher, Elder & Mekos, 2000; Huebner & Mancini, 2003; Mahoney, Harris & Eccles, 2006; Raymore, Godbey, & Crawford, 1994; Simpkins, Davis-Kern, & Eccles, 2005). Using participants ranging in age from 9- to 19-years old, and of diverse race/ethnicity and economic background, students were asked to describe the reasons for their participation, either on an individual basis or as part of adult-led focus groups. The most common reasons both adolescents and preadolescents gave for participation include: (a) enjoyment and excitement (Gambone & Arbretton, 1997; Mahoney, Harris, Eccles; Passmore & French, 2001), (b) encouragement and support received from friends or parents (Fletcher et al., 2000; Godbey, & Crawford, 1994; Huebner & Mancini, 2003; Raymore et al. 1994; Simpkins Davis-Kern, Eccles), (c) opportunities to challenge oneself, build skills, and increase self worth (Carruthers & Busser, 2000; Gambone & Arbretton, 1997); (d) desire to interact with activity leaders and friends (Huebner & Mancini, 2003), and (e) personal safety (Borden et al., 2006; Gambone & Arbretton, 1997).

Despite the reports suggesting why students participate in out-of-school activities, Jordan and Nettles (2000) argued that students spend the majority of their after school and weekend time in structured activities that are likely to facilitate learning. These authors examined the impact out-of-school activities had on academic achievement to determine which specific activity was most influential for success. This study differed from previous studies by comparing different types of structured activities. Using the NELS: 88 Longitudinal Survey of 25,000 Students, Jordan and Nettles found that most of the out-of-school activities they examined, such as time spent in structured activities, time spent with adults, and involvement in religious activities, were positively associated with higher math and science achievement. Additionally, they also found that out-of-school activities in the 10th grade increased academic achievement in the 12th grade, and time spent in activities outside school had a positive effect on student participation in school-related activities such as participation in clubs. The authors stressed that when adolescents were involved in positive, meaningful, and structured out -of-school activities, they were found to be more likely to make personal investments in schooling, and be more engaged in their class work. This, in turn, was likely to positively impact academic achievement.

Other researchers have noted an increase in test scores based on structured activity participation. Cooper, Valentine, Nye, and Lindsay (1999) examined the relationship between participation in five types of out-of-school activities and academic achievement. They surveyed a sample of 424 students in grades 6 through 12 to

determine the relationship participation had on standardized achievement test scores and grades. After controlling for student background characteristics (SES, race, gender, grade level), they found a positive relationship between participation in structured out-of-school activities, grades and standardized tests. They explained that test scores were increased by 7% based on out-of-school activities, and grades were increased by 11%. This was nearly three times greater than the initial prediction with the background variables. These findings aligned closely with Marsh (1992) and the existing literature which suggested that structured activities can lead to students becoming more motivated, interested, and invested in school.

The networks students create from positive peer association and adult role models have been viewed as an influential factor for students' academic success. Valentine, Cooper, Bettencourt, and Bubois (2002) believed that performance was positively impacted when students associated with groups that were academically focused and valued peer connections that promote identification with the school. The main link between activity and achievement was the association students have with peer group or other adults within the group and the type of activity in which students are involved (Valentine et al.). Downey and Yaun (2005) suggested that certain activities may provide access to networks of people who value skills that encourage the development of specific academic skills.

Peer group associations are relevant because as adolescents increase in age, they spend more time with people who are similar to themselves. Larson and Verma (1999)

believed that since adolescents tend to spend a large proportion of the time with peers and are involved in self-structured leisure activities they develop supportive relationships mainly with their peers by “just hanging out”. It is also likely that the ties students create can be with students having strong academic goals. Crosnoe (2001) noted that the characteristics of a peer group influenced participation experiences in the observation that academically successful friends tended to have higher academic achievement themselves. Interacting with high achieving adolescents increases the chances for having better academic outcomes. Eccles and Barber (1999) found that youth who participated in prosocial (volunteer or church activities) activities had more friends who planned to attend college and fewer friends that drank or used drugs than their peers who did not participate in prosocial activities. However, these authors emphasized that students who participated in team sports reported more incidences of drinking behavior and having friends who drank more often than peers who did not participate in sports. Clearly, the peer connections established from different types of activities have been found to yield different behavioral effects on students.

Jordon and Nettles (2000) explained that various school and community–related involvement might promote school investment, suggesting that the type of activities outside of school can influence students’ academic achievement and engagement in school. Jordon & Nettles investigated the extent to which various types of out-of-school activities influence adolescents’ personal investment in and commitment to school using a sample drawn from the National Education Longitudinal Study of 1988 (NELS: 88),

student data from grades 8, 10, 12, and two years post high school graduation. The common out-of-school time was identified as: time spent in structured activities (community-based); time spent “hanging out” with peers; time spent alone (hobbies or reading); time spent with adults; time spent in religious activities; and time spent working for pay. The results showed that student participation in structured activities, religious activities and time spent interacting with adults during the 10th grade had positive and significant effects on educational outcomes (school engagement and achievement) by the 12th grade. However, time spent hanging out with peers was negatively associated with educational outcomes. Time spent working for pay and time spent alone had inconsistent results. These results suggested that the ways in which students use their time during the typical day (excluding time spent in school) can have important repercussions for their educational success and perception of life chances. Students who were hardly involved in meaningful experiences outside of school risks losing the personal development and self-improvement that often occurs through interactions, which can impact achievement.

While out-of-school activity can have favorable effects on students, it only becomes relevant when the activity itself reinforces socially acceptable behavior. Mahoney and Stattin (2000) suggested that adolescents who tend to have high involvement in low structured activities were more likely to report that their peers “stayed out on the town all night” and were apprehended by the police. The associations were determined to be more likely to promote different subcultures that were not

consistent with academic values and, as a result, could have a negative impact on students' academics.

In summary, researchers have indicated that what takes place outside the school affects students just as strongly as what takes place inside the school (Fashola, 2003). As students interact through different social networks, they are exposed to different sources of knowledge, services, and assistance that can be useful for success in school. Taken jointly, the knowledge gained through the affiliation in the networks of out-of-school activities can provide the mechanism by which students live their lives and make academically-related decisions that impact their educational success. Recognizing that not all out-of-school activities will yield the same results for improving academic success, more research is needed to differentiate the activities more relevant to educational success. In the next section research on gender and school-sponsored activity and out-of-school activity will be discussed.

Gender and School-Sponsored and Out-of-School Activity

McNeal (1998) reported differential participation patterns by gender and suggested that to some extent, sex segregation is a key factor for the differences in participation rates by gender. He believed that certain types of school-sponsored activities such as athletics have been less open to female participation. He also found that boys were more likely to participate in athletics than girls, and that girls were more likely to participate in other types of extracurricular activities (cheerleading, fine arts, academic clubs, newspaper/yearbook, service/government, vocational activities). These results

coincide with those obtained from national database samples in which it was found that by 2001, females tended to participate more than males in newspaper/yearbook, music/performing arts, academic clubs, student council or government, and other school clubs or activities (NCES, 2005). Additionally, between 1990 and 2001, music/performing arts showed a significant increase in participation rates by females compared to other activities during that time (NCES).

Other authors have explored differential patterns based on gender. Eccles and Barber (1999) examined the benefits associated with five types of activities: prosocial (church and volunteer activities), team sports, school involvement, performing arts, and academic clubs. They found that girls not only had higher participation rates than boys, but also that they had participated in a wider range of activities than boys. Girls were more likely to be involved in prosocial (church and volunteer activities), performing arts, and school involvement activities. Boys were more likely to be involved in different types of sports and coached-related activities.

Posner and Vandell (1999) conducted telephone interviews with low-income white and African American students in Grades 3-5 and found that as early as third grade, females were more likely to participate in academic activities and socialized at higher rates than males. However, consistent with the findings of Eccles and Barber (1999) and Mc Neal (1998), males were seven times more likely to participate in coached sports than were females. In the study of Worrell and Bucknavage (2004), they surveyed high school students across nine areas: dance, solo instrument, choral music, band, athletics, student

government, academic clubs, ethnic/cultural clubs, and other activities. The findings differed from previous studies by showing that participation for both male and female students was highest in athletics. Participation rates in music, dance, drama/acting and debate were higher for females than for males.

Hanson and Kraus (1998) examined the relationship of participation in sports on mathematics and science achievement. They found that sports participation led to better math and science achievement in girls, but not in boys. Silliker and Quirk (1997), found that when examining academic performance of interscholastic athletes (in-season verses out-of-season) among a combination of freshman, sophomore, junior, and seniors, there were positive effects of participation during the in-season academic quarter. The results showed that girls had higher GPAs than boys during in-season than out-of-season. Additionally, among the boys' scores, there was a significant difference in boys' GPA mean scores in that these scores were higher for boys during in-season than out-of-season.

Consistent with the findings of school-sponsored activities, certain out-of-school activities have been found to have higher incidence of female participation than male. As McNeal (1998) and Eccles and Barber (1999) indicated, females in high school consistently have been found to be more likely to volunteer and participate in community service than their male counterparts (NCES, 2000; NHES, 1999). During 1996 and 1999, females were more likely than males to participate in community service (NHES, 1999).

By 2000 the National Center for Educational Statistics reported that high school females (50%) were more likely to volunteer than males (38%). Moreover, when male and female volunteers were compared, females (14%) were more likely to be “consistent volunteers” than males (11%).

In 2001 the rates continued to show an increase by gender. Females (39%) were more likely than males (28%) to participate in community affairs or volunteer activities monthly (NCES, 2005). Downey and Yaun (2005) suggested that activities outside of class play a role in reinforcing conceptual information which encourages school performance and test scores. Consistent with the work of Eccles and Barber (1999), they believed that boys tended to be involved in more activities that promote quantitative skills, while girls tended to be involved in activities that promote verbal/reading skills. In their study, they examined the differences in outside activities by gender to see the relationship between reading and math scores. Using the NELS: 88 and the follow-up studies in 1990 and 1992 and students in grades 10-12, they found that girls spend more time in out-of-class activities connected to verbal/reading skills, whereas boys spend more time in outside activities that more likely promote math skills during grades 10 and 11. After controlling for 8th grade reading test scores, they found that females outscored males in the 12th grade. They explained that test score differences between genders could be accounted for by the variety of activities that girls and boys participated in outside of school. While a small percentage was accounted for by differences in course-taking patterns between genders, outside activities explained more than half of the gender

differences in skills acquired during high school. Although it was emphasized in this study that girls and boys spend their outside of school time differently, it was viewed as likely that the type of activity strongly influenced students' academics.

Murtaugh (1988) suggested that outside of school activities provide a way for students to create social connections in their community. Murtaugh investigated the impact of nonacademic activities on high school students from the 10th-12th grades and found that girls tended to be less involved than boys (50% versus 80%). However, he also found a correlation between activity involvement and SES. He noted that families having low SES tended to discourage outside activity involvement more than did families with high SES. Hedges and Nowell (1995) used six nationally representative data sets and reported "the largest sex differences occur in areas not generally taught in school (mechanical comprehension and vocational aptitudes)" (p. 45). This suggested that the characteristics of the activity impacted the genders differently and could be important in terms of the skills that students are able to transfer into the classroom setting. Hamilton (1998) analyzed the NELS:88 and found that sex differences in performance on the NELS standardized science tests were largest for questions that required information "commonly acquired through extracurricular activities" (p. 179). Moreover, when she conducted a follow-up interview with 25 high school students requesting them to 'think aloud' as they answered science questions, many students reported using outside knowledge on one or more items. This suggested that activities outside the classroom

may have played a significant role in reinforcing conceptual information which may in turn promote the academic performance of students.

Race/Ethnicity and School-Sponsored and Out-of-School Activity

Longitudinal studies have resulted in mixed findings concerning racial differences in participation rates of school-sponsored activity. Hanson & Kraus (1998) examined the relationship between school-sponsored activity and academic achievement. Similar to many of the previous findings, using the High School and Beyond (HSB) longitudinal data, the authors found that sports participation was not associated with improved grades or test scores in African American or Hispanic students.

Gerber (1996) used the NELS:88 longitudinal data to compare the participation rates of African American, White and Hispanic students in public schools to see how general school-based activity and out-of-school activity influenced math, reading and science achievement. The results showed that there was a positive relationship between participation and academic achievement indicating that students who participated had higher gains in academic achievement than students who did not participate. When comparing race results, Hispanics had the lowest participation rates. Increased participation rates for African American students were found in specific areas such as, yearbook and computer clubs, whereas for whites, increased participation rates were found in band/orchestra, dance, and religious organizations.

Other researchers found similar patterns in participation over time. Brown and Evans (2002) compared participation rates of 1,739 students in the 7th through 12th

grades. They surveyed several ethnic groups, including African American, Asian American, European American, Hispanic American and mixed ethnicity to determine participation in sports activities, fine arts activities, in-school activities, or out-of-school activities. The results showed African American and European American students had higher participation rates than Hispanic Americans in fine arts, while Asian Americans were less involved in out-of-school activities than European Americans. Yet, overall African Americans had greater rates of participation in all activities than did Hispanic students.

Similarly, McNeal (1998) compared differential participation rates between blacks and Hispanics using the NELS-88 longitudinal database. After statistically controlling for SES and gender, his findings revealed that Blacks had higher participation rates than did Hispanics during high school in all forms of extracurricular activities, except for academic clubs, while Hispanics had lower rates in most of the activities. These results concurred with the findings of Hanson and Kraus (1998) and Brown and Evans (2002) showing that African American students had higher rates of participation, than did Hispanic students.

In another study Lisella and Skewatka (1996) examined the relationship between extracurricular activity and academic achievement for minority students attending urban schools. They used a sample of 766 eighth grade White, African American, Hispanic and American Indian decent students from poor inner-city high schools. Although previous researchers had found differences in participation patterns, this study found that there

were few differences in extracurricular participation rates between African American and Hispanic students. It was noted that the pattern of participation was similar to the same patterns in the general student body, and there were similar patterns for white peers attending the same inner-city schools. Lisella and Skewatka did find differences in achievement levels between male participants and non-participants. They noted that male minority students who participated in extracurricular activities had significantly lower academic achievement than males who did not participate.

Other researchers found a relationship between types of activity in which students participate and specific achievement gains. Schreiber and Chambers (2002), analyzed a stratified sample of 8,305 minority students from the 8th through 10th grades using the NELS:88 longitudinal study. Their aim was to find the relationship these activities would have with academic achievement by categorizing the type of extracurricular activity involvement. They classified extracurricular activities as (a) in-school/academic/organized, (b) in-school/non-academic/organized, (c) out-of-school/non-academic/organized, (d) out-of-school/non-academic/non-organized, and (e) out-of-school/academic/non-organized. This study differed from previous studies by showing that in-school and out-of-school activity impacted different academic areas. The results showed that in eighth grade in-school academic and organized activities predicted academic achievement but differed across content areas and ethnic groups. In-school academic and organized activities predicted academic achievement for Latinos in geography/history. Although in-school academic/organized activities predicted academic

achievement for African Americans, the achievement was not associated with any specific subject area. However, out-of-school/academic/non-organized activities were associated with mathematics and reading achievement for the eighth grade African Americans. For Latinos, out-of-school/academic/non-organized activities were related to achievement in geography/history, reading, math and science.

While there has been a robust amount of literature on school-sponsored activities, limited literature concerning race/ethnicity in out-of-school activities has been cited in academic databases that differentiates out-of-school activities from school-sponsored activities. The researcher broadened the search term to include leisure activities and obtained with limited results the research discussing race/ethnicity which referred to out-of-school activities in the context of extracurricular activities. For this reason the researcher sought to focus on volunteer patterns since this area has been discussed in literature as the most common out-of-school activity for secondary school students.

The National Center for Educational Statistics (NCES), (2003) reported national differences in volunteer rates in high school during 1990-1992. They noted that Blacks (36%) were more likely to volunteer than Hispanics (38%). However, between the high school years (1990-1992 and 2000) there was a decline in volunteering patterns which showed that two years after high school (1994) Hispanics performed higher rates of volunteer activities (33%) than Blacks (15%), yet Blacks were more likely to volunteer in church-related organizations than other types of organizations. These rates changed eight years after high school (in 2000) where Blacks had higher rates of volunteering (41%)

than Hispanics (31%). By 2000, 29% of Blacks were more likely to volunteer in youth organizations while 27% tended to volunteer for civic or community organizations. Among Hispanics, 20% volunteered in youth organizations while 19% volunteered for civic or community organizations (NCES).

Overall, the findings of these studies have suggested that the way students spend their in-school and out-of-school time impacts their achievement. When students are engaged in activities that develop specific learning skills, there is an increased chance for improved academics. Although the studies seemed to indicate that gender and race differences were found in types of activities in which students engage, there have continued to be mixed findings regarding the relationship between participation and academic achievement. Parental involvement and the relationship to academic achievement will be discussed in the next section.

Parent Involvement (PI)

Parent involvement has been discussed in the literature as contributing to high school students' academic outcomes, attitudes towards school and aspirations about schooling (Elish-Piper, 2008). Evidence has suggested that adolescents whose parents take part in their education have been more academically successful compared to students with parents who do not participate in education (Ho Sui-Chu & Williams, 1996). Those studying parent involvement have claimed that involved parents have contributed positively to increased grade point averages for adolescents, higher scores on standardized assessments and classroom assignments, enrollment in more rigorous

academic courses, more passed classes, more credits earned towards graduation (Henderson & Mapp, 2002), and higher graduation rates (Fan & Chen, 1999; Gutman & Midgley, 2000). Reportedly, parent involvement has been associated with lower rates of retention and low chances of dropping out of school (Elish-Piper). Not only has parent involvement been shown to affect specific high school grades, but length of involvement was linked to an increase in grades and suggested that the effects of parent involvement accrue over time (Castsambis, 2001). Parent involvement extends to other areas of schooling and has also been found to (a) influence better attendance, (Henderson & Mapp), (b) improve preparedness for classes (Simon, 2004), (c) decrease disruptive behavior in school (Gutman & Midgley), and (d) influence positive attitudes toward schooling (Shumow & Miller, 2001). Clearly, parent involvement makes a substantial contribution on high school students and has been additionally found to impact students' motivation, effort and engagement in class (Elish-Piper, 2008).

Despite the wealth of studies concerning the relationship between parent involvement and the findings indicating parent involvement leads to better academic achievement (Coleman, 1991; Epstein, 1991, 1992; Ho-Sui-Chi & Williams, 1996), other researchers have suggested that parent involvement is associated with lower levels of achievement (Horn & West, 1992) or does not affect achievement at all (Epstein; Keith 1991). While many of the studies on parent involvement have been based on White samples, it is believed that strategies used to foster academic success for White students may not be relevant for racial/ethnic groups (Steinberg, Dornbush & Brown, 1992).

Because of the multiple ways parent involvement has been defined (Fan & Chen, 2001), and because the influence of parent involvement varies by family relationships and experiences, race, ethnic background, social class, students' grade level, and school policies (Epstein, 1992; McNeal, 1999), there have been inconsistencies in the research on this factor of social capital.

Lopez, Scribner and Mahitvanichcha (2001) emphasized that some problems with parental involvement models are that they often rely on the cultural deficit approach which stresses traditional types of parent involvement; and traditional approaches do not consider the way parent involvement varies by ethnic groups. While Coleman (1988) has suggested that parent involvement varies by ethnic group, it has been well known that students of different ethnicities have different home experiences (Yan, 1999) and have parents with different parenting styles (Steinberg, Dornbush & Brown, 1992). African American and Hispanic American parents have been found in literature to have more authoritative parenting styles, while Asian American parents have been found to be less authoritative (Steinberg et al. 1992). Jackson and Remillard (2005) explained one common problem often seen in the parent involvement literature. He believed that parent involvement is most often evaluated from the school's viewpoint; therefore, parents who participate in untraditional ways are often perceived in the literature as being least involved. Finally, Peng and Lee (1991) suggested that perceptions of educational expectations have been shown to vary between different ethnic groups with Asian American children perceiving their parents as having higher expectations for their

education than African American, Hispanic American, Native American or European American children (Peng & Lee, 1991).

Based on the social capital model, parents maintain a positive relationship with their adolescent when they foster learning at home by providing emotional support and encouragement for academic pursuits (Croninger & Lee, 2001, Hao & Bonstead-Bruns, 1988; Yan & Lin, 2005). Epstein (1992) stated that:

Students at all grade levels do better academic work and have more positive school attitudes, higher aspirations, and other positive behaviors if they have parents who are aware, knowledgeable, encouraging, and involved. (p. 1141)

Other reasons for lack of involvement have been expressed. Researchers have suggested that lack of involvement can be attributed to barriers experienced by parents. In Lopez, Scribner and Mahitvanichcha's (2001) qualitative study involving four school districts with a large migrant population, it was found that parents were able to meaningfully participate in their child's education when their social, economic, and physical needs were addressed. Lopez and colleagues emphasized that for parent involvement to be successful, the economic and structural barriers have to be recognized by schools, and the cultural and educational strengths of parents also need to be recognized.

In another study, it was claimed that lack of involvement was associated with developmental stages of adolescents. It was suggested that as children grow older, parent involvement decreases due to parents believing that their involvement is less important in the middle and high school grades than the earlier grades (Stevenson & Baker, 1987).

DePlanty, Coulter-Kern and Duchane (2007) highlighted additional factors that contributed to less parental involvement in schooling. They believed parents having minimal social networks were more likely to have less involvement, while parents having more networks were likely to be more involved and aware of educational needs. Family socioeconomic status (SES), often measured by parent education level and family income, has been a strong indicator of educational success (Desimone, 1999; Jeynes, 2007; Stewart, 2008; Yan, 1999). Education level of parent has also been found to influence parent involvement. Stevenson and Baker (1987) found a positive relationship between mothers' education and the level of parent involvement in school activities, indicating that parents with more education may tend to be more active in school activities such as Parent-Teacher Association meetings or parent-teacher conferences than parents having less education. The authors suggested that parents' level of education may also be associated with a decrease in parental involvement because as students move from elementary to secondary education, parents may be less knowledgeable of the academic subjects taught in school. Parents having more formal education can provide home environments that encourage educational success and support participation in educational related activities (Yan, 1999). Contrary to these findings, Ho Sui- Chu and Willms (1996) found little support for the notion that parents of low SES are less involved in their children's schooling than parents of higher SES.

Coleman (1988) and Dika and Singh (2002) have suggested that parent involvement can build social capital through the relationships between the adolescent and

the parent, and the relationship between a student's parents and other adults. When parents become acquainted with each other, they are more likely to receive feedback about their own adolescent's behavior outside the home (Pong, Hao, & Gardner, 2005). The ties parents establish between each other and the family impact the decisions made about schooling. In a longitudinal study using NELS: 88, Carbonaro (1998) found that the likelihood of dropping out of high school decreased when parents had more ties with the parents of their children's friends.

Catsambis (2001) expressed the belief that as children mature they need a different type of parental interaction. She examined the correlation between parental involvement practices and educational outcomes for high school seniors. Her goal was to highlight long-term connections between multiple parental involvement practices and high school seniors' achievement growth, coursework and academic program enrollments. Using data from the NELS: 88, her findings showed that students needed less parental involvement through supervision during the last year of high school,. Although her findings revealed that parental practices were not linked to increased test scores during high school, she found that active encouragement to prepare for college was valuable during the final year of high school. Catambis expanded on the types of helpful parental involvement as follows:

During high school the types of parental involvement that are most important for teens' academic success are not usually geared towards behavioral supervision, but rather they are those geared towards advising or guiding teens' decisions. Therefore, parents who stay well informed about important academic issues could still be helpful to high school students who may be making their own decisions about school. (p. 169)

Yan (2000) suggested that parental involvement as a form of social capital has been effective in mediating the effects of underachievement. Yet, she argued that direct parent and school involvement was not as important for academic achievement for African Americans as frequent parent-child conversations about schooling (Yan, 1999). Yan compared parent involvement as a form of social capital held by successful African American students with parent involvement of non-successful peers. Social capital was measured as (a) parent-teen interaction, (b) parent-school interactions, (c) parent-parent interactions, and (d) family norms. Her results showed that there were differences in parent involvement between students. She noted that successful African American students had higher levels of social capital than their non successful peers.

Social capital is transmitted through discussions parents have with their adolescent only when the conversations convey parents' expectations and norms (Pong, Hao, & Gardner, 2005). Therefore, not all discussions constitute social capital. Discussions about school related activities, topics studied in class, and school in general allow parents to take an active interest in students' day-to-day and long-term educational activities. This results in the student exerting greater effort to perform better academically with fewer chances to engage in negative behavior (McNeal, 1995). Through discussions, parents can become more aware of factors such as an adolescent's disengagement from school which is often associated with lower academic performance and a greater chance of dropping out (Fin, 1989; McNeal, 1995, 1999).

Longitudinal studies have been conducted to examine the effects of parental involvement during different grade levels. During the eighth grade, Ho Sui-Chu and Willms (1996) found parents' discussions with their 8th-grade adolescents about school-related topics had the strongest impact on 8th grade mathematics performance. Contrary to this finding, Ma (1999) examined the over time effects for students in grades 8-12 and reported that home discussions had no effect on mathematics achievement from the 8th grade; however, it had a significant effect in the 10th and 11th grades. Findings were similar for the 10th grade. Stewart (2008) found that in addition to parent involvement (through discussions), student effort, and peer association had a much stronger effect on mathematics achievement than did school-related activities, school climate, school education and socioeconomic status. These findings suggested the value of parental involvement as the students progress through their high school years.

The debate in parent involvement literature relating to ethnicity was that parents want to provide a home environment that supports learning; however, there was uncertainty about the specific type of behavior needed for enhancing academic success (Anguiano, 2004). Although some researchers noted that there was little support for high levels of parent involvement from Hispanic parents (Yan & Lin, 2005), there was some disagreement. Chavkin and Williams (1999) surveyed 506 Hispanics parents to examine parent involvement behaviors in Hispanic families. The results of this qualitative study showed that although parents provided little assistance at home, over 90% of them wanted to take part in helping their children at home with school work and other

activities. The authors reported that parents provided support by attending activities such as school performances and open houses.

Yan and Lin (2005) investigated three dimensions of parent involvement (family obligations, family norms, and parent information networks) as they related to 12th-grade math achievement using a longitudinal study (NELS: 88). Their goal was to see how these relationships varied across four ethnic groups including African American, Hispanic American, Native American and Caucasian. The results aligned with those of Yan (1999) showing that African American parents had high levels of contact with the school about their teenager's performance. There was a positive relationship between the parent obligation indicator (discussions about school topics) and mathematics achievement. Close parent-teenager relationship (through discussions) was the major way that achievement was impacted for most groups; For Hispanic American students, mathematics achievement was mainly impacted by the family norms indicator, educational expectations. The authors explained that this finding may be due to the common findings showing that Hispanic parents are not aware of ways of assisting their children academically.

Desimone (1999) investigated the effects of 12 types of parent involvement across several racial-ethnic and income groups. The purpose was to examine the extent to which discussion about school topics would impact academic achievement. Using data from the National Education Longitudinal Study of 1988 (NELS: 88) Desimone found that discussions with parents was one of the best predictors of achievement for Hispanic and

Black students, but there were differences between parents. His findings suggested that discussions with mothers were positively associated with achievement, whereas discussions with fathers predicted a decrease in test score. The authors noted that this finding may be explained by the tendency for mothers to be more involved in their adolescents' schooling on a day-to-day basis, while fathers tend to be involved when there are behavioral problems affecting their adolescents' academic achievement.

In summary, parental involvement has been recognized as capable of impacting academic achievement of students at all levels of education. Researchers have indicated, however, that parent involvement declines and the type of parent involvement changes as the students progress from the sophomore to senior academic years in high school. Given the mixed findings, a better understanding about the effects of parental involvement is needed for understanding the effects on academic achievement.

CHAPTER 3 METHODOLOGY

Introduction

This chapter contains the methodology and procedures used in the study. It has been organized to address (a) the research design of this study, (b) the sample, (c) instrumentation, (d) the assessment battery and a description of the variables, (e) the procedures used in processing and analyzing the data, and (f) a summary.

Research Design

Secondary data analysis was utilized in this study in order to determine differences in groups of students over time. Using variables from the ELS: 2002 dataset enabled the researcher to define groups and conditions to compare.

The ELS: 2002 dataset had two distinctive features: First, it was a longitudinal study, meaning that the same individuals were surveyed repeatedly over time and secondly, it was a multilevel study, meaning that information was collected from multiple respondent populations that represent students, their parents, their teachers, their librarians, and their schools. The multilevel focus provides researchers with a comprehensive picture of the home, school, and community environments and their influences on the student. The ELS dataset contained many hundreds of possible variables to draw upon and combine in examining social capital factors that could be important to student achievement (Ingels, Scott, & Owings, 2004)

Statistical analysis was used in this study to test the relationships between three categories of social capital factors identified as: school-sponsored activities (National Honor Society, academic clubs, band, orchestra, chorus and choir), outside of school activities (volunteering or performing community service, and playing non-school sports) and parent involvement. The goal of this study was to investigate the effects of participation in school-sponsored activities, out-of-school activities, and parental involvement (discussions about grades and SAT/ACT) on math achievement for African American and Hispanic high school students. Quantitative longitudinal data from the Educational Longitudinal Study of 2002 (ELS: 2002), 2004 base year (10th grade), and the first follow-up year (12th grade) data file were used to address study questions. The ELS: 2002 study was a nationally representative longitudinal study conducted by the National Center for Educational Statistics (NCES), and presented a profile of American high school sophomores in 2002.

An essential construct for this study was the measurement of student achievement in mathematics that related to student background variables and educational processes. The ELS: 2002 provided information on education-related behaviors, high school and transition. Furthermore the dataset was ideal in that it provided in-depth information on students' behaviors, tendencies, values and attitudes about their educational experiences.

The dependent variable used for this study was math academic achievement which was measured in the dataset by the Mathematics Item Response Theory (Math IRT), which is the estimated number of right scores, given at the base and follow-up

assessments. Because the researcher was examining two time periods, the repeated measures or within-subjects design was used.

Since the researcher's goal was to examine changes that occurred in academic achievement over time, the Item Response Theory method was used to account for the changes that occurred between assessments (Ingels et. al., 2005). Using the base year assessments of the independent variables would mean that engagement in the social capital factors could have occurred prior to the base year mathematics assessment, but could have changed in terms of engagement during the time between the base year and the follow-up assessments. Using the follow-up assessments ensured that the same time period held significance for both the independent and dependent measures.

Sample

The NCES ELS survey sample had a two-stage sample selection where schools and students were surveyed. The total sample included a cohort of student participants (N = 16,252) enrolled in the schools in the target population for the base and follow-up for full-scale ELS: 2002, which included public, Catholic and other private schools in the United States.

In the first stage of the NCES ELS: 2002 sample selection, schools were contacted for the study. A total of 1,221 of public, Catholic, and other private schools were contacted. A stratified sampling frame was selected by the nine-level U.S. Census divisions with New England and Middle Atlantic Census divisions combined: (a) New England/ Middle Atlantic, (b) East North Central, (c) West North Central, (d) South

Atlantic, (e) East South Central, (f) West South Central, (g) Mountain, and (h) Pacific. Additional stratifications were made by metropolitan status or level of urbanicity in each of the public school divisions: (a) urban setting, (b) suburban setting, and (c) rural setting. The sampling for Catholic and other private schools involved having participants identify their affiliation as Roman Catholic and other schools. In addition further stratifications were made by based on the four-level Census regions: (a) Northeast, (b) Midwest, (c) South, and (d) West. Schools were selected with probability to proportion size (Ingels et al, 2004). Of the eligible schools, 752 agreed to participate in the study; 580 were public schools and 172 were private schools. The 10th grade population represented 27,000 schools in the United States for a 67.8% weighted response rate.

In the second stage of the NCES ELS: 2002 sample selection, 26 students per school was selected from enrollment lists by a random selection on 10th grade students in within each school. Quality checks were performed on the students. The eligible students were 17,591; however, 15,362 participated in the study yielding an 87.28% weighted response rate. In total, 15, 362 tenth grade students, representing 3.6 million tenth grade students in the United States were included in the sample (Ingels et al., 2004a).

The first follow-up sample design included the following participants:

1. ELS: 2002 base-year participants currently enrolled in 12th grade.
2. ELS: 2002 base- year participants who finished high school early or obtained alternative certification.

3. ELS: 2002 base-year participants who were unable to participate during the base-year due to disability or insufficient English language skills.
4. ELS: 2002 base-year participants who dropped out of school prior to data collection in the 12th grade.
5. ELS: 2002 base-year participants who transferred out of the school they were originally sampled, also students who transferred to home school setting.
6. A subsample of base-year nonrespondents including students without parental consent.
7. Students who were part of the base-year sampled school who were enrolled in the 12th grade; however, was not in the 10th grade in the United States during 2002.

All spring-term 2004 seniors in base year schools were eligible for the study with the exception of foreign exchange students. Students who were considered ineligible included: Students with disabilities where the degree of disability made it inadvisable to assess them and students with insufficient command of the English language by the judgment of school officials. All non-responding students were included except for white students in public schools who were randomly subsampled. A subsample of 1,000 non respondent students was selected from the 2,229 base year nonrespondents. In total, 238 new students were added to the study by refreshing procedure, while 31 of the 238 were incapable of completing the questionnaire. Freely accessible data were collected from these students at two different time points: in the spring-term 2002 (when the cohort was

in 10th grade) and in spring-term 2004 (two years later when the cohort was in 12th grade) (Ingels et al, 2005). This figure (N = 16,252) excluded foreign exchange students. For the purpose of this study, African American and Hispanic students examined in this study did not drop out before graduating from high school. In 2002, the ELS study's goal was to evaluate 10th graders and follow them through transition periods at 2-year intervals using the same math assessment. The base-year study included surveys of parents, teachers, school administrators, and library media specialists, and the cohort of high school sophomores. This dissertation draws on primary data from students who were originally sampled in 2002.

Instrumentation

The data collection instruments for the NCES ELS: 2002 base year involved five separate questionnaires (students, parent, teacher, school administrator, and library media center), two achievement tests with assessments in reading and mathematics, and a school observation checklist (Ingels et al., 2004). In the first follow-up year (2004), data collection instruments were seven questionnaires (student questionnaire, a transfer student questionnaire, a new participant student questionnaire, a home school student questionnaire, an early graduate questionnaire, a dropout (not currently in school) questionnaire, and a school administrator questionnaire) and one achievement test in mathematics (Ingels et al., 2004a). In addition, other information about course offerings and transfer records were also collected for all the sophomore and senior cohorts.

A Base Year Student Questionnaire (2002) and First Follow-up Student Questionnaire (2004) were used in the study.

The instrument design, content, and questionnaire relied heavily on previous NCES studies, the National Longitudinal Study of the High School Class of 1972 (NELS:72), the High School and Beyond Longitudinal Study (HS&B), The National Educational Longitudinal Study of 1988 (NELS:88). The Educational Longitudinal Study's priority was to obtain data that would be longitudinal in nature and obtain cross-sectional data that can be used for cross-cohort comparison. Changes in the Protection of Pupil Rights Amendment (PPRA) and the *No Child Left Behind Act of 2001*, led to NCES, ELS:2002 adding new items relating to educational technology and psychological scales (Ingels et al., 2004a). ELS tested the reliability and validity of the instrument and instituted an eight-step development and review process consisting of the following steps (Ingels et al., 2004):

1. Sharing of Draft Data Elements. Draft elements of the questionnaires were shared with other government agencies, policy groups, and interested parties.
2. Technical Review Panel (TRP) Review. The ELS:2002 TRP, a specially appointed, independent group of substantive, methodological, and technical experts, reviewed the questionnaires.
3. National Center for Education Statistics (NCES) Review. The questionnaires underwent interdivisional review at NCES.

4. Questionnaire Revision. The survey instruments were revised based on reviewer comments.
5. Writing of Justification. A justification was written for components of the instruments.
6. Office of Management and Budget (OMB) Review. The federal OMB reviewed the instruments.
7. Questionnaire Revision. The questionnaires were revised based on OMB comments.
8. Field Testing and Revision. The instruments were field tested and revised based on field test results.

The NCES ELS: 2002 Base Year Student questionnaire was a 45-minute self administered instrument where sophomores completed the questionnaire in a group in the school classroom during the spring term. There were 98 questions divided into seven sections: (a) locating information, (b) school experiences and activities, (c) plans for the future, (d) non-English language use, (e) money and work, (f) family, and (g) beliefs and opinions about self (Ingels et al., 2004a).

The first NCES ELS: 2004 follow-up questionnaire was primarily self-administered in-school survey sessions, while for other students out of school through computer assisted telephone interviewing (CATI), or occasionally through the mail or through telephone interviews.

The first follow-up student questionnaire consisted of eight content modules (Ingels et al., 2004a).

1. Part I Contact information.
2. Part II Student's school experiences and activities.
3. Part III How you spend your time, inquiries of time usage.
4. Part IV Plans and expectations for the future.
5. Part V Education after school.
6. Part VI Plans for work after high school.
7. Part VII Working for pay
8. Part VIII Community, family, and friends.

Assessment Battery

The ELS mathematics assessment test specifications for 2002 and 2004 were adapted for frameworks from previous NCES studies, which included two-levels to the framework: content areas and cognitive processes. The mathematics section specifications emphasized arithmetic, algebra, geometry/measurement, data/probability, and advanced topics. The test questions came from previous assessments such as (a) National Education Longitudinal Study of 1988 (NELS:88); (b) National Assessment of Educational Progress (NAEP) (mathematics), and (c) Program for International Student Assessment (PISA) (reading and mathematics). Most of the items on the base year and first follow-up year assessments were multiple choice.

All of the 10th grade items were field tested in 2001, while the 12th grade items were field tested in 2004 to test the reliability and validity of the assessment tests. Based on field tests, some items were modified. The mathematics assessment was administered in two stages, and the results were normalized (Ingels et al., 2004a). Test forms were developed ranging from low difficulty to high difficulty levels (Form X, low difficulty; Form Y, middle difficulty; Form Z, high difficulty). Students were administered a routing test and based on their performance test forms were assigned.

Mathematics Achievement

For the purpose of this study, data taken from students' achievement tests in mathematics and surveys from base year and first follow-up years were examined. In the base year 2002 study, ELS measured achievement in both reading and mathematics, but in the follow-up study only mathematics was measured. Because mathematics achievement was reassessed in the follow-up (2004) study using the same assessment procedures, it was an appropriate measure for seeing growth in academic achievement. The math assessment involved 72 items that comprise the base-year and 59 items that comprise the first follow-up mathematics assessments. Students completed cognitive tests given by the National Center for Educational Statistics (NCES) which included mathematics comprehension. The cognitive skill/process areas assessed by the base and follow-up years were: skill/knowledge, understanding/comprehension, and problem solving. The content areas assessed by the base and follow-up years were: arithmetic, algebra, geometry/measurement, data analysis/statistics probability, and advanced topics

(precalculus and analytic geometry). The base year mean scores for each of the content areas individually were 98.30 ranging from 12.52 to 69.72. The first follow-up year mean scores for each of the content areas individually were 98.30 ranging from 13.74 to 82.03. The item parameters for each test involved a possible total of 81 points. For the purpose of this study, it was not appropriate to use raw scores on tests because NCES test vary according to average difficulty. For the base year assessment, all students received the same tests. However, for the follow-up year, students' test forms varied according to students' ability as determined by the base year assessment.

Using the item response theory (IRT) procedure provided a means to compare scores regardless of the test form students took. With this method it is possible to estimate the score the student would have achieved for test items calibrated on a continuous scale (Morales & Saenz, 2007). Math IRT (Item – response theory) estimated number right was used in this study as an estimate of the number of items students would have answered correctly had they responded to all of the 72 items in the ELS:2002 math item pool. The ability estimates and item parameters derived from the IRT calibration can be used to calculate each student's probability of a correct answer for each item. The probabilities are summed and produce the IRT-estimated right score. The score is a sum of probabilities. It is not an integer or a count of right or wrong answers.

Ingels et al., (2004a) suggested the value of Item Response Theory (IRT) by suggesting that it has advantages over the raw number-right scoring. Because IRT uses the overall pattern of right and wrong to estimate ability, IRT is able to compensate for

guessing factor, for example, a low ability student guessing several difficult items correctly. IRT differs from raw number-right scoring because it uses the pattern of responses to estimate the probability of correct responses for the test questions rather than treating omitted items as if they have been answered incorrectly. Finally, other gains in IRT have been that the scoring procedure used makes it possible to compare scores from different test forms of different difficulty. Tables 1-4 show the distribution by content area and skill/cognitive process area.

Table 1
Mathematics Items in ELS: 2002 Base Year, by Content Area: 2002

Content area	Number of items	Percentage of items
Arithmetic	19	26.0
Algebra	17	23.3
Geometry/measurement	20	27.4
Data analysis, statistics/probability	9	12.3
Advanced topics	8	11.0

Note. ELS = Educational Longitudinal Study of 2002 base year through first follow-up year.

Table 2
Mathematics Items in ELS: 2002 Follow-up Year, by Content Area: 2004

Content area	Number of items	Percentage of items
Arithmetic	15	25.4
Algebra	17	28.8
Geometry/measurement	17	28.8
Data analysis, statistics/probability	4	6.8
Advanced topics	6	10.2

Note. ELS = Educational Longitudinal Study of 2002 base year through first follow-up year.

Table 3
Mathematics Items per Skill/Cognitive Process area in ELS: 2002 Base Year, by Process/Skill Specifications: 2002

Process/skill specifications	Number of items	Percentage of items
Procedural skills/knowledge	23	31.5
Conceptual understanding	27	37.0
Problem solving	16	27.1

Note. ELS = Educational Longitudinal Study of 2002 base year through first follow-up year.

Table 4
 Mathematics Items per Skill/Cognitive Process Area in ELS: 2002 First Follow-up Year,
 by Process/Skill Specifications: 2004

Process/skill specifications	Number of items	Percentage of items
Procedural skills/knowledge	17	28.8
Conceptual understanding	26	44.1
Problem solving	16	27.1

Note. ELS = Educational Longitudinal Study of 2002 base year through first follow-up year.

Socio-Economic Status (SES)

ELS: 2002 calculated the SES variables as an average of continuous measure of SES. The variable is a composite measure of socioeconomic status using data from parent and/or student questionnaire. The measure was based on five equally weighted, standardized components: (a) father's/guardian's education, (b) mother's/guardian's education, (c) family income, (d) father's/guardian's occupation/prestige score, and (e) mother's/guardian's occupation/prestige score. ELS used a prestige value based on the Duncan Socioeconomic Index (SEI). SES was constructed differently in the dataset and could not be directly compared in the original form. Because of this, SES was converted to standardized z-scores in order to make it more meaningful for interpretation. The five SES variables were each transformed to a z-score distribution and, therefore, necessarily had a mean of zero and a standard deviation of 1. Table 5 displays the means of the variables related to father's/guardian's education and mother's/guardian's education. Table 6 presents the family income categories, and Table 7 displays the means of the variables related to father's/guardian's occupation and mother's/guardian's occupation.

Table 5
Means: Education of Father/Guardian and Mother/Guardian

Variables	Father's/guardian's education (BYFATHED)	Mother's/guardian's education (BYMOTHEd)
Did not finish H.S.	12.61	11.97
Graduate from H.S. or GED	26.29	25.45
Attended 2-year school, no degree	8.90	11.43
Graduated from 2-year school	7.39	10.06
Attended college, no 4-year degree	8.77	9.81
Graduated from college	16.96	17.47
Completed Master's degree or equivalent	7.93	6.57
Completed PhD, MD, other educational degrees	5.35	1.97

Table 6
Means: Family Income

Family income (BYINCOME)	Means
None	.49
1,000 or less	1.10
1,001-5000	1.88
5,001-10,000	2.17
10,001-15,000	4.31
15,001-20,000	4.84
20,001-25,000	6.15
25,001-35,000	11.66
35,001-50,000	18.69
50,001-75,000	20.47
75,001-100,000	13.48
100,001-200,000	11.20
200,001-or more	3.58

Table 7
Means: Occupation of Father/Guardian and Mother/Guardian

Variables	Father's/guardian's occupation (BYOCCUF)	Mother's/guardian's occupation (BYOCCUM)
No job for pay	1.10	3.81
Clerical	2.25	15.27
Craftsman	11.99	2.09
Farmer /Farm manager	1.79	.52
Homemaker	2.41	4.65
Manager, Administrator	13.94	10.29
Military	1.25	.18
Operative	10.88	3.91
Professional A	10.06	13.48
Professional B	5.56	3.74
Proprietor, owner	5.72	2.25
Protective service	3.22	.70
Sales	4.94	4.04
School teacher	1.34	6.21
Service	3.80	14.58
Technical	4.41	4.77

Gender

The gender variable (BYS14) used for the base year and the first follow-up year student questionnaire were coded as (1) Male (M = 46.73) and (2) Female (M = 47.20).

The responses were recoded for analysis into the following variable: (0) Male and (1) Female.

Race

The coded race variable (BYRACE) used for the base year and first follow-up student questionnaires included (1) American Indian or Alaska native ($M = .81$), (2) Asian or Pacific Islander, including Native Hawaiian ($M = 9.01$), (3) black including African-American (non-Hispanic) ($M = 12.47$), (4) Hispanic or Latino (ethnicity only) ($M = 6.14$), (5) Hispanic or Latino (regardless of race) ($M = 7.56$), (6) more than one race or Multi-racial ($M = 4.55$), and (7) white ($M = 53.75$). The present study included only data from African American and Hispanics. The two Hispanic categories (i.e., values of '4' and '5' above) were combined into one category. For this analysis, the new race variable was coded as '0' for African Americans and '1' for Hispanics.

School-Sponsored Activities

The base and first follow-up questionnaire contained responses students gave to school experiences and activities, plans and expectations for the future, high school work experiences, and information regarding students' community, family, and friends. For school-sponsored activities, the students were asked during the base year (10th grade) and first follow-up year (12th grade), "Have you participated in the following school-sponsored activities this year?" The response categories were: (a) National Honor Society (NHS) or other academic honor society (BYS41D, $M = 8.80$; FYS26F, $M = 17.29$); (b) academic club (such as art, computer, foreign language, debate) (BYS41G, $M = 8.45$; F1S26I, $M = 16.23$); and (c) band, orchestra, chorus and choir (BYS41A, $M = 20.23$; F1F26C, $M = 13.66$). For analysis purposes, the categories were combined to create a

total score. The two response categories were recoded as 0 = Not participating, 1 = Participating in one activity, 2 = Participating in two activities, 3 = Participating in three activities.

Out of School Activities

For out of school activities, students were asked during the base year and the first follow-up year, “How often do you spend time on the following activities?”(a) volunteering or performing community service (BYS44C) (1) rarely or never (M = 59.64), (2) less than once a week (M = 17.60), (3) once or twice a week (M = 8.95), (4) everyday or almost every day (M = 1.52). The follow-up year values (F1S39C) were (1) rarely or never (M = 52.37), (2) less than once a week (M = 20.83), (3) once or twice a week (M = 14.74), (4) everyday or almost every day (M = 2.92). The other variable used was (b) playing non school sports (BYS44H): (1) rarely or never (M = 46.27), (2) less than once a week (9.77), (3) once or twice a week (M = 18.44), (4) everyday or almost every day (M = 13.50). The follow-up year values (F1S39H) were (1) rarely or never (M = 54.75), (2) less than once a week (M = 10.52), (3) once or twice a week (M = 16.48), (4) everyday or almost every day (M = 9.14). These response categories were recoded as 0 = Never and 1 = Sometimes/Often. For analysis purposes, the categories were combined to create a total score. The two response categories were recoded as 0 = Not participating, 1 = Participating in one activity, 2 = Participating in two activities.

Parent Involvement

For parent involvement, students were asked during the base year and the first follow-up year, “How often have you discussed the following with either or both of your parents or guardians?” (a) Your grades (BYS86D), the three response categories were: 1 = Never (M = 5.46), 2 = Sometime (M = 33.63), 3 = Often (M = 38.33). The follow-up year (F1S64D) values were 1 = Never (M = 4.64), 2 = Sometime (M = 35.18), 3 = Often (M = 43.28). The Second variable used was (b) Plans and preparation for ACT or SAT tests (BYS86F). The three response categories were: 1 = Never (M = 31.70), 2 = Sometime (M = 31.97), 3 = Often (M = 13.41). The follow-up year (F1S64G) values were 1 = Never (M = 23.93), 2 = Sometime (M = 31.97), 3 = Often (M = 20.94). The sometimes and often responses were combined. The responses were recoded for analysis into the following variable: 0 = never, and 1 = sometimes and often. For analysis purposes, the categories were combined to create a total score. The two response categories were recoded as 0 = No discussion, 1 = discussion of 1 item, 2 = discussion of both items. Data Processing and Analysis

Data Processing

For analysis, the researcher used repeated measures design based on Maxwell and Delaney’s (2004) description to obtain the comparison of data from the ELS: 2002 sample. The goal was to measure trends in social capital and academic success in African American and Hispanic high school students. The aim of this study was to measure groups at the 10th grade and the 12th grade academic years. The Statistical Package for

the Social Sciences software (SPSS--Version 16.0 for Windows) for data analysis was used. The repeated measures analysis tested for mean differences between the groups in this research study. The repeated measures design was used to support the hypotheses of this study by testing for mean differences based on academic achievement and the three social capital variables as well as gender and race (African American and Hispanic). Socio-economic status was used as the covariate. In addition, interactions between school-sponsored activities, out-of-school activities, parent involvement, race, and gender were examined with the covariate.

Within-Subjects Factors

The social capital factors (school-sponsored activities, out-of-school activities and parent involvement) were taken from ELS: 2002 and representative of the base year and the first follow-up year studies. The variables have been represented as a dependent variable and a within-subjects factor for the base year and first follow-up year.

Between-Subjects Factors

The between-subjects factors used for this study were race, gender, and socio-economic status. Socio-economic status was used as a covariate variable.

Research Questions

The following research questions guided the study:

1. When adjusting for SES, is there a difference in social capital factors reported from the base year (2002) to its first follow-up (2004) based on gender, race, or the interaction of gender and race? The social capital factors are school-sponsored activities, out-of-school activities and parent involvement.
2. When adjusting for SES, is there a difference in mathematics –IRT estimated number right scores from the base year (2002) and the first follow-up (2004) based on gender, race, or the interaction of gender and race?
3. Is there a predictive relationship between mathematics IRT–estimated number right score and gender, race and social capital factors (school-sponsored activities, out-of-school activities and parent involvement) for the base year (2002)?
4. Is there a predictive relationship between mathematics IRT –estimated number right score and gender, race and social capital factors (school-sponsored activities, out-of-school activities and parent involvement) for the first follow-up year (2004)?

Data Analysis

Descriptive statistics were provided for all study variables. This included frequencies and percentages for categorical variables, means, standard deviations, and ranges for all continuous variables. All variables other than gender and race were interval

level data. Inferential analysis was performed to address the research questions of the current study.

To address the first two research questions, a repeated measures analysis of covariance was performed to compare the differences in the social capital factors of the base year and the follow-up year. Table 8 shows the study variables and statistical role employed to address the research questions. Two-tailed tests and an alpha level of .05 were used for all inferential analysis. The covariate was SES. The independent variables were race and gender. The dependent variables were social capital factors (total school-sponsored activities, total out-of-school activities, and total parent involvement) of 2002 and 2004. All main effects and two-way interactions between the independent variables were included in the model.

To address the third and fourth research questions, a multiple regression was performed to examine predictive validity between mathematics IRT estimated number right score and the social capital factors (total school-sponsored activities, total out-of-school activities, and total parent involvement) for the two years. The R^2 was examined to assess the model fit. The p-value of the F statistic was also examined for the significance levels, and the R^2 change was examined to determine how much of the dependent variables' variance was explained by the independent variables.

Table 8
Variables and Repeated-Measures Analysis of Covariance Description

Variables	Description	Role
Race	Race variable was coded as 0 = African Americans and 1 = Hispanics.	Categorical
Gender	Gender variable was recoded for analysis into the following variable 0 = Male and (1) = Female.	Categorical
Total school-sponsored activities	The three response categories were combined recoded as 0 = Not participating, 1 = Participating in one activity, 2 = Participating in 2 activities. (National Honor Society or other academic honor society; Academic club (such as Art, Computer, Foreign Language, Debate); and Band, orchestra, chorus and choir). Examined during the base and follow-up year.	Interval Continuous
Total out-of-school activities	The two response categories were combined and recoded as 0 = Not participating, 1 = Participating in one activity, 2 = Participating in 2 activities. (Volunteering or performing community service or Playing non school sports). Examined during the base and follow-up year.	Interval Continuous
Parent Involvement	The two response categories were recoded as 0 = No discussion, 1 = discussing one item (your grades) 2 = discussing both items (Plans and preparation for ACT or SAT tests). Examined during the base and follow-up year.	Interval Continuous
Socio-economic status index	Follow-up (2004) assessment of socio-economic status based on parents/guardians education, income, and occupation. Examined during the base and follow-up year.	Interval Continuous
Mathematics Achievement	Mathematics IRT--estimated number right--scores for base year (2002) and follow-up (2004) assessments. Examined during the base and follow-up year.	Interval Continuous

CHAPTER 4 FINDINGS

Introduction

The purpose of the study was to investigate the relationships among social capital factors and mathematics achievement. The purpose of this chapter is to report the results of the study. Results are presented of the inferential analysis that was performed to address each research question in the study. Statistical data analysis is presented in the following sections, including descriptive statistics, frequency data, multiple regressions, analysis of variance, and findings for each research question.

Descriptive Statistics

The final sample consisted of 551 male and female high school students. Listwise deletion was completed for students who were not African American and not Hispanic, and for students who did not have scores on one of the key study variables. Table 9 presents descriptive statistics for the categorical variables for the 551 male and female high school students. Overall, 44.3% of the sample was African American while more than half (55.7%) was Hispanic. Males comprised 41.2% of the sample and more than half (58.8%) were female.

For the combined category of total base year total school-sponsored activities, the largest proportion (28.9%) of the respondents participated in the National Honor Society or other academic honor society. A lesser amount (5.8%) of the respondents participated

in academic clubs (art, computer, foreign language, debate), while the smallest number of participants participated in the band, orchestra, chorus or choir (2.4%).

For the combined category of total base year total out-of- school activities, the largest proportion (46.1%) of the respondents participated in community service organizations. Nearly one-fourth (21.2%) of respondents participated in non-school sports.

For the combined category of total base year parent involvement, more than one-fourth (28.3%) of the sample discussed their grades with either or both of their parents. More than half (67.7%) discussed plans and preparation for ACT or SAT tests with either or both of their parents.

For the follow-up year, the combined category of total school-sponsored activities, the largest proportion (37.4%) of the respondents participated in the National Honor Society. Less than one-quarter (15.1%) participated in academic clubs, and an even lesser amount (2.5%) participated in band, orchestra, chorus and choir.

For the follow-up year combined category of total out-of-school activities, the largest proportion of the participants, about half (49.4%) participated in community service activities, while nearly one-quarter (24.1%) participated in non-school sports.

For the follow-up year combined category of parent involvement, less than one-quarter (20.7%) of the sample discussed their grades with either or both of their parents. More than half (75.7%) discussed plans and preparation for ACT or SAT tests with either or both of their parents.

Table 9
Descriptive Statistics of Categorical Variables

Variables	Frequency	Percentage
Race		
African American	224	44.3
Hispanic	307	55.7
Gender		
Male	227	41.2
Female	324	58.8

Descriptive statistics for the continuous measures are shown in Table 10.

Socioeconomic status scores were in standardized z score format ranging from -3 to + 3.

In this study, it ranged from - 1.85 to + 1.80, with a mean of - .0179 (SD = .74). Base

year Math IRT - estimated number right-scores for the base year score ranged from 13.74

to 64.21 with a mean of 37.36 (SD = 10.75). For the first follow-up year Math IRT -

estimated number right-scores ranged from 15.73 to 75.43 with a mean of 42.18 (SD =

12.72). Total base year school-sponsored activities ranged from 0 to 3 with a mean of .47

(SD = .713). Total base year out-of-school activities ranged from 0 to 2 with a mean of

.89 (SD = .726). Total base year parental involvement ranged from 0 to 2 with a mean of

1.64 (SD = .558). Total follow-up year school-sponsored activities ranged from 0 to 3

with a mean of .75 (SD = .801). Total follow-up year out-of-school activities ranged from

0 to 2 with a mean of .98 (SD = .712). Total follow-up year parent involvement ranged

from 0 to 2 with a mean of 1.72 (SD = .524).

Table 10
Descriptive Statistics for Continuous Variables

Variables	Minimum	Maximum	Mean	SD
Socio-economic status	-1.85	1.80	.0179	.74
Base year mathematics	13.74	64.21	37.36	10.75
Follow-up mathematics	15.73	75.43	42.18	12.72
Total by school-sponsored activities	0	3	.47	.713
Total by out-of-school activities	0	2	.89	.726
Total by parent involvement	0	2	1.64	.558
Total fy school-sponsored activities	0	3	.75	.801
Total fy out-of-school activities	0	2	.98	.712
Total fy parent involvement	0	2	1.72	.524

Inferential Statistics

Research Question 1

When adjusting for SES, is there a difference in social capital factors reported from the base year (2002) to its first follow-up (2004) based on gender, race, or the interaction of gender and race? The social capital factors are (a) school-sponsored activities, (b) out- of-school activities, and (c) parent involvement.

Repeated-measures analysis of covariance was used to address the null hypothesis of the two research questions of the current study. For the first social capital factor, school-sponsored activities, the analysis revealed statistical significance in within-subjects effects (school sponsored activities), and statistical significance in several between-subjects effects (SES, gender, and race), which are displayed in Table 11. The sample size was 551 for all the results. The adjusted mean (AM) is shown in Table 12. The main effect of school-sponsored activities (SSA) was statistically significant, [F

(1,546) = 63.03, $p < .05$]. This indicates that the mean scores for school-sponsored activities during the base year ($AM = .47$, $SE = .031$, $s = .713$) was significantly lower than mean scores for school-sponsored activities at the first follow-up year ($AM = .75$, $SE = .035$, $s = .801$). Almost 11% of variance in school-sponsored activities can be accounted for by repeated trials.

As shown in Table 8, there were no significant interactions with the covariate socio-economic status (SES), the interaction with gender, the interaction with race, and the interaction with gender and race combined. The interaction of SES with school-sponsored activities, [$F(1,546) = .535$, $p = .465$] accounted for less than 1% of variance.

There was also no interaction effect when school-sponsored activities were compared by gender. The interaction produced no statistically significant difference, [$F(1,546) = .222$, $p = .638$]. In fact, less than 1% variance in school-sponsored activities can be attributed to the interaction by gender. Examining the means indicated that the mean scores were lower for both males ($AM = .38$, $SE = .048$, $s = .664$) and females ($AM = .53$, $SE = .054$, $s = .740$), in the base year, than males ($AM = .65$, $SE = .054$, $s = .751$) and females ($AM = .82$, $s = .828$, $SE = .044$) in the follow-up year.

The school-sponsored activities with race interaction was also not statistically significant [$F(1,546) = .097$, $p = .755$]. African American students scored lower in the base year ($AM = .552$, $SE = .047$, $s = .754$, $N = 551$) and increased in the follow-up year ($AM = .819$, $SE = .052$, $s = .842$, $N = 551$). A similar trend of lower mean scores was found in Hispanic students in the base year ($AM = .387$, $s = .671$, $SE = .041$, $N = 551$)

and increased in the follow-up year ($AM = .675$, $s = .763$, $SE = .046$, $N = 551$). Less than 1% variance can be accounted for by race interaction. This indicates that the increased mean scores were more evident between both African American and Hispanics in their senior year than in their sophomore years.

Lastly, contrasting the school-sponsored activities by race and gender interaction was also not statistically significant [$F(1, 546) = 293$, $p = .588$]. Both African American male ($AM = .527$, $SE = .073$) and female ($AM = .576$, $SE = .057$) mean scores were lower in the base year, than male scores ($AM = .763$, $SE = .083$) and female scores ($AM = .874$, $SE = .065$) in the follow-up year. Similarly, Hispanic followed the same pattern. On average males ($AM = .284$, $SE = .061$), and females ($AM = .491$, $SE = .054$) scored lower in the base year, while showing more increase in scores for males ($AM = .575$, $SE = .069$) and females ($AM = .775$, $SE = .060$) in the follow-up year. Less than 1% variance can be accounted for by race and gender interaction. Results are displayed in Table 12.

As shown in Table 11, examining SES as a covariate, produced statistical significance [$F(1, 546) = 486.550$, $p < .01$]. Almost 3.2% variance can be accounted for by SES, which suggests that SES had an impact on the individual race groups.

Similarly, gender, when examined as a between-subjects effects, produced a statistically significant difference [$F(1, 546) = 9.484$, $p < .05$]. Almost 1.7% variance can be accounted for by gender. Examining the mean scores indicated that males tended to score lower ($AM = .537$, $SE = .043$), than females ($AM = .679$, $SE = .036$), this suggests that gender had some effect between the two groups.

The between-subjects effects on race, produced a statistically significant difference in race, [$F(1, 546) = 6.978, p < .01$]. Less than 1.3% variance can be accounted for by race, which suggests that there were some racial differences. Examining the means showed that African Americans scored higher (AM = .685, SE = .042), than Hispanic (AM = .531, SE = .037).

There were no significant interactions in the race by gender between-subjects effects [$F(1, 546) = .735, p = .392$]. Again, less than 1% variance can be accounted for by race and gender interaction. In summary, among both gender and races, students were more involved in school activities during their senior years than their sophomore years, yet no statistically significant difference was found between students. Results are displayed in Table 11. The estimated means are displayed in Table 12.

Table 11
 Repeated-Measures, Analysis of Covariance of School-Sponsored Activities

Source	<i>df</i>	Mean Squares	F	P	Partial η^2
Within subjects effects					
School-sponsored activities (SSA)	1	20.018	63.030**	.000	.103
Interactions					
SSA-Change by SES (covariate)	1	.170	.535	.465	<.01
SSA-Change by gender	1	.07040	.222	.638	<.01
SSA-Change by race	1	.03095	.097	.755	<.01
SSA-Change by gender & Race	1	.09316	.293	.588	<.01
Error (SSA)	546	.318			
Between-subjects effects					
SES (covariate)	1	14.244	18.043**	.000	.032
Gender	1	7.487	9.484**	.002	.017
Race	1	5.509	6.978**	.008	.013
Gender * race	1	.581	.735	.392	<.01
Error	546	.789			

Note. * $P < .05$, ** $P < .01$

Table 12
Results of Means for School-Sponsored Activities (SSA)

Measure	Base Year Adjusted Mean	Raw Mean	Follow-up Year Adjusted Mean	Raw Mean
SSA	.469	.47	.747	.75
SSA*gender				
Male	.405	.38	.669	.65
Female	.534	.53	.824	.82
SSA*race				
African American	.552	.56	.819	.83
Hispanic	.387	.40	.675	.69
SSA*gender*race				
African American male	.53	.527	.763	.76
African American female	.576	.58	.874	.865
Hispanic male	.284	.28	.575	.569
Hispanic female	.491	.49	.775	.77

Out-of-School Activities

The second social capital factor, out-of-school activities (OSA), SES was not a statistically significant covariate [$F(1,546) = .054, p = .816$]. SES was able to account for less than 1% in variance. Because of this it was removed from the analysis in out-of-school activities. The remaining interactions OSA –change by gender [$F(1,547) = 1.078, p = .300$], OSA - change by race [$F(1,547) = .821, p = .365$], and OSA - change by gender and race [$F(1,546) = .495, p = .482$], were not statistically significant. Results are displayed in Table 13. The estimated means results are displayed in Table 14.

The change in out-of-school activities from base year to follow-up year was statistically significant, [$F(1,547) = 8.469, p < .05$]. Examining the estimated mean,

indicated that there were lower mean scores in out-of-school activities during the base year ($AM = .898, s = .726, SE = .032$) than in the out-of-school activities in the first follow-up year ($AM = .99, s = .712, SE = .031$). Almost 1.5% of variance can be accounted for by out-of-school activities, indicating that out-of-school activities had a higher mean score in the follow-up year.

The between-subjects effects of the main effects of the independent variable had a statistically significant difference [$F(1,547) = 16.978, p < .01$] in OSA based on gender. Males who participated had lower mean scores in the base year ($AM = .986, SE = .049$) than in the follow-up year ($AM = 1.124, SE = .047$). Similarly, females who participated, also tended to have lower participation in the base year ($AM = .809, SE = .040$), than in the follow-up year ($AM = .875, SE = .037$). However, males had higher participation in out-of-school activities than females in both years. Almost 3% of variance can be accounted for by gender.

Contrasting the between-subjects effects of the main effects of the independent variable race revealed that there was not a statistically significant difference in race [$F(1,547) = .381, p = .537$], accounting for almost 1% of variance. Also, when gender and race were examined as the between-subjects effects there was not a statistically significant interaction [$F(1,547) = .330, p = .566$], again only accounting for almost 1% of variance.

Table 13
Results of Repeated-Measures Analysis of Variance for Out-of-School Activities

Source	<i>df</i>	Mean Squares	<i>F</i>	<i>P</i>	Partial η^2
Within Subjects Effects					
Out of school activities (OSA)	1	2.696	8.469*	.004	.015
Interactions					
OSA-Change by gender	1	.343	1.078	.300	.002
OSA-Change by race	1	.261	.821	.365	<.01
OSA-Change by gender & race	1	.152	.477	.490	<.01
Error (OSA)	547	.318			
Between-subjects effects					
Gender	1	11.834	16.978**	.000	.030
Race	1	.266	.381	.537	<.01
Gender *race	1	.230	.330	.566	<.01
Error	547	.697			

Note. * $P < .05$, ** $P < .01$

Table 14
Results of Means for Out-of-School Activities (OSA)

Measure	Base Year Adjusted Mean	Raw Mean	Follow-up Year Adjusted Mean	Raw Mean
OSA	.898	.89	.999	.98
OSA*gender				
Male	.986	.99	.124	1.12
Female	.809	.81	.875	.88
OSA*race				
African American	.866	.84	.999	.96
Hispanic	.929	.92	.999	.99
OSA*gender*race				
African American male	.957	.96	1.151	1.15
African American female	.775	.77	.848	.85
Hispanic male	1.015	1.01	1.097	1.10
Hispanic female	.844	.84	.902	.90

Parent Involvement

The third social capital factor, parent involvement, revealed a change in parent involvement (PI) from base year to follow-up year that was statistically significant, [$F(1,546) = 9.55, p < .05$]. The mean scores of parent involvement showed that on average, students had parent involvement during the base year ($AM = 1.639, s = .588, SE = .024$) which was lower than the involvement in the follow-up year ($AM = 1.727, s = .524, SE = .022$). Almost 1.7% of variance in change of parent involvement can be accounted for between base year and first follow-up year. This indicated that parent involvement had a small change from the base year to the first follow-up year.

As indicated in Table 15, the interaction of parent involvement and the covariate socio-economic status (SES) revealed no statistically significant difference, [$F(1,546) = .428, p = .513$]. There were no statistically significant interactions with race, and the interaction with gender and race [$F(1, 546) = .054, p = .816$]. The mean of SES was $-.0097$. SES accounts for less than 1% of variance. The change in parent involvement by gender interaction was also not statistically significant, [$F(1,546) = .207, p = .649$], accounting for less than 1% of variance. The change in parent involvement interaction with gender and race was also not statistically significant [$F(1,546) = .054, p = .816$]. Less than 1% in variance could be accounted for by the interaction. Parent involvement and race was not statistically significant [$F(1,546) = 3.59, p = .05$]. Almost 7% of variance can be accounted for by race. Examining the means indicated that African American students used parent involvement in the base year ($AM = 1.698, s = .553, SE = .037$) which was

lower than the follow-up year ($AM = 1.84, s = .416, SE = .034$). Similarly for Hispanic students parent involvement in the base year ($AM = 1.580, s = .573, SE = .032$) was lower than the average amount in the follow-up year ($AM = 1.612, s = .578, SE = .029$). Finally, the interaction of gender and race as a difference between-subjects factor did not produce a statistically significant difference [$F(1,547) = .330, p = .294$] in PI. Again almost 2% of the variance in PI can be accounted for by gender and race.

Table 15
Results of Repeated-Measures Analysis of Covariance for Parent Involvement

Source	<i>df</i>	Mean Squares	<i>F</i>	<i>P</i>	Partial η^2
Within subjects effects					
Parent involvement (PI)	1	2.015	9.554*	.002	.017
Interactions					
PI-Change by SES (covariate)	1	.09023	.428	.513	<.01
PI-Change by gender	1	.04370	.207	.649	<.01
PI-Change by race	1	.759	3.598	.058	<.01
PI-Change by gender & race	1	.01143	.054	.816	<.01
Error (PI)	546	.211			
Between-subjects effects					
SES (covariate)	1	5.595	16.011**	.000	.028
Gender	1	2.040	5.837**	.016	.011
Race	1	7.323	20.958**	.000	.037
Gender * race	1	.385	1.103	.294	.002
Error	546	.349			

Note. * $P < .05$, ** $P < .01$

As indicated in Table 15, the between-subjects effects of the main effects of the covariate SES revealed a statistically significant effect [$F(1,546) = 16.011, p < .01$].

Almost 2.8% in variance can be accounted for by SES.

Similarly, there was a statistically significant difference in PI based on gender [$F(1,546) = 5.837, p < .05$], almost 1.1% in variance can be accounted for by gender.

Examining means indicated that males ($AM = 1.648, SE = .029$) had lower mean scores in parental involvement, than females ($AM = 1.719, SE = .024$).

As displayed in Table 16, there was a statistically significant difference in PI based on race, $F(1,546) = 20.958, p < .01$. Almost 3.7% in variance can be accounted for by race, the means indicated that in the base year, African American ($AM = 1.770, SE = .028$) parental involvement mean scores were greater on average than Hispanic ($AM = 1.597, SE = .024$) mean scores.

Table 16
Results of Means for Parent Involvement (PI)

Measure	Base Year Adjusted Mean	Raw Mean	Follow-up Year Adjusted Mean	Raw Mean
PI	1.639	1.64	1.727	1.72
PI*gender				
Male	1.609	1.59	1.686	1.66
Female	1.669	1.67	1.768	1.76
PI*race				
African American	1.698	1.70	1.841	1.84
Hispanic	1.580	1.59	1.613	1.62
PI*gender*race				
African American male	1.688	1.69	1.828	1.83
African American female	1.709	1.71	1.854	1.85
Hispanic male	1.530	1.53	1.545	1.54
Hispanic female	1.630	1.63	1.682	1.68

Research Question 2

When adjusting for SES, is there a difference in mathematics IRT- estimated number right score from the base year (2002) and the first follow-up (2004) based on gender, race, or the interaction of gender and race?

A repeated-measures analysis of covariance was performed to address the second research question of the study. The analysis revealed within-subjects effects and between-subjects effects, which are displayed in Table 17. The main effect of Mathematics IRT- estimated number right scores was statistically significant, [$F(1,547) = 707.225, p < .01$]. Almost 56% of variance in mathematics score between the base year and the first follow-up year was found. Examining the means indicated students scored lower in the base year ($M = 37.36, s = 10.73$) than in the first follow-up year ($M = 42.18, s = 12.70$).

As indicated in Table 17, Mathematics IRT-estimated number right scores by gender interaction was not statistically significant [$F(1,547) = .1571, p = .211$]. Variance that could be accounted for by gender barely exceeded 3%. Also the Mathematics IRT-estimated number right scores by race was not statistically significant [$F(1,547) = 3.091, p = .079$]. Almost 6% of variance was accounted for by race. The gender and race interaction was not statistically significant [$F(1,547) = .067, p = .796$]. Less than 3% variance was able to account for the gender and race interaction. Finally, the gender and race interaction as between-subjects effects, did not produce statistical significance [$F(1,546) = .007, p = .933$]. Again less than 1% variance can be accounted for by gender and race interaction.

The between-subjects effects of the main effects of the independent variable gender, revealed a statistical significance [$F(1,547) = 16.646, p = .01$]. Less than 3% in variance can be accounted for by gender. Examining the means indicated that, in the base year, males ($M = 39.76, s = 10.69$) and females ($M = 35.68, s = 10.44$) had lower scores, than males ($M = 44.86, s = 13.07$) and females ($M = 40.30, s = 12.10$) in the first follow-up year. However, overall males' scores were higher in both the base and follow-up years.

Race examined as between-subjects effects produced statistical significance [$F(1,547) = 12.152, p < .01$]. Almost 2.2% of variance can be accounted for by race. Analyzing the means indicated that African American ($M = 35.59, s = 9.99$) and Hispanic ($M = 38.77, s = 11.09$) students, scored lower in the base year than in first follow-up year, African American ($M = 40.03, s = 11.83$) and Hispanic ($M = 43.89, s = 13.11$). In

general, however, Hispanic race students tended to score higher than African American race students. Results are indicated in Table 17.

Table 17
Results of Repeated-Measures Analysis of Variance of Mathematics IRT- Estimated Number Right Score

Source	<i>df</i>	Mean Squares	<i>F</i>	<i>P</i>	Partial η^2
Within Subjects Effects					
Score	1	6072.713	707.225**	.000	.564
Interactions					
Score-Change by gender	1	13.489	1.571	.211	.003
Score-Change by race	1	26.539	3.091	.079	.006
Score-Change by gender & race	1	.574	.067	.796	<.01
Error (Score)	547	8.58			
Between-subjects effects					
Gender	1	4236.087	16.646**	.000	.030
Race	1	3092.463	12.152**	.001	.022
Gender * race	1	164.676	.647	.421	<.01
Error	547	254.475	513.862	.118	.004

Note. * $P < .05$, ** $P < .01$. IRT = Item Response Theory.

Research Question 3

Is there a predictive relationship between mathematics IRT- estimated number right score and gender, race and social capital factors for the base year (2002)?

A regression was performed to predict mathematics achievement score using gender, race, and social capital factors for the base year. The second social capital factor, out-of-school activities (OSA) was not statistically significant ($F = 9.281$, $df = 5, 545$, $p = .097$). Because this variable was not a good predictor, it was removed from further analysis. However examining one variable within OSA individually,

volunteer/performing community service, showed a statistical significance ($F = 13.823$, $df = 3, 547$, $p < .01$). Also examining one variable within PI individually, plans/preparation for ACT/SAT tests, showed a statistical significance ($F = 11.765$, $df = 3, 547$, $p = .05$). The results of the regression were: base year mathematics = $34.83 + 3.38$ (Race) - 4.25 (gender) + 1.72 (total base year school-sponsored activities) + 1.43 (total base year parent involvement).

The equation accounts for 7.4% (.074) of variance in base year mathematics ($R = .272$, $F = 10.873$, $df = 4, 546$, $p < .01$). When race is Hispanic, math score increases by 3.38, holding all others constant. When gender is female holding all others constant, base year mathematics decreases by 4.25. When total base year school-sponsored activities increases by 1, holding all others consonant, base year mathematics increases by 1.72. When total base year parent involvement increases by 1, holding all others constant, base year mathematics increases by 1.43. Regression results are represented in Table 18.

Table 18
Summary of Base Year Mathematics Regression Analysis (N = 551)

Variable	B	SE B	T	P
Constant	34.83	1.59	21.92**	<. 01
Race	3.38	.899	3.76**	<. 01
Gender	-4.25	.904	4.70**	<. 01
Total base year school-sponsored activities	1.72	.630	2.73**	<.01
Total base year parent involvement	1.43	.801	1.88	.075

Note. $R^2 = .078$, * $P < .05$, ** $P < .01$

Research Question 4

Is there a predictive relationship between mathematics IRT- estimated number right score and gender, race and social capital factors for the first follow-up year (2004)?

A regression was performed to predict mathematics achievement score and gender, race, and social capital factors for the follow-up year. The results of the regression were: follow-up year mathematics = 36.03 + 4.62 (race) - 5.19 (gender) + 4.00 (total follow-up year school-sponsored activities) + 2.12 (total follow-up year parent involvement). The regression results are displayed in Table 19.

Table 19
Summary of Follow-up Year Mathematics Regression Analysis (N = 551)

Variable	B	SE B	T	P
Constant	36.03	2.18	17.302**	<.01
Race	4.62	1.05	4.39**	<.01
Gender	-5.19	1.04	-4.97**	<.01
Total follow-up year school-sponsored activities	4.00	.642	6.23**	<.01
Total follow-up year parent involvement	2.11	.999	2.11*	.035

Note. $R^2 = .123$, * $P < .05$, ** $P < .01$

The equation accounts for 12.3% of variance in follow-up year mathematics ($R = .350$, $F = 15.32$, $df = 4, 546$, $p < .01$). When race is Hispanic holding all others constant, follow-up year mathematics increases by 4.62. When gender is female holding all others constant, follow-up year mathematics decreases by 5.19. When total follow-up year school-sponsored activities increases by 1, holding all others constant, follow-up year

mathematics increases by 4.00. When total base year parent involvement increases by 1, holding all others constant, follow-up year mathematics increases by 2.11.

Summary

This study was conducted to investigate the differences in social capital factors and math achievement to see whether social capital factors (school-sponsored activities, out-of-school activities, and parent involvement) could be predictors of math achievement. Secondary analysis was used from the National Center for Educational Statistics, National Longitudinal Study of 2002 and the first follow-up year. The participants included in this study were 551 African American and Hispanic high school students who were surveyed twice, in the 10th and 12th grades.

The significant findings of this study were:

1. There was a change in all forms of social capital indicating an increase in the follow-up year. For school-sponsored activities, SES was statistically significant effect for students; and females had higher mean scores than males in school-sponsored activities and parent involvement. African-American students had higher mean scores than Hispanic students in school-sponsored activities and parent involvement. For out-of-school activities, males had higher mean scores than females. Finally, for parent involvement, SES was statistically significant.
2. There was a change in Mathematics IRT-estimated number right scores indicating an increase in mean scores in the follow-up year.

3. Race , gender , and school-sponsored activities were strong predictors of mathematics achievement in the base year.
4. Race , gender , school-sponsored activities and parent involvement were strong predictors of mathematics achievement in the follow-up year.

CHAPTER 5 SUMMARY, DISCUSSION, AND RECOMMENDATIONS

Introduction

This chapter contains five sections. The first section presents a brief review of the purpose of the study. A summary of the findings based on each research question is presented in the second section followed by a discussion of the results. The final sections address recommendations for future research and a concluding summary.

Purpose of the Study

The purpose of this study was to examine the differences in social capital (school-sponsored activities, out-of-school activities, and parent involvement) and whether social capital was a predictor of mathematics achievement. Data from the National Center for Educational Statistics, Educational Longitudinal Study (ELS) of 2002 were used. Participants for the study were 551 African American and Hispanic students who had been surveyed in the 10th and 12th grades. Mathematics IRT- estimated number right scores were used to measure academic achievement. Quantitative statistical secondary data analysis was used to examine differences in social capital factors and to examine whether the social capital factors were predictors of academic achievement.

Summary of Findings

This section provides the summary of findings presented in Chapter 4. The importance of the findings for each research questions is presented.

Research Question 1

When adjusting for SES, is there a difference in social capital factors reported from the base year (2002) to its first follow-up (2004) based on gender, race, or the interaction of gender and race?

The social capital factors were school-sponsored activities (SSA), out-of-school activities (OSA) and parent involvement (PI). The first social capital factor, school-sponsored activities (SSA), produced a statistically significant difference indicating that students' mean scores were lower in the base year than the first follow-up year. There were no significant interactions with the covariate socio-economic (SES) [$F(1,546) = .535, p = .465$], the interaction with gender [$F(1,546) = .222, p = .638$], the interaction with race [$F(1,546) = .097, p = .755$], and the interaction with gender and race combined [$F(1,546) = .293, p = .588$]. A statistical significance in several between-subjects effects (SES, gender, and race) was found. The covariate SES was statistically significant indicating that SES had an effect between groups. Gender was statistically significant indicating that females had higher mean scores than males. Finally, race was statistically significant with African American students having higher mean scores than Hispanic students.

Students had lower mean scores in out-of-school activities (OSA) during the base year than in the first follow-up year. Because the covariate SES was not statistically significant it was removed from further analysis for OSA. This indicated that there was no change in out-of-school activities based on SES. The interaction effect of gender [$F(1,547) = 1.078, p = .300$] was not statistically significant. Similarly, the interaction

effect of race [$F(1, 547) = .821, P = .365$] in out-of-school activities was not statistically significant. The interaction of gender and race combined [$F(1, 546) = .495, p = .482$] were not statistically significant. A statistical significance in between-subjects effects was found in gender indicating that males had higher mean scores than females. Race was not statistically significant [$F(1, 547) = .381, P = .537$], also the interaction of gender and race [$F(1, 547) = .330, P = .566$] were not statistically significant.

Students had lower mean scores in parental involvement (PI) during the base year than the first follow-up year. There was not a statistically significant interaction effect of parent involvement with the covariate socioeconomic status (SES) [$F(1, 546) = .428, p = .513$]. There was no statistically significant interaction effect on gender [$F(1, 546) = .207, p = .649$] There was no statistically significant difference on race [$F(1, 546) = .054, p = .816$] Finally, there was no statistically significant difference in the interaction of gender and race [$F(1, 546) = 3.59, p = .05$]. A statistical significance in several between-subjects effects (SES, gender, and race) was found. The covariate socioeconomic status was statistically significant indicating that there were differences seen in parental involvement. A statistical significance was found in gender indicating that females had higher mean scores than males. A statistically significant effect was found in race and suggested that African American had higher mean scores than students Hispanic students Finally, a statistically significant difference was not found in the interaction of race and gender as a between subject factor [$F(1, 547) = .330, p = .294$].

Research Question 2

When adjusting for SES, is there a difference in mathematics IRT- estimated number right score from the base year (2002) and the first follow-up (2004) based on gender, race, or the interaction of gender and race?

There was a statistically significant difference in Mathematics IRT-estimated number right scores, indicating that students tended to score lower in the base year than the first follow-up year. A statistically significant interaction effect was not found in gender [$F(1,547) = 1.571, p = .211$], or race [$F(1,547) = 3.091, p = .079$]. Also, there was not a statistically significant effect on the race and gender interaction [$F(1,547) = .067, p = .796$]. A statistically significant effect was found in two of the between-subjects effects (gender, race). A statistically significant effect was found in gender indicating that males had higher mean scores for the Mathematics IRT-estimated number right scores than females. There was a statistically significant effect between race, indicating that Hispanics scored higher than African Americans. There was not a statistically significant effect in the race and gender interaction [$F(1,547) = .067, p = .796$].

Research Question 3

Is there a predictive relationship between mathematics IRT- estimated number right score and gender, race and social capital factors for the base year (2002)?

A regression analysis was conducted to predict the social capital factors on base year mathematics standardized achievement scores on students' gender and race. The social capital factor, total out-of-school activities, was not a significant predictor; therefore, it was removed from further analysis of the base year. However, one of the

variables for the out-of-school activities (volunteering/performing community service) revealed a statistically significant predictor of base year mathematics ($F = 13.823$, $df = 3$, 547 , $p < .01$). Also one of the variables for parent involvement (discuss plans for taking ACT/SAT) was revealed to be a statistically significant predictor of base year mathematics ($F = 11.765$, $df = 3$, 547 , $p = .05$). The model predicted race, gender and total base year school-sponsored activities were significant predictors of base year mathematics ($R = .272$, $F = 10.873$, $df = 4$, 546 , $p < .01$). This model accounted for approximately 7.4% of the variance explained in base year mathematics.

Research Question 4

Is there a predictive relationship between mathematics Item Response theory (IRT)-estimated number right score and gender, race and social capital factors for the first follow-up year (2004)?

A regression analysis was performed to predict the social capital factors on follow-up year mathematics standardized achievement scores on students' gender and race. The model revealed that race, gender, total follow-up year school sponsored activities, and total follow-up year parent involvement were significant predictors of follow-up year mathematics ($R = .350$, $F = 15.32$, $df = 4$, 546 , $p < .01$). This model accounted for approximately 12.3% of the variance explained.

Discussion

Contrary to previous research that suggested that school-sponsored activities decline over time (Hanson & Kraus, 1998; Passmore & French, 2001), the opposite was

found in this study in that school-sponsored activities increased as students progressed to the 12th grade. The change in social capital may be due to students forming networks and finding social capital to be valuable as they progressed in the high school years. Students may also find as they come closer to their senior year having strong social relationships may be extremely beneficial for finding out about teachers, and assistance in college-related decisions. The strong ties may be linked to certain informational resources that help them get through high school.

As expected, socioeconomic status was found to affect school-sponsored activities. According to the National Center for Educational Statistics (NCES) (1999), students of low socioeconomic status were found to be less likely to participate in activities than were students of high socioeconomic status. Socioeconomic status has been shown to influence change in school-sponsored activities because the type of activities in which students participate may vary based on family income. For example, families of higher socioeconomic status may seek resources through networks for their adolescent to participate in activities that provide better opportunities for learning. These activities may also require a financial commitment which might be less affordable for families of lower socioeconomic status.

As expected, females had higher participation rates than males in school-sponsored activities. This finding was aligned with the work of McNeal (1999) and Posner & Vadell (1999). McNeal (1998), Eccles and Barber (1999), and other researchers have explained that females tend to be more interested in academically-related types of

activities than males. The strong networks in academically-related associations that the females maintain may have led to continued participation, especially as achievement increased.

African American students were found to have higher scores in participation than Hispanic students in school-sponsored-activities. This finding is consistent with those of Brown and Evans (2002), Gerber (1996), and McNeal (1998, 1999). All of these authors have noted the higher participation rates of African American students when compared to Hispanic students.

Although research findings regarding out-of-school activities were mixed, this researcher found that there was a change in participation rates in the form of an increase as student progressed to their senior year. Eccles & Barber (1999) explained that friendship networks set norms for behaviors, expectations and aspirations, which influence overall adolescents' behavior across domains. As students progress through high school they are likely to expand their social circle of friends as well as the types of activities become involved in. Therefore, the patterns seen in out-of-school activity participation may relate more closely to the peer association and the values associated within the peer group.

Similar to Murtaugh's (1988) findings in out-of-school activities, the findings of this study showed that gender was statistically significant with males having higher scores than females. This finding has been consistent with other research suggesting that boys tend to spend more time in activities outside the home and form more relationships

outside of the home than girls (White & Gager, 2007). Other findings showed that Latina girls were less likely to be involved in out-of-school activities because of parents' expectations for girls' involvement in household activities (Stanton-Salazar, 2001). With girls having less access to out-of-school activities, they may be hindered in gaining the benefits involved in establishing social resources that may aid their classroom learning.

Because much of the research reviewed suggested a decrease in parent involvement as students progress through school (O'Bryan, Braddock, & Dawkins, 2006), the increase in the follow-up year was surprising. Stevenson & Baker (1987) noted that the decline may be due to (a) parents' belief that their involvement is not needed as much for their adolescent, and (b) the adolescents' need to become autonomous and separate from their parents. Ma (1999) suggested in his empirical work that a different type of parent involvement is needed as the students progress through the high school level. It is possible that as students come closer towards choices about college and future plans, parents may become more involved in providing assisting. Positive encouragement received from parents enhances the adolescents' motivation to achieve in school (Anthrop-Gonzalez, Velez, & Garrett, 2005).

It was found in the present study that parent involvement was affected by socioeconomic status. This has also been a common finding in previous research. Family socioeconomic status has been the most influential factor in understanding achievement of Hispanic students (Smith, 2008). Parents with higher socioeconomic status have been viewed as more likely to (a) keep abreast of upcoming information and necessary

resources to assist their adolescent and (b) seek out more available networks that can increase the chances for success. Parents with lower socioeconomic status have been viewed as possibly being unaware of the necessary resources available or may have limited financial capital to access the resources. In addition, parents of lower socioeconomic status may have limited networks, thereby decreasing the chances for their adolescents' educational success.

That parent involvement affected females more than males was a finding that was consistent with the findings of the Ho Sui-Chu and Willms (1996) who found that parents exhibited higher levels of educational involvement with their daughters than with their sons. Muller (1998) explained that often daughters experience more nurturing and more restrictions from their parents than do sons. Moreover, daughters tend to build more supportive relationships with parents inside the home, whereas parents' connection with their sons may be fostered through events outside the home (Muller, 1998). Because of this, it is not common for parent involvement to have a greater effect on girls than on boys, especially since parent involvement tends to be less as boys become older.

Finally, parent involvement was found to have a greater effect on African American students than Hispanic students. This finding was surprising since much of the empirical research suggested that low levels of parental involvement were a concern for African American high school seniors (O'Bryan, Braddock, & Dawkins, 2006). This finding is especially important since high school seniors have tended to be in a transitional phase between adolescence and adulthood at a time when they must make

educational decisions about their future academic goals. Given that African American students tend to be less consistent in their educational plans and occupational goals (Dai, 1996), increased parent involvement may have greater value for high school seniors than for younger students.

The results regarding math achievement indicated that students scored higher in the follow-up year. This finding was surprising since previous reports suggested that math scores decrease as students progress to their senior year. This finding may suggest that students could probably be mastering a more advanced level of mathematics, if they had taken it during the senior year rather than the sophomore year. Yet, it is also possible that factors not limited to students' course-taking and prior knowledge about math facts could also have an effect. Previous achievement has been a common indicator of learning aptitude and cognitive ability (Keith & Lichtman, 1994). If the math test was administered in the students' sophomore year, they would have had over a year before taking another math test in the senior year. It is likely that students' previous knowledge of math in the 10th grade could have impacted students' 12th grade scores. The finding that males had higher scores than females was not surprising. Catsambis (1994) explained that in high school females have tended to limit their opportunities to learn math by taking the minimal number of courses required to graduate. Some researchers have suggested that the gender differences seen in math can be accounted for by females' insufficient involvement in math courses (Oakes, 1990). Unfortunately, insufficient math

background may lead to females avoiding certain career fields involving high levels of math.

The findings regarding race were consistent with previous literature which has shown that Hispanics tend to outscore African Americans on standardized tests (National Center for Education Statistics, 2005). Some studies have noted that although Hispanic students may not do as well as other populations they still have positive attitudes for math (Morales & Saenz, 2007). This may explain the behavioral strides Hispanics make towards learning math. The finding suggests that Hispanic students may invest more time in developing social networks that enhance their academics. For example these students may be more likely to seek out resources for assistance when they are having a difficult time in their academics.

Consistent with many of studies that have shown gender as a predictor for achievement, gender was the strongest predictor for achievement in the present study. The findings showed that males' scores were higher than females in the base and follow-up years. This finding was not surprising. While this may be due to several factors as indicated in previous studies (Doolittle & Cleary, 1987; Matsumoto, 1995), the connection between activity involvement may be a significant factor particularly for the follow-up year since students would have had greater opportunity for involvement. Having participation in certain type of groups that are academically focused groups will encourage academic achievement. When students engage in academically related activities, they are likely to create 'networks of achievement' that can influence

academics in the 10th and 12th grades. Social relationships that encourage values and behaviors for learning may be more implicit in the interaction among peers.

As expected, total-school sponsored activities were found to be predictors of the base year math achievement and the first follow-up year math achievement. This finding was congruent with the benefits of participating in structured activities. Through participation, students are able to learn and develop skills that enhance achievement in school (Larson & Verma, 1999). Participating in school-sponsored activities can build social capital and promote positive social relationships where students can gain support and encouragement from their peers and adult role models. This, then, can influence academic achievement. In addition, when students are a part of an achievement oriented peer group that supports their academics, they will be more likely to study together or help each other with difficult school assignments. This findings in this study lead to the suggestion that peers networks are particularly important during the high school years, especially during the base year and in cases where parents are unfamiliar with the educational system. Antrop-Gonzalez, Velez & Garrett, (2005) reported that Hispanic families often encourage their children to engage in school-sponsored activities so as to socially bond with their classmates and be able to gain assistance.

Total out-of-school activities were not a significant predictor of math achievement in the base year or follow-up year in this model. As indicated in the review of the literature, when out of school time is unstructured or less organized it provides fewer chances for students to receive academic gains. It has been found, however, that when

adolescents have high levels of participation in sports and other non-academic related activities, they are less likely to pursue academically-related endeavors (Dotterer, McHale, & Crouter, 2007). This study yielded different findings. A link was not found with the total out-of-school activities and achievement, yet the study did find a link between one variable, volunteer/performing community services, as a predictor for achievement. Volunteering or performing community service builds supportive relationships where students can make connections between their family, school, or community. Thus, students may have learning opportunities through volunteering that can enhance their academics. Given that the total out-of-school activities variable was not a predictor of math achievement, it is possible that adolescents should spend time in specific types of out-of-school activities where they can have relationships and experiences that influence their educational success. As noted earlier, when students can engage in activities in their own community and learn about different things concerning their community, their chances for academic success can be impacted.

Although the total parent involvement category was not found to be significant in the base year, parental involvement made a difference in math achievement for Hispanic students when there were discussions about SAT/ACT tests. This may suggest that since Hispanic adolescents often come from families where the parents have not gone to college, and since they hold high expectations for their adolescent enrolling in college, discussions about SAT/ACT may have great importance for Hispanic families. For the follow-up year, the total parent involvement was found to be a significant predictor of

math achievement. Fuligni (1997) conducted a study of immigrant families and explained that parents often influenced students' behaviors and attitudes about education. He believed that Hispanic families' strong focus on education stems from being from an immigrant family where high values of schooling and educational success are encouraged. Parents who have high value for education often support their children in doing well in school because the educational opportunities in the United States are often superior to the ones available in their home countries (Fuligni, 1997). Consequently, he found that children were more likely to put forth time and effort to meet parents' expectations and they often use a network of friends to do homework together, or study for exams (Fuligni, 1997). Anthrop-Gonzalez, Velez and Garrett (2005) explained that parents provide support for academics by providing traditional help to students and monitoring success. In cases where parents were unable to offer help, they found someone or some resource to facilitate the learning process. This type of support is crucial for academic success because when parents show interest in their adolescents' academics it increases the chances for the student to do well. Similar to previous analysis which showed Hispanic ethnicity students as having higher math achievement scores, this model predicted race showing Hispanic ethnicity to be a better predictor of academic achievement than African American ethnicity. This finding was not surprising.

Overall the findings suggested that among these predictors various components reinforced and enhanced academic achievement. While this study validated the effects of social capital, caution needs to be taken so as to explore other factors influencing

academic success such as grades, GPA, or course-taking patterns. Having a model incorporating such features will enhance the value of social capital for high school students.

Implications for Practice

Much of the existing research on African American or Hispanic adolescent school outcomes has either focused on between group comparisons between either European American adolescents and African American students or European American adolescents and Hispanic students, sometimes often combining African American and Hispanic populations as a single category. As a result little is known about how academic achievement may differ between certain groups. This study sought to examine social capital factors for African American and Hispanic students separately.

The value of examining adolescent social context as a source of social capital for students, and the association it has to enhancing academic performance has been acknowledged in literature (Coleman, 1988). The present investigation examined social capital factors (school-sponsored activities, out-of-school activities and parent involvement) of African American and Hispanic high school students by assessing indicators (race, gender, and socioeconomic status) of academic achievement. The results showed that social capital was instrumental in predicting academic achievement for students.

Given the findings, it is important that students be encouraged to participate in programs that provide social capital for their academic success. Considering all contexts

of adolescents' lives such as the family, community, and school, is essential for educational success. Overall, the results of this study revealed that for this sample of African American and Hispanic high school students, social capital was stronger in the follow-up year, which suggests that these students have weaker networks in their sophomore years but have a tendency to build stronger networks as they progress to the senior year. This is a significant finding because although previous research indicated reversed findings, it may be that failure to have strong bonds during the earlier years of high school could be negatively impacting achievement in both groups. During the high school years, students are more likely to have access to a wide variety of people who can potentially impact their future educational or career paths.

Socioeconomic status was found to affect both school-sponsored activities and parent involvement, which was an expected correlation. Students' access to networks through activities may be limited by socioeconomic status and the type of informational access they have through networks. Parent involvement will also change as parent education and family income changes. In addition, parents may be more likely to provide a home environment which facilitates learning as their access to resources increases.

Although an investigation of out-of-school activities showed that males had stronger connections in nonschool-related events, this may mean that parents need to examine more closely the types of activities in which their adolescents are involved. Perhaps parents should encourage involvement in activities that provide more structure instead of less structure to gain the benefits on academic achievement. Social capital from

school-sponsored activities was a strong predictor of academic achievement for both the base year and follow-up year. Parent involvement was also found to be a predictor of achievement; however, it showed more relevance in the follow-up year. Finally, race and gender were found to be strong predictors of academic achievement, which aligned with previous research.

Given the findings, there are several implications for educators even though the correlations between social capital through out-of-school activities were small. Clearly, social capital through certain types of out-of-school activities can have a positive association with academic success. Although students may obtain networks from out-of-school activities, not all types of out-of-school activities are beneficial for student achievement. While parent involvement was found to be a stronger predictor in the follow-up year, as indicated by previous research, not all forms of parent involvement are useful during the high school years.

Research results have suggested that the academic achievement can be raised by increasing social capital through school-sponsored activities and parent involvement. Students who are actively involved in forming relationships with other students in school activities and discuss their school day-to-day events with their parents will be likely to perform better. Although these findings may be important to the general population, they are even more relevant for Hispanic and African American students who historically have not demonstrated the academic achievement of other groups and are generally considered educationally disadvantaged and at-risk for academic failure.

Recommendations for Future Research

Researchers and educators have been concerned about African American and Hispanic students learning given the findings of lower academic achievement when compared to adolescents from other groups. It is important to identify factors that promote academic achievement in these two populations. Social capital has been suggested as a key factor for promoting academic achievement in adolescents. The researcher hypothesized that social capital in the form of school-sponsored activities, out-of-school activities, and parent involvement would enhance academic achievement for African American and Hispanic students. This study revealed differences in African American and Hispanic high school student social capital and examined social capital as predictors of academic achievement. In this present study the researcher built on prior work by (a) studying within and between group differences of African American and Hispanic adolescents during two time periods in high schools and (b) using a multi-dimensional conventionalization of social capital to understand more fully the social context of African American and Hispanic students and the effects on achievement.

Since the literature and research have provided continuing evidence suggesting that both African American and Hispanic students are at risk for school failure, increasing social capital may be one of the methods by which academic achievement may be enhanced. The findings of greatest interest in this study were that race, gender, and school-sponsored activities and parent involvement were the strongest predictors for

academic achievement. Students who invest in these types of social capital will have higher chance for academic success.

Parent involvement was seen to be a strong predictor of academic achievement for students in their senior year. The finding was consistent with previous research, suggesting that certain kinds of parental behavior is effecting for enhancing academics during high school. Parents who spend time discussing school-related events with their adolescent will be more likely to have an impact on academic achievement.

The question of what other social capital factors work to influence academic achievement requires further examination. For example, although the presence of social capital was instrumental in academic achievement for students, it did not have similar results for all the students in this study. African American students had higher levels of social capital (school-sponsored activities) than did Hispanic students. One can postulate that some students may have had greater social networks established, yet it is unclear why the social ties were not instrumental in affecting achievement in the same way. A question arises as to whether the group norms and behaviors that were established were conducive for academic achievement. Also, because the change in social capital was found to be greater in follow-up year, it may be necessary to investigate why students access social capital more in the later rather than the earlier high school years.

Future analysis is necessary to examine the relationship between a broad spectrum of social capital factors and academic achievement. The investigation needs to include

broader categories of school-sponsored activities, out-of-school activities, and parent involvement variables.

Not all out-of-school activities were predictors for academic success, but utilizing a model examining more predictors of out-of-school activities would be useful for understanding academic success of African American and Hispanic students. Although the patterns of involvement seen in adolescents provide a picture of the social context during high school, little is known about how high school age adolescents spend their time when they are not in formal education or family settings. For example, much of research suggested that religious activity were commonly practiced among Hispanic families. Incorporating broader types of out-of-school activity may help to explain other impact on academic achievement. As discussed earlier, approximately 40% of time is spent in nonschool-related activities yet little is known about their impact on educational success. A recommendation for future research would be to investigate the wider range of social settings in which adolescents find themselves during their high school years.

While the social capital of teachers was not investigated in this study, examining teacher support would be essential for understanding the social context of the school environment on achievement. Teachers are a major component in the instructional process for academic achievement. Therefore, building a model to include social capital produced through teacher interaction with students is necessary when examining predictors for academic success.

Finally, the current study was limited to math achievement outcome since NCES, Educational Longitudinal Study used it as the only variable measured twice in their original study. Future studies should examine multiple outcomes for seeing broader relationships with academic achievement. Although there were social capital factors in the current study that were found to hold little significance with math achievement, it is possible that if the same factors were measured against different outcomes, there may have been significance. Just as Zaff, More, Papillo and Williams (2003), found significant relationships when measuring multiple outcomes, it may be likely that when one outcome does not hold significance the other does. At the time of this study, raising academic achievement was a broad issue and a great concern for schools. Understanding how factors may contribute to different educational outcomes would have a rich value for educational researchers. This future research could provide valuable insights to enhance the educational success of many high school students.

Summary

In this chapter, the findings of the study for each of the research questions have been discussed. Conclusions, implications for practice and recommendations for future research and study have also have been offered.

APPENDIX
INSTITUTIONAL REVIEW BOARD APPROVAL



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Notice of Exempt Review Status

From: **UCF Institutional Review Board**
FWA00000351, Exp. 5/07/10, IRB00001138

To: **Jacqueline Davis**

Date: **May 30, 2008**

IRB Number: **SBE-08-05665**

Study Title: **The Influence of Social Capital Factors on African American and Hispanic High School Student Achievement.**

Dear Researcher:

Your research protocol was reviewed by the IRB Vice-chair on 5/29/2008. Per federal regulations, 45 CFR 46.101, your study has been determined to be **minimal risk for human subjects and exempt** from 45 CFR 46 federal regulations and further IRB review or renewal unless you later wish to add the use of identifiers or change the protocol procedures in a way that might increase risk to participants. Before making any changes to your study, call the IRB office to discuss the changes. **A change which incorporates the use of identifiers may mean the study is no longer exempt, thus requiring the submission of a new application to change the classification to expedited if the risk is still minimal.** Please submit the Termination/Final Report form when the study has been completed. All forms may be completed and submitted online at <https://iris.research.ucf.edu>.

The category for which exempt status has been determined for this protocol is as follows:

4. Research involving the collection or study of existing data, documents, records, pathological specimens or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. (**"Existing"** means already collected and/or stored before your study starts, not that collection will occur as part of routine care.)

All data, which may include signed consent form documents, must be retained in a locked file cabinet for a minimum of three years (six if HIPAA applies) past the completion of this research. Any links to the identification of participants should be maintained on a password-protected computer if electronic information is used. Additional requirements may be imposed by your funding agency, your department, or other entities. Access to data is limited to authorized individuals listed as key study personnel.

On behalf of Tracy Dietz, Ph.D., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 05/30/2008 08:59:07 AM EDT

IRB Coordinator

LIST OF REFERENCES

- Anguiano, R. P. V. (2004). The effect of parental involvement on high school completion. *Family Issues*, 25 (1), 61-85.
- Antrop-Gonzalez, R., Velez, W., Garrett, T. (2005). ¿Dónde están los estudiantespuertorriqueños exitosos [Where are the successful Puerto Rican students]? Successful factors of high achieving Puerto Rican high school students. *Journal of Latinos and Education*, 4 (2), 77-94.
- Bankston, C. (2004). Social capital, cultural values, immigration, and academic achievement: The host country context and contradictory consequences. *Sociology of Education*, 77 (2), 176-179.
- Bassani, C. (2006). A test of social capital theory outside of the American context: Family and school social capital and youths' math scores in Canada, Japan, and the United States. *International Journal of Educational Research*, 45 (6), 380-403.
- Berry, R. Q., III. (2005). Voices of success: Descriptive portraits of two successful African American male middle school mathematics students. *Journal of African American Studies*, 8(4), 46-62.
- Bianchi, S.M. & Robinson, J. (1997). What so you do today? Children's use of time, family, composition, and the acquisition of social capital. *Journal of Marriage and Family*, 59 (1), 332-344.
- Bol, L. & Berry, R. Q. III. (2005). Secondary mathematics teachers' perceptions of the achievement gap. *The High School Journal*, 88 (4), 32-43.
- Bonnet, G. (2002). Review essay: reflections in a critical eye on the pitfalls of international assessment. *Assessment in Education: Principles, Policy and Practice*, 9 (3), 387-399.
- Borden, L.M., Perkins, D. F., Villarruel, F. A., Chaeleron-Hug, A., Stone, & Keith, J. G. (2006). Challenges and opportunities to Latino youth development: Increasing meaningful participation in youth development programs. *Hispanic Journal of Behavioral Sciences*, 28 (2) 187-208. Bourdieu, P.(1986). The forms of social capital. In J.G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). New York: Greenwood.
- Bourdieu, P. & Wacquant, L.J.D. (1992). *An invitation to reflexive sociology*. Cambridge, UK: Polity Press. Bowman, K.L. (2001). The new face of school desegregation. *Duke Law Journal*, 50(6), 1751-1808.

- Braswell, J.S., Lutkus, A.D., Grigg, W.S., Grigg, Santapau, S.I., Tay-Lim, B. & Johnson, M. (2001). U. S. Department of Education, Office of Educational Research and Improvement. National Center for Education Statistics, The Nation's Report Card: Mathematics 2000. Washington, D.C. Retrieved January 2, 2009 from <http://nces.ed.gov/Pubsearch/pubsinfo.asp?pubid=2001517>
- Broh, B.A. (2002). Linking extracurricular programming to academic achievement: Who benefits and why? *Sociology of Education*, 75(3), 69-91.
- Brown, R. & Evans, W.P. (2002). Extracurricular activity and ethnicity: Creating great school connection among diverse student populations. *Urban Education*, 37, 41-58.
- Call, K. T. & Mortimer, J.T. (2001). Arenas of comfort in adolescence: A study of adjustment in context. Mahwah, NJ: Erlbaum.
- Carbonaro, W.J. (1998). A little help from my friends' parents: Intergenerational closure and educational outcomes. *Sociology of Education*, 71(4), 295-313.
- Carruthers, C. P., & Busser, J. A. (2000). A qualitative outcome study of boys and girls club program leaders, club members, and parents. *Journal of Park and Recreation Administration*, 18 (1), 50-67.
- Catsambis, S. (1994). The path to math: Gender and racial- ethnic differences in mathematics participation from middle school to high school. *Sociology of Education*, 67 (3), 199-215.
- Catsambis, S. (2001). Expanding knowledge of parental involvement in children's secondary education: Connections with high school seniors' academic success. *Social Psychology of Education*, 5 (2), 149-177.
- Chee, K. H., Pinto, N.W. & Smith, W. L. (2005). Gender differences in the academic ethic and achievement. *College Student Journal*, 39(3), 604-618.
- Coleman, J.S.(1988). Social capital and the creation of human capital. *American Journal of Sociology*, 94(1), 95-120.
- Coleman, J. S. (1990). *The Foundations of Social Theory*. Cambridge, MA: Harvard University Press.
- Coleman, J. S. & Hoffer, T. B. (1987). Public and private schools: The impact of communities. New York, Basic Books.
- Cooper, C. R., Cooper, R.G., Azmitia, M., Chavira, G. & Gullatt, Y. (2002). Bridging multiple worlds: How African American and Latino youth in academic outreach

- programs navigate math pathways to college. *Applied Developmental Science*, 6(2), 73-87.
- Cooper, H., Valentine, J.C., Nye, B. & Lindsay, J. J.(1999). Relationships between five after-school activities and academic achievement. *Journal of Educational Psychology*, 91 (2), 369-378.
- Cote, S. & Healy, T. (2001). The well-being of the nations. The role of human and social capital. Organization for Economic Co-operation and Development, Paris.
- Crane, J. (1996). Effects of home environment, SES, and maternal test scores on mathematics achievement. *Journal of Educational Research*, 89(5), 305-314.
- Croninger, R.G. & Lee, V.E. (2001). Social capital and dropping out of high school: Benefits to at-risk students of teachers' support and guidance. *Teachers College Record*, 103(4), 548-582.
- Crosnoe, R. (2001). Parental involvement in Education: The influence of school and neighborhood. *Sociological Focus*, 34, 4117-4434. Crosnoe, R. (2004). Social capital and the interplay of families and schools. *Journal of Marriage and Family*, 66 (1), 267-280.
- Dai, Y. (1996). Educational plans after high school: A national survey of high school seniors. *Journal of Research and Development in Education*, 30 (1), 22-30.
- Darling, N., Caldwell, L.L. & Smith, R. (2005). Participation in school-based extracurricular activities and adolescent adjustment. *Journal of Leisure Research*, 37 (1), 51-76.
- Davila, A. Mora, W. (2007). Do gender and ethnicity affect civic engagement and academic progress? Working Paper 53. Center for Information and Research on Civic Learning and Engagement (CIRCLE), University of Maryland, 1-25.
- Dearing, E., McCartney, K., & Taylor, B.A.(2001). Change in family income-to-needs matters more for children with less. *Child Development*, 72(6), 1779-1793.
- Deplit, L.(1995). Other People's Children: Cultural conflicts in the classroom. New York: The New York Press.
- Desimone, L. (1999). Linking parent involvement and student achievement: Do race and income matter? *Journal of Educational Research*, 93 (1), 11-30.
- Dika, S. L. & Singh, K. (2002). Applications of in social capital educational literature: a critical synthesis. *Review of Educational Research* 72(1): 31-60.

- Doolittle, A. E. & Cleary, T.A. (1987). Gender-based differential item performance in mathematics achievement items. *Journal of Educational Measurement*, 24(2), 157-166.
- Downey, D.B. & Vogt Yuan, A.S. (2005). Sex differences in school performance during high school: Puzzling patterns and possible explanations. *The Sociological Quarterly*, 46(2), 299-321.
- DePlanty, J., Coulter-Kern, R., Duchante, K.A. (2007). Perceptions of parent involvement in academic achievement. *The Journal of Educational Research*, 100(6), 361-368.
- Dika, S. L. & Singh, K. (2002). Applications of social capital in educational literature: A critical synthesis. *Review of Educational Research*, 72 (1), 31-60.
- Dotterer, A. M. , McHale, S. M. & Crouter, A. C. (2007). Daily activities and school engagement in African American adolescents. *Journal of Youth and Adolescents* 36 (4), 391-401.
- Dumais, S. A. (2009). Cohort and gender differences in extracurricular participation: The relationship between activities, math achievement, and college expectations. *Sociological Spectrum*, 29 (1), 72-100.
- Eccles, J. S. & Barber, B. L. (1999). Student council, volunteering, basketball, or marching band: What kind of extracurricular involvement matters? *Journal of Adolescent Research*, 14 (2), 10-43.
- Eccles, J. S. (1993). School and family effects on ontogeny of children's interests, self perceptions, and activity choice. In J. Jacobs (Ed.), Nebraska symposium on motivation, 1992: Developmental perspective on motivation (pp.145-208). Lincoln: University of Nebraska Press.
- Eccles, J.S., Barber, B. L., Stone, M. & Hunt, J. (2003). Extracurricular activities and adolescent development. *Journal of Social Issues*, 59(35), 865-889.
- Eide, E. R. & Ronan, N. (2001). Is participation in high school athletics an investment or a consumption good? Evidence from high school and beyond. *Economics and Education Review*, 20 (5), 431-442.
- Elam, C. ,Stratton, T. & Gibson, D.D. (2007). Welcoming a new generation to college: The millennial students. *Journal of College Admission*, 195 (1), 20-25.
- Elish-Piper, L. (2008). Parent involvement in reading. *Illinois Reading Council Journal*, 36 (2), 44-50.

- Entwisle, D. R., Alexander, K.L., & Olson, L. (1994). The gender gap in math: Its possible origins in neighborhood effects. *American Sociological Review*, 59 (1), 822-838.
- Epstein, J. L. (1991). Effects on student achievement on teachers' practices on parent involvement. In S.B. Silvern (Ed.), *Advances in reading/ language research: Vol.5. Literacy through family, community and school interaction* (pp 261-276). Greenwich, CT: JAI Press.
- Epstein, J.L. (1992). School and family partnerships. In M. Aiken (Ed.), *Encyclopedia of educational research* (6th ed.), Macmillan, New York, pp.1139-1151.
- Evans, G.W.(2004). The environment of childhood poverty. *American Psychologist*, 59 (2), 77-92.
- Fan, X. & Chen, M. (2001). Parent involvement and students' academic achievement: A meta-analysis preview. *Educational Psychology Review*, 13(1), 1-22.
- Fan, X., Chen, M., & Matsumoto, A.(1997). Gender differences in mathematics achievement: Findings from the National Education Longitudinal Study of 1988. *Journal of Experimental Education*, 65 (2), 229-242.
- Fashola, O. S., (2003). Developing the talents of African American male students during the nonschool hours. *Urban Education*, 38 (4), 398-430.
- Feldman, A. F. & Matjasko, J.L. (2005). The role of school-based extracurricular activities in adolescent development: A comprehensive review of future direction. *Review of Educational Research*, 75 (2), 159-210.
- Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research*, 59 (2), 117-142.
- Furstenberg, F. F. & Hughes, M.E. (1995). Social capital and successful development among at-risk youth. *Journal of Marriage and the Family*, 57(3), 580-592.
- Fletcher, A. C., Elder, G.H. & Mekos, D. (2000). Parental influences on adolescent involvement in community activities. *Journal of Research on Adolescence*, 10 (1), 29-48.
- Fulgini, A., J. (1997). The academic achievement of adolescents from immigrant families: The roles of family background, attitudes, and behavior. *Child Development*, 68 (2), 351-363.

- Furstenberg, F. F., & Hughes, M. E. (1995). Social capital and successful development among at-risk youth *Journal of Marriage and the Family*, 57(1), 580-592.
- Gager, C.T., Cooney, T.M., & Call, K.T. (1999). The effects of family characteristics and time use on teenage girls' and boys' household labor. *Journal of Marriage and the Family*, 61 (12), 982-994.
- Gadzella, B. M., & Davenport, J. (1985). Achievement and attitudes in mathematics. *College Student Journal*, 19 (1), 398-403.
- Galbo, J. J. (1989, April). Nonparental significant adults in adolescents' lives: Literature overview theory and issues. *Paper presented at the National Biennial Meeting of the Society for Research in Child Development*, Kansas City, MO (ERIC Document Reproduction Service No. 305996).
- Gallagher, S. A. (1989). Predictors of SAT mathematics scores of gifted male and gifted female adolescents. *Psychology of Women Quarterly*, 13 (2), 191-203.
- Gambone, M. & Arbreton, A. (1997). *Safe havens: The contributions of youth organizations to health adolescent development*. Philadelphia: Public/Private Ventures.
- Gardner, M., Roth, J. & Brooks-Gunn, J. (2008). Adolescents' participation in organized activities and developmental success 2 and 8 years after high school: Do sponsorship, duration, and intensity matter? *Developmental Psychology*, 44(3), 814-830.
- Gerber, S. B. (1996). Extracurricular activities and academic achievement. *Journal of Research & Development in Education*, 30 (1), 42-50.
- Gilman, R. (2001). The relationship between life satisfaction, social interest, and frequency of extracurricular activities among adolescent students. *Journal of Youth and Adolescence*, 30(2), 749-767.
- Glanville, J. L., Sikkink, D. & Hernandez, E. T. (2008). Religious involvement and educational outcomes: The role of social capital and extracurricular participation. *The Sociological Quarterly*, 49 (1), 105-137.
- Goddard, R. (2003). Relational networks, social trust, and norms: A social capital perspective on students' chances of academic success. *Educational Evaluation and Policy Analysis* 25 (1), 59-74.
- Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S.*

Fourth- and Eighth-Grade Students in an International Context. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

- Gutman, L.M., & Midgley, C. (2000). The role of protective factors in supporting the academic achievement of poor African American students during the middle school transition. *Journal of Youth and Adolescence*, 29(2), 223-248.
- Grigg, W. S., Danne, M. C., Lin, Y. & Campbell, J. R. (2003). U. S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. The Nations Report Card. Washington, D. C.
- Grigg, W., Donahue, P., & Dion, G. (2007). The nation's report card: 12th grade reading and mathematics, 468-496. U. S. Department of education, National Center for Education Statistics. Washington, D.C.:U.S.Government Printing Office.
- Grolnick, W.S. & Slowiaczek, M.L.(1994). Parents' involvement in children's schooling: A multidimensional conceptualization and motivational model. *Child Development*, 65(1), 237-252.
- Hamilton, L. S. (1998). Gender differences on high school science achievement tests: Do format and content matter? *Educational Evaluation and Policy Analysis*, 20 (3), 179-195.
- Hanson, S. L. & Kraus, R. S. (1998). Women, sports, and science: Do female athletes have an advantage? *Sociology of Education*, 71 (2), 93-110.
- Hao L,& Bonstead-Burns M. (1998). Parent-child differences in educational expectations and the academic achievement of immigrant and native students. *Sociology of Education*, 71(3),175–198
- Healy, T., Cote, S., Heliwell, J.F., & Field, S. (2001).The Well-being of nations: The role of human and social capital. Paris: OECD Publishing.
- Hedges, L. V. & Nowell, A. (1995). Sex differences in mental test scores, variability, and numbers of high-scoring individuals. *Science*, 269 (1), 41-45.
- Henderson, A.T., & Mapp, K.L. (2002). A new wave of evidence: The impact of school, family, and community connections on student achievement. Austin , TX: National Center for Family and Community Connections.
- Hendrix, V. , Sederberg, C. , & Miller, V. (1990). Correlates of commitment/alienation among high school seniors. *Journal of Research and Development in Education*, 23 (1), 129-135.

- Herbert, T.P., & Reis, S. M.(1999). Culturally diverse high-achieving students in an urban high school. *Urban Education* 34(4), 428-457.
- Herlihy, C. & Quint, J. (2006). Emerging evidence on improving high school student achievement and graduation rates: The effects of four popular improvement programs. *National High School Programs*. Retrieved April 9, 2009, from <http://hdl.handle.net/10207/11512>
- Hofman, R. H., Hofman, W. A., Guldemon, H. (2003). Effective families, peers, and schools -A configuration approach. *Educational Research and Evaluation*, 9(3), 213-237.
- Ho Sui-Chu, E. S., & Willms, J.D. (1996). Effects of parent involvement on eighth-grade achievement. *Sociology of Education*, 69 (2) 126-141
- Howe, N. & Strauss, W. (2000). *Millennials Rising: The next great generation*. New York: Vintage Books.
- House, G. N.(2005). Reclaiming children left behind: Addressing the causes and cures for low minority achievement. *School Administrator*, 63(1), 6-15.
- Huebner, M.A., & Mancini, J (2003). Shaping structured out-of-school time use among youth: The effects of self, family, and friend systems. *Journal of Youth and Adolescence*, 32 (6), 453-463.
- Hughes, S. A. (2003). An early gap in Black-White Mathematics achievement: Holding school and home accountable in an affluent city school district. *The Urban Review*, 35(4), 297-322.
- Hunt, H. D.(2005). The effect of extracurricular activities in the educational process: Influence on academic outcomes? *Sociological Spectrum*, 25(4), 415-445.
- Hyde, J. S., & Linn, M. C. (1988). Gender differences in verbal ability: A meta-analysis. *Psychological Bulletin*, 104 (1), 53-69.
- Hyde, J.S., Fennema, E. & Iamon, S.J. (1990). Gender differences in mathematics performance: A meta-analysis. *Psychological Bulletin*, 107(2), 139-155.
- Ingels, S, J., Scott, L.A. & Owings, J. A. (2004). *The High School Sophomore Class of 2002: A Demographic Description*. First Results from the Base Year of the Education Longitudinal Study of 2002. Washington, DC: National Center for Education Statistics.

- Ingels, S., Pratt, D., Rogers, J., Siegel, P., Stutts, E., & Owings, J. (2004a). *Education Longitudinal Study of 2002: Base Year Data File User's Manual*. Washington DC: U.S. Department of Education: National Center for Education Statistics.
- Ingels, S., Pratt, D., Rogers, J., Siegel, P., & Stutts, E. (2005). *Education Longitudinal Study of 2002: Base-Year to First Follow-up Data File Documentation* (NCES 2006-344). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office. Available: <http://nces.ed.gov/pubsearch>.
- Israel, G. D., Beaulieu, L. J. & Hartless, (2001). The influence of family and community social capital on educational achievement. *Rural Sociology*, 66 (1), 43-68.
- Jackson, K. & Remillard (2005). Rethinking parent involvement: African American mothers construct their roles in mathematics education of their children. *The School Community Journal*, 15(1), 51-73.
- Jeynes, W. (2007). The relationship between parent involvement and urban secondary school student achievement. *Urban Education*, 42(1), 82-110,
- Jordan, W. J. (2009). Black high school students' participation in school-sponsored sports activities: Effects on school engagement and achievement. *Journal of Negro Education*, 68 (1), 54-71.
- Jordan, W.J., & Nettles, S. M. (2000). How students invest their time outside of school: Effects on school related-outcomes. *Social Psychology of Education*, 3(4), 217-243.
- Kao, G. (2004). Social capital and its relevance to minority and immigrant populations. *Sociology of Education*, 77, 172-183.
- Keith, T.Z. (1991). Parent involvement and achievement in high schools. In Silvern, S. (Ed.), *Advances in Reading/Language Research: Literacy Through Family, Community, and School Interaction* (Vol. 5), JAI Press, Greenwich, CT.
- Keith, P. B. & Lichtman, M.V. (1994). Does parental involvement influence the academic achievement of Mexican-American eighth graders? Results from the National Educational Longitudinal Study. *School Quarterly*, 9(4), 256-272.
- Kimball, M. M. (1989), A new perspective on women's math achievement. *Psychological Bulletin*, 105(2), 198-214.
- Kleiner, B. & Chapman, C. (1999). Service-learning and community service among 6th through 12th grade students in the United States: 1996 and 1999. U.S. Department

of Education, National Center for Education Statistics, National Household Education Survey, 1996, 1999. 1-13.

- Kuh, G. D., Hu, S. & Vesper, N. (2000). "They shall be known by what they do": An activity based typology of college students. *Journal of College Student Development, 41* (2), 228-244.
- Kundanis, R. M. (2003). *Children, teens, families, and the mass media*. Lawrence Erlbaum Associates: NJ.
- Lamborn, S. D., Brown, B. B., Mouts, N.S., & Steinberg, L. (1992). Putting school in perspective: The influence of family, peers, extracurricular participation, and part-time work on academic achievement. In F.M. Newmann (Ed). *Student engagement and achievement in American secondary schools*. New York: Teachers College Press.
- Langenkamp, A. G. (2007). *Following different pathways: Effects of social relationships and social opportunity on students' academic trajectory after school transitions* (Doctoral dissertation, The University of Texas at Austin, 2007) Dissertation Abstracts International AAT 3284733 (208). Dissertation retrieved April 12, 2009 from Proquest.
- Lareau, A. & Horvat, E. (1999). Moments of social inclusion and exclusion. *Sociology of Education, 72*(1), 155-171.
- Larson, R.W., & Verma, S. (1999). How children and adolescents spend their time across world: Work, play, and developmental opportunities. *Psychological Bulletin, 125* (6), 701-736.
- Lee, J. (2002). Racial and ethnic achievement gap trends: Reversing the process towards equity? *Education Researcher, 31*(1), 3-12.
- Lisella, L. C. & Serwatka, T. S. (1996). Extracurricular participation and academic achievement in minority students in urban schools. *Urban Review, 28* (1), 63-80.
- Lin, N. (2001). *Social capital: A theory of social structure and action*. New York: Cambridge University Press
- Linn, M. C. & Hyde, J. S. (1989). Gender Mathematics and Science. *Education Researcher, 18* (8), 17-27.
- Lopez, R., Scribner, D. & Mahitvanichcha, K. (2001). Redefining parental involvement: Lessons from high-performing migrant-impacted school. *American Educational Research Journal, 38*, 107-114.

- Ma, X. (1999). Dropping out of advanced mathematics: The effects of parental involvement. *Teachers College Record*, 101(1), 60-81.
- Mahoney, J.L., Harris, A.L., Eccles, J.S. (2006). Organized activity participation, positive youth development, and the over-scheduling hypothesis. *Social Policy Report*, 20(4), 3-31.
- Mahoney, J.L. & Stattin, H. (2000). Leisure activities and adolescence anti-social behavior: The role of social structure and social context. *Journal of Adolescence*, 23(2), 113-127.
- Marsh, H. (1992). Extracurricular activities: Beneficial extension of the traditional curriculum or subversion of academic goals. *Journal of Educational Psychology*, 84(4), 553-562.
- Marsh, H. W. & Kleitman, S. (2002). Extracurricular school activities: The good, the bad, and the nonlinear. *Harvard Educational Review*, 72(4), 464-514.
- Marsh, H.E., & Kleitman, S. (2003). School athletic participation: Mostly gain with little pain. *Journal of Sport and Exercise Psychology*, 25 (3), 205-228.
- Murtaugh, M. (1988). Achievement outside the classroom: The role of nonacademic activities in the lives of high school students. *Anthropology & Education Quarterly*, 19 (4), 382-395.
- Matsumoto, A. R. (1995, April). Gender differences in mathematics performance: A comparison of meta-analysis. *Paper presented at the annual meeting of American Research Association*, San Francisco.
- Mayer, D. P., Mullins, J. E., Moore, M.T., & Ralph, J. (2000). *Monitoring School Quality: An indicators Report*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.
- Maxwell, S. E. & Delaney, H. D. (2004). *Designing experiments and analyzing data. A model comparison perspective* (2nd ed.) Mahwah, NJ: Lawrence Erlbaum Associates.
- McHale, S. M. , Crouter, A. C. , & Tucker, C. (2001). Free-Time activities in middle childhood; Links with adjustment in early adolescence. *Journal of Child Development*, 72 (6), 1764-1778.
- McNeal, R. B. (1995). Extracurricular activities and high school dropouts. *Sociology of Education*, 68 (1), 62-81.

- McNeal, B. (1998). High school extracurricular activities: Closed structures and stratifying patterns of participation. *Journal of Educational Research*, 9 (3), 183-191.
- McNeal, R. (1999). Parental involvement as social capital: Differential effectiveness on science achievement, truancy, and dropping out. *Social Forces*, 78(1), 117-144.
- McLaughlin, D.H., Bandeira de Mello, V., Blankenship, C., Chaney, K., Esra, P., Hikawa, H., Rojas, D., William, P., and Wolman, M. (2008). *Comparison Between NAEP and State Mathematics Assessment Results: 2003*. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.
- Melnick, M. J., Sabo, D. F. & Vanfossen, B. (1992). Educational effects of interscholastic athletic participation on African-American and Hispanic youth. *Adolescence*, 27(106), 295-308.
- Miller, K. E., Sabo, D.F., Farrell, M.P., Barnes, G.M. & Melnick, M. J. (1998). Athletic participation and sexual behavior in adolescents: The different worlds of boys and girls. *Journal of Health and Social Behavior*, 39(2), 108-123.
- Moles, O.C. (1993). Collaboration between schools and disadvantaged parents: Obstacles and openings. In N.F. Chavkin (Ed.), *Families and Schools in a Pluralistic Society* (pp21-52). Albany: SUNY Press.
- Morales, M. C. & Saenz, R. (2007). Correlates of Mexican American students' standardized tests scores: An integrated model approach. *Hispanic Journal of Behavioral Sciences*, 29 (3), 349-365.
- Morgan, S. & Sorensen, A. (1999). Parental Networks, Social Closure, and Mathematics Learning: A Test of Coleman's Social Capital Explanation of School Effects. *American Sociological Review*, 64 (5), 661-681.
- Morrow, V. (1996). 'Rethinking childhood dependency: children's contribution to the domestic economy', *The Sociological Review*, 44 (1), 58-77.
- Morrow, V. (1999). Conceptualizing social capital in relation to the well-being of children and young people: A critical review. *Sociological Review*, 47(4), 744-765.
- Muller, C. (1998). Gender differences in parental involvement and adolescents' mathematics achievement. *Sociology of Education*, 71 (4), 336-356.

- Muller, C. (2001). The role of caring in the teacher-student relationship for at-risk students. *Sociological Inquiry*, 71(2), 241-255.
- Muller, C., Katz, S.R., & Dance, L.K.(1999). Investing in teaching and learning: Dynamics of teacher-student relationship from each actor's perspective. *Urban Education*, 34(3), 292-337.
- Murname, R. J., Willett, J. B. & Levy, F. (1995). The growing importance of cognitive skills in wage determination. *Review of Economics and Statistics*, 74(2), 251-266.
- National Center for Education Statistics. (September, 1999). NAEP 1998 writing: a report card for the nation and the states. Retrieved September, 2009, from <http://nces.ed.gov/pubSearch/pubsinfo.asp?pubid=1999462>
- National Center for Education Statistics. (August, 2000). National Assessment of Educational Progress (NAEP) 1990-2000 Mathematics Assessments. Retrieved February 3, 2009, from <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2001518>
- National Center for Educational Statistics (December, 2003) Volunteer service by young people from high school through early adulthood. Retrieved February 2, 2009, from <http://nces.ed.gov/pubSearch/pubsinfo.asp?pubid=2004365>
- National Center for Educational Statistics. (July, 2005) Trends in the well-being of American youth. Retrieved January 3, 2009, from <http://nces.ed.gov/PUBSEARCH/pubsinfo.asp?pubid=2005050>
- National Center for Educational Statistics. (February, 2007). The Nation's Report Card. Retrieved February 2, 2009, <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2007468>
- National Commission on the High School Senior Year (2001). Raising our sights: No high school senior left behind. Princeton, NJ: The Woodrow Wilson National Fellowship Foundation. Retrieved from February 1, 2009, from <http://www.woodrow.org/CommissionOnTheSeniorYear>.
- Nettles, S.M. (1991). Community contributions to school outcomes of African-American students. *Education and Urban Society*, 24(1), 132-147.
- Nevarez, C. (2001). Mexican Americans and other Latinos in post-secondary education: Institutional influences. Charleston, WV: ERIC Clearinghouse on Urban Education (ERIC Digest No. ED459038).

- Niemi, R. G., Hepburn, M.A. , & Chapman,C. (2000). Community service by high school students: A cure for civic ills? *Political Behavior*, 22(1), 45-69.
- Oakes, J. (1990). Opportunities, achievement and choice: Woman and minority students in science and mathematics. *Review of Research in Education*, 16(1), 153-222.
- O'Bryan, S. T., Braddock, J. H., Dawkins, M. P. (2006). Bringing parents back in: African American parental involvement, extracurricular participation, and education policy. *Journal of Negro Education*, 75 (3), 401-414. Ogbu, J. (1987). Variability in minority school performance: A problem in search of an explanation. *Anthropology and Education Quarterly*, 18(4), 312-334.
- Olszowski-Kubilius, P. & Lee, S. (2004). The role of participation in-school and outside-of-school activities in the talent development of gifted students. *Journal of Secondary Gifted Education*, 15 (3), 107-123.
- Orfield, G., Losen, D., Wald, J. & Swanson, C. B.(2004). Losing our future: How minority youth are being left behind by the graduation rate crises. Cambridge,MA: The Civil Rights Project of Harvard University.
- Orr, A.(2003). Black-White differences in achievement: The importance of wealth. *Sociology of Education*.,76(4), 281-304.
- Pallas, A. M. & Alexander, K.L. (1983). Sex differences in quantitative SAT performance: New evidence on differential work course-work hypothesis, *American Educational Research Journal*, 20 (2), 165-182.
- Passmore, A., & French, D. (2001). Development and administration of a measure to access adolescents' participation in leisure activities. *Adolescence*, 36 (141). 67-75.
- Pelling, N. J.(2004). Children and adolescents: The impact of the Internet. *Australian Journal of Guidance and Counseling*, 14(2), 176-186.
- Peng, S. S. & Lee, R. M. (1991). How variables that make a difference: A study of 1988 eighth graders. Unpublished manuscript, Temple University Center for Research in Human Development and Education, Philadelphia, PA.
- Peressini, D.D. (1998). The portrayal of parents in the school mathematics reform literature: Locating the context of parental involvement. *Journal of Research in Mathematics Education*, 29(5), 555-582.
- Planty, M., Hussar, W., Snyder, T., Provasnik, S., Kena, G., Dinkes, R., KewalRamani, A. & Kemp, J. (2008). The Condition of Education 2008. National Center for

Education Statistics. Institute of Education Sciences. U. S. Department of Education, D. C.

- Pong, S., Hao, L., & Gardner, E. (2005). The roles of parenting styles and social capital in the school performance of Asian and Hispanic adolescents. *Social Science Quarterly*, 86 (4), 928-950.
- Portes, A. (1988). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology*, 24 (1), 1-24.
- Portes, A. & Landolt, P. (1996). The downside of social capital. *The American Prospect*. 26(1), 18-21.
- Posner, J. K. & Vandell, D.L. (1999). After-school activities and the development of low income urban children: A longitudinal study. *Developmental Psychology*, 35 (3), 868-879.
- Putnam, R. (2000). *Bowling Alone: The Collapse and Rival of American Community*. New York: Simon & Schuster.
- Qian, Z. & Blair, S, L (1999). Racial/Ethnic differences in educational aspirations of high school seniors, *Sociological Perspectives*, 42 (4), 605-625.
- Raymore, L., Godbey, G. & Crawford, D. (1994). Self-esteem, gender, and socioeconomic status: Their relation to perceptions of constraints on leisure among adolescents. *Journal of Leisure Research*, 26, (2), 99-118.
- Rosenfeld, L. B. & Richman, J.M. (1999). Supportive communication and school outcomes, part II: Academically “at-risk” low income high school students. *Communication Education*, 48 (4), 294-307.
- Rueda, R., Monzó, L. D. and Arzubiaga, A. (2003). Academic instrumental knowledge: Deconstructing cultural capital theory for strategic intervention approaches. *Current Issues in Education*, 6(14), 40-63.
- Scales, P.C., Roehlkepartain, E.C., Neal, M., Kielsmeier, J.C. & Benson, P.L.(2006). Reducing academic achievement gaps: The role of community service and service learning. *Journal of Experiential Education*, 29(1), 38-60.
- Schneider, B. & Coleman, J.S. (1993). *Parent, their children, and schools*. Boulder. CO: Westview.

- Schreiber, J. B. & Chambers, E. A. (2002). After-school pursuits, ethnicity, and achievement for 8th - and 12th-grade students. *Journal of Educational Research*, 96 (2), 90-110.
- Shaver, A.V., & Walls, R.T. (1998). Effect of Title 1 parent involvement on student reading and mathematics achievement. *Journal of Research and Development in Education*, 31(1), 90-97.
- Shepherd, R., & Edelman, R.J. (2001). Caught in the web. *The Psychologist*, 14(10), 520-521.
- Shumow, L. & Miller, J.D. (2001). Parents' at-home and at-school academic involvement with young adolescents. *Journal of Early Adolescence*. 21 (1), 68-91.
- Silliker, S. A. & Quirk, J. T. (1997). The effect of extracurricular activity participation on the academic performance of male and female high school students. *School Counselor*, 44(4), 288-293.
- Simon, B. S. (2004). High school outreach and family involvement. *Social Psychology of Education*, 7(1), 185-209.
- Simpkins, S. D., Davis-Kern, P. E., & Eccles, J, S. (2005). Parents' socializing behavior and children's participation in math, science, and computer out-of-school activities. *Applied Developmental Science*, 9(1), 14-30.
- Singer, B., Beasley, T. & Bauer, E. (1997). Interactions of ethnicity, mathematics achievement level socioeconomic status, and gender among high school students' mathematics self- concepts. *Journal of Education for Students Placed at Risk*, 2(4), 377-393.
- Smith, M. J. (2008). Four steps to a paradigm shift: Employing critical perspectives to improve outreach to low-ses African American and Latino students and their parents. *Journal of College Admission*, 201, 17-23.
- Smith-Maddox, R. (1999). The social networks and resources of African American eighth graders: Evidence from the National Education Longitudinal Study of 1988. *Adolescence*, 34 (133), 169-183.
- Sprigler, D. M. & Alsup, J. K. (2003). An analysis of gender and the mathematical reasoning ability sub-skill of analysis-synthesis. *Education*, 123(4), 763-769.
- Stanton-Salazar, R.D. & Dornbusch, S. M. (1995). Social capital and the reproduction of inequality: Information network among Mexican-origin high school students. *Sociology of Education*, 68(2),116-135.

- Stanton-Salazar, R. (1997). A social capital framework for understanding the socialization of racial minority children and youths. *Harvard Education Review*, 67(1), 1-40.
- Stanton-Salazar, R.D. (2001). *Manufacturing hope and despair: The school and kin support networks of U.S. Mexican youth*. New York: Teachers College Press.
- Steinberg, L., Dornbush, S. M., & Brown, B.B. (1992). Ethnic differences in adolescent achievement. An ecological perspective. *The American Psychologist*, 47 (6), 723-729.
- Stevenson, H.C. (1988). Raising safe villages: Cultural-ecological factors that influence the emotional adjustment of adolescents. *Journal of Black Psychology*, 24 (1), 44-59.
- Stevenson, D. L. & Baker, D.P. (1987). The family-school relation and the child's performance. *Child Development*, 58 (1), 1348-1357.
- Stewart, E. B. (2006). Family-and individual-level predictors of academic success for African American students: A longitudinal path analysis utilizing national data. *Journal of Black Studies*, 36(4), 597-621.
- Stewart, E. B. (2008). School structural characteristics, student effort, peer associations, and parent involvement. *Education and Urban Society*, 40 (2), 179-204.
- Stinson, D.W. (2006). African American male adolescents, schooling (and mathematics): Deficiency, rejection, and achievement. *Review of Educational Research*, 76(4), 477-506.
- Thomas, J.P. (2000). Influences on mathematics learning and attitudes among African American High School students. *Journal of Negro Education*, 69(3), 165-183.
- Trueba, H. (1988). Culturally based explanations of minority students' academic achievement. *Anthropology & Education Quarterly*, 19(3), 270-289.
- U.S. Department of Education. (2002, May 15). Introduction: No Child Left Behind. Retrieved March 13, 2007, from [Http://www.nclb.gov/next/overview/index.html](http://www.nclb.gov/next/overview/index.html)
- U.S. Department of Education, National Center for Education Statistics. (2004). *The condition of education 2004* (Event dropout rates by family income, 1972-2001). Washington, DC: National Center for Educational Statistics.

- Valdez, J.R.(2002). The influence of social capital on mathematics course selection by Latino high school students. *Hispanic Journal of Behavioral Sciences*, 24(3), 319-339.
- Valentine, J. C., Cooper, H., Bettencourt, B.A., & Dubois, D. L.(2002). Out-of- school activities and academic achievement: The mediating role of self-beliefs. *Educational Psychologist*, 37 (4), 245-256.
- Voyer, D. (1996). The relation between mathematical achievement and gender differences in spatial abilities: A suppression effect. *Journal of Educational Research*, 88 (3), 563-571.
- Walker, E.N.(2006).Urban high school students' academic communities and their effects on mathematics success. *American Educational Research Journal*, 43(1), 43-73.
- Weihner, G.R. & Tedin, K.L. (2006). Minority student achievement. *Review of Policy Research*, 23(5), 963-967.
- White, A.M. & Gager, C.T. (2007). Idle hands and empty pockets? Youth involvement in extracurricular activities, social capital, and economic status. *Youth and Society*, 39 (1), 75-111.
- Worrell, F. C. & Bucknavage, L. B. (2004). Participation in extracurricular activities by students attending assisted prestige schools in Trinidad. *Caribbean Curriculum*, 11, 129-147.
- Yan, W. (1999). Successful African American students: The role of parental involvement. *The Journal of Negro Education*, 68 (1), 5-22.
- Yan, W. (2000). Successful African American students: The role of parental involvement. *Journal of Negro Education*, 68(1), 5-21.
- Yan, W. & Lin, Q. (2005). Parent involvement and mathematics achievement: Contrast across racial and ethnic groups. *The Journal of Educational Research*, 99(2), 116-127.
- Zaff, J. F. , Moore. K. A., Papillo, A. R. & Williams, S.(2003). Implications of extracurricular activity participation during adolescence on positive outcomes. *Journal of Adolescent Research*, 18(6), 599-630.