AN EXAMINATION OF TIME USE PATTERNS INFLUENCE ON ACADEMIC ACHIEVEMENT AMONG AFRICAN AMERICAN AND HISPANIC MALE HIGH SCHOOL STUDENT ATHLETES

by

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ABSTRACT

The purpose of this investigation is to contribute to the body of knowledge in the area of effective time management skills among African American and Hispanic male student athletes and their academic achievement utilizing the Educational Longitudinal Study of 2002 (ELS: 2002) Base year thru the First follow-up database. The researcher has assessed indicators (socioeconomic status, time use patterns, sports participation, and race) within the construct of academic achievement among African American and Hispanic male high school student athletes. Their contribution to the main effects revealed that statistically significant differences exist between the non-sports participant and sports participant groups. After controlling for time spent completing mathematics homework and socioeconomic status, the findings revealed that time spent completing math homework was significantly related to academic achievement for African American and Hispanic male student athletes. Time spent watching television was not significantly related to academic achievement for African American and Hispanic male student athletes. For the variable time spent playing on the computer game, the analysis indicated that the detrimental effect of time spent playing video/computer games was the same for African American and Hispanic male student athletes. Finally, it is noteworthy that effective use of time (i.e., playing video games less) and sports participation positively influences academic achievement of African American and Hispanic males high school student athletes. Strategies were uncovered for possible future research among African American and Hispanic male student athletes to increase academic achievement levels.

Wonderful Women

You listened to my words while talkin', sippin' tea, laughin' on the front porch.

When we sneaked into your room, You always knew that we were there.

Your presence is near.

You birth me, promised me, scold me and taught me how to be.

You inspired, guided, graded and displayed patience with me.

Your strength is incomparable.

You trust and believe in me. You use little words to empower me.

Your unwavering stance completes me.

You are in awe of me. You learn from me, challenged me and love me.

Your smiles are contagious to me. You wonderful women mean the world to me!

This dissertation is dedicated to my daughters – Kianna, Kei, Kiah, Kaena – and all those who have supported my educational growth over the years. Without you, I would not have had the inner strength to persevere through this academic journey.

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LIST OF ACRONYMS/ABBREVIATIONS

CATI	Computer-assisted telephone interviewing
CHAMPS	Challenging Athletes' Minds for Personal Success
ELS: 2002	Educational Longitudinal Study of 2002 base year through the first follow-up
EAP	Extracurricular Activity Participation
Math IRT	Mathematics Item Response Theory
NCAA	National Collegiate Athletic Association
NCES	National Center for Education Statistics
NFHS	National Federation of State High School Associations
NCLB	"No Child Left Behind" Act
TEAP	Total Extracurricular Activity Participation

CHAPTER ONE: INTRODUCTION

Interscholastic sport programs are a major feature of American high schools and yet, the educational consequences are not fully known or understood. On one hand, supporters of interscholastic sport programs argue that participation improves grades, keeps students in school, and raises their educational expectations. School-sanctioned extracurricular activities play an important role in the lives of students, parents, and school personnel as well as a great deal of time and money are devoted to these activities. On the other hand, others make the case that sports deflect time and energy away from the classroom. Whether interscholastic sport programs support or interfere with the educational mission of American high schools continues to be a point of serious debate.

The last three decades have witnessed a strong interest by a growing number of researchers who investigated the social and educational consequences of the interscholastic athletic experience. Beginning with James S. Coleman's (1961) influential work, researchers have been especially inquisitive about the psychosocial correlates of high school athletic participation. "Athlete" versus "non athlete" studies now number in the hundreds. Researchers have a variety of variables that can be explored.

Research variables studied have included, high school athletic participation on grades, choice of high school program, social values, popularity, peers' educational plans, global and academic self-esteem, parents' and teachers' academic encouragement.

Other variables studied include competitive orientation, educational aspirations, delinquent behavior, application and acceptance to college, academic progress in college, graduation rates, occupational aspirations, status, earnings expectations and adult earnings.

While the sheer quantity of student athletes' research is impressive, Coakley (1978) revealed that the quality of sports participation research has drawn criticism. Stevenson (1975) reviewed the research published through the mid-1970s and concluded that ". . . to date, there is no valid evidence that participation in sport causes any verifiable socialization effects. The stated educational legitimization of physical education and of athletics must, therefore, remain in the realm of belief and should not be treated as fact" (p. 299).

Greendorfer (1987) looked at the same literature and concluded that methodological flaws in design, misinterpretation of correlational findings for cause-and-effect relationships, inherent weaknesses of cross-sectional research designs, failure to control for intelligence and social class, and the inability to explain the mechanisms through which sport participation operates to bring about positive (or negative) changes renders many of these studies suspect. Despite a host of positive outcomes attributed to sports participation, Greendorfer wondered whether the direct, independent effects of athletic participation can explain any of the psychosocial benefits attributed to sport.

Unfortunately, the great majority of the "sport participation effects" studies have focused on white males and, to a much lesser extent, on white females (McPherson, 1980; Melnick, Sabo, & Vanfossen, 1992). Only a few of studies have examined the effects of high school athletic participation on black youth (i.e. Jordan, 1999), most of them focusing on males and not a single study has looked at the impact of sport participation on Hispanic youth. In a nation in which it is predicted that one of every three people is or will be a member of a racial or ethnic minority, such a glaring omission begs for correction.

Statement of the Problem

Many high school student athletes are required to deal with more responsibilities without the skills necessary to balance daily events successfully. Some critics believe that participation in extracurricular activities detracts from academic performance. Coleman suggested a direct relationship of conflict between athletics and academics. His “zero-sum theory” predicted that sports participation detracts from academic study time resulting in low achievement. Others believe the opposite. According to Misra and McKean (2000), the effective use of time lowers student athletes stress level, which in turn may increase academic performance.

Purpose of the Research

The purpose of this study is to examine how time use patterns and sports participation impact academic success of African American and Hispanic male student athletes. Participation in high school interscholastic sports programs has shown to correlate with the improvement of academic performance (Fejgin, 1994; Marsh, 1993; Snyder & Spreitzer, 1992). However, Coleman's (1961) zero-sum model advocates that students who put their energy into sports are less likely to pursue academic objectives. In theory, he believes that youth do not have time or energy to achieve excellence and satisfaction in both roles. The aim of this research is to disentangle how student athletes can perform at a high academic level and balance the time commitment that is required to participate in various sports.

In the 1998 National Educational Longitudinal Study, Jordan (1999) found a positive relationship between black students' varsity sports participation and chronological academic performance. Marsh's (1992) evaluation of total extracurricular activity participation (TEAP) during the last two years of high school (based on the nationally representative High School and Beyond data) found that, after controlling background variables and sophomore outcomes, extracurricular activity participation had small but statistically significant and positive relationships with 17 of 22 seniors.

The postsecondary outcomes included e.g., social and academic self-concept, educational aspirations, coursework selection, homework, absenteeism, academic achievement, and subsequent college attendance. Time use patterns of adolescents are mentioned with little or no importance within the literature. More research concerning factors of time use may reveal some interesting trends about academic achievement, time use patterns and sports participation.

Relevance of Study

Currently, few studies explore time management factors e.g., (Schreiber & Chambers, 2002), which are associated with the academic success of African American and Hispanic male high school student athletes. The design of this study will determine how effective use of time and sports participation factors influence academic performance among African American and Hispanic male high school student athletes. Due to the dearth of literature about time use patterns among this population, specific strategies concerning the effective use of time remains hidden.

Research Questions

The research questions for this study are:

1. What are the effects of Hispanic and African American male student athletes' time use patterns on their academic achievement, controlling for socio-economic status and time spent completing mathematics homework?

There were three sub-questions:

1a. What are the effects of Hispanic and African American male student athletes' time spent in extracurricular activities on their mathematics achievement, controlling for socio-economic status and time spent completing mathematics homework?

1b. What are the effects of Hispanic and African American male student athletes' time spent watching TV/DVDs on their mathematics achievement, controlling for socio-economic status and time spent completing mathematics homework?

1c. What are the effects of Hispanic and African American male student athletes' time spent playing video/computer games on their mathematics achievement, controlling for socio-economic status and time spent completing mathematics homework?

The second research question is:

2. What are the effects of Hispanic and African American male student athletes' sports participation on their academic achievement, controlling for socio-economic status and time spent completing mathematics homework?

The third research question is:

3. Is there a difference between Hispanic and African American male students' mathematics achievement based on sports participation and time use, controlling for socio-economic status and time spent completing mathematics homework?

There were four sub-questions for the third research question, each related to the interaction between race and sports participation or race and the three time use variables:

3a. Is the effect of sports participation on mathematics achievement the same for Hispanic and African American male student athletes, controlling for socio-economic status and time spent completing mathematics homework?

3b. Is the effect of time spent on extracurricular activities on mathematics achievement the same for Hispanic and African American male student athletes, controlling for socio-economic status and time spent completing mathematics homework?

3c. Is the effect of time spent watching TV/DVDs on mathematics achievement the same for Hispanic and African American male student athletes, controlling for socio-economic status and time spent completing mathematics homework?

3d. Is the effect of time spent playing video/computer games on mathematics achievement the same for Hispanic and African American male student athletes, controlling for socio-economic status and time spent completing mathematics homework?

Conceptual / Theoretical Framework

Due to high stakes testing, schools are demanding student to achieve at a predetermine level. In addition to the schools demands, student athletes must meet the physical, mental and time requirements of their chosen sport. According to Coleman's theory (1961), these demands facilitate less emphasis on academic requirements. Within prior literature, Larson and Verma (1999) disputed the potential developmental benefits of extracurricular activities due to overestimating results. These premises compelled the researcher to desegregate nationally representative data on how effective use of time manipulates academic success among high school student athletes.

Britton and Tesser (1991) described a simple theoretical model of time management practices intended to maximize intellectual productivity. Their model specifies several time management components: choosing goals and sub goals, prioritizing the goals, generating tasks and subtasks from the goals, prioritizing the tasks, listing the tasks on a "to-do" list, scheduling the tasks, and then completing the tasks. They predicted that students with well-developed time management practices would accomplish more intellectually and therefore would achieve academically. The goal is to provide student athletes with strategies on how to perform at academically high levels before, during and after sports participation by effectively utilizing a set of skills, tools and/or system to accomplish their academic, professional and lifetime goals.

Limitations

1. The study is limited to the Educational Longitudinal Study of 2002 (ELS: 2002) data set.

2. The range of this evaluation is narrow.

3. Pre-existing groups of only African American and Hispanic males (i.e. Sports participants and non sports participants had already self-selected their group membership by participating or not participating in sports)

4. The accuracy of students' survey response is limiting.

5. Mathematics is the only assessment measure utilized in this study.

Assumptions

1. Students are matched from within the target population.

2. Instruction concerning time management within the high school curriculum is nonexistent.

3. Student athletes learn various skills from their sport but fail to transfer those skills to the classroom setting.

4. Statistical methods assume that variables have normal distributions.

5. Repeated measurements taken over a period of time help reduce some of the internal validity problems.

6. The Educational Longitudinal Study 2002 statistical data and original research design is valid and reliable.

Definition of Terms

For clarity of understanding, the researcher will define the subsequent terms as follows:

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

Black or African American: a person having origins in any of the Black racial groups of Africa.

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

Non-athletes: students were defined as sports non-participants if they did not participate in any sports or they indicated that their school did not offer sports.

Over sampling: deliberately sampling a portion of the population at a higher rate than the remainder of the population. For example, in ELS: 2002, private schools have been over sampled and Asians have been over sampled.

Point biserial correlation: a measure of association between a continuous variable and a binary variable. It is constrained to be between -1 and +1.

Student athlete: students are considered as a sports participant if they indicated that they participated in at least one sport at the intramural or interscholastic level.

Time use: concerns how time is allocated across a number of activities (such as time spent at home, at work, shopping, socializing with friends, etc.)

Time Management: is a set of skills, tools, and various methods that work in tandem to help you get more value out of your time with the aim of improving intellectually, physically, and emotionally. It covers events from daily tasks to long term goals.

Zero-Sum Model: a model, which indicates that more of one variable results in less of another. For example, more time involved in athletic participation leads to less time spent on academics.

Overview

The purpose of this research is to contribute to the body of knowledge in the area of effective time management among African American and Hispanic male student athletes with regard to their academic achievement. The study is organized as follows: this chapter is followed by a review of the existing literature on interscholastic sports participation, time management skills and academic success. The literature review discuss previous research concerning college sports, middle and high school athletics, gender, other activities, students' social/ethnic background, time use of 1970's youth as a comparison to today's adolescents, time management and stress. A few theories (i.e., zero sum theory and developmental theory) which have research implications on sports participation and academics are mentioned. They provide the theoretical base for this dissertation. Based on the literature review, Chapter 3 describes the investigation process of important variables that influence academic success among high school athletes. This includes descriptions of research design, assessment battery, and the appropriate statistical procedure for testing the hypotheses. Data analysis results are presented in Chapter 4, in which each research hypotheses are scrutinized. In Chapter 5, research findings, implications as well as recommendations are offered which will be an addition to the debate.

CHAPTER TWO: LITERATURE REVIEW

Introduction

The purpose of this section is to review and synthesize what is known about time management skills of adolescents and how sports participation influence academic achievement of African American and Hispanic male high school student athletes. There has been considerable debate regarding the advantages and disadvantages of participation in athletics, particularly with regard to the relationship between athletic success and academic achievement. Researchers (Fejgin, 1994; Marsh, 1993; Snyder & Spreitzer, 1992) have made a case, which establishes the benefit of sports programs at the high school level.

However, locating research or information pertaining to the time management skills of student athletes was a difficult task. The research parameters of this review were broken down into a variety of methods. First, a search was conducted on student athletics and academics and how those interacted with one another. Second, the researcher investigated other activities in which may cause schedule conflicts on a daily basis for student athletes. Third, a search was performed on the time management skills (or lack thereof) of students in general.

The student athlete is representative of the typical student, not the NBA All-Star or NFL Pro Bowler. The explanation of data simply reflects on the pros and cons of sport as a high school activity.

Factors of collegiate sports, middle and high school athletics, gender, other activities (i.e., intramural sports, homework, hanging out with friends and etc.), students' social/ethnic background, time use of 1970's youth as a comparison to today's adolescents and stress are discussed. The following section will discuss peer-reviewed research concerning the relationship between interscholastic sports participation and time use patterns as it relates to academic achievement of high school student athletes.

Extracurricular Activity Participation

The comprehensive, developmental model for school counseling has recently been described by Gysbers and Henderson (2000) and promoted by other researchers (Borders & Drury, 1992; Gysbers, Hughey, Starr, & Lapan, 1992). This model fosters the development of student competency in broad areas of lifelong learning, personal effectiveness, and life roles. Extracurricular activity participation (EAP) is one way to promote learning and development in some of these areas. Unfortunately, extracurricular activity participation can be perceived as interfering with academic success. Students or their parents often use academic pressures as a reason to avoid extracurricular activity participation. Extracurricular activity participation has been shown to be a positive factor in the overall development of adolescents (Holland & Andre, 1987; Taylor & Chiogioji, 1987).

In addition, Extracurricular activity participation has been associated with positive student outcomes including higher career aspirations (Marsh, 1992; Otto & Alwin, 1977; Picou, 1978; Spady, 1970), better school attendance (Jable, 1986; Laughlin, 1978), improved social standing among peers (Caulfield, 1980; Spady, 1970), and reduced delinquency (Landers & Landers, 1978). Furthermore, researchers saw beneficial consequences of extracurricular activity participation in lower dropout rates and less involvement with drugs. Student achievement in extracurricular activities was identified as the variable most predictive of success in later life (Joekel, 1985).

Additional support for extracurricular activity participation comes from self-complexity within the research. Linville (1987) demonstrated that diversity in abilities and group membership may serve as a buffer against stress. Extracurricular activity participation enables students to master new skills and explore different roles outside the classroom setting. Another assertion of the inherent value in self-complexity and diversity is the advice that "No life component should contribute more than one-third to self-esteem" (McCarthy & McCarthy, 1992, p 9). Thus, it seems that healthy human development is balanced across many domains. This balance is the goal of comprehensive, developmental school counseling programs.

The relationship between academic performance and interscholastic athletics has been of particular interest to investigators. Eidsmoe (1964) found that athletes had a higher grade point average (GPA) than the overall class average. Edwards (1967) and Schafer and Armer (1968) compared athletes with non-athletes.

Their findings showed athletes to have slightly higher grade point averages than did non-athletes. Harvancik and Golsan (1986) also found a small positive correlation between high school grade point average and extracurricular activity participation. Another small but statistically significant relationship between academic achievement and extracurricular activity participation was found by Marsh (1992). Laughlin (1978) took a somewhat different approach by comparing the academic performance of high school wrestlers both in-season and out-of-season. Grade point averages were better during the wrestling season than when these athletes were not participating in the sport.

Extracurricular activity participation research on athletes has not been without its critics. Holland and Andre (1987) identified many weaknesses in their review of extracurricular activity participation studies. They warned of the potential bias of self-selection on results and enumerated several confounding variables that might interact with extracurricular activity participation and various outcome measures. These confounding variables include family socioeconomic status, size of the school, extent of student participation, student ability, degree of participant success in the activity, student self-esteem, and the influences of significant others.

In past extracurricular activity participation research, there have been some omissions. Otto and Alwin (1977) reported that little evidence exists on the effects of non-athletic activities. Other common omissions in the extracurricular activity participation research include the absence of information on such factors as race, type of activity, age, length of student involvement, and social and political context (Taylor & Chiogioji, 1987).

According to Dickman and Lammel (2000), there is an increase effort by school administrators to assure genuine academic achievement of high school student athletes.

Extracurricular Activities in Middle and High School Athletics

Although the research in this area is sparse, it appears that there are differences in participation in extracurricular activities related to the grade level of the student. For example, Posner and Vandell (1999) recommended that how students utilize their time after school changes as grade level increases. Specifically, they found that the amount of time spent in unstructured activities decreased by one half from third to fifth grade. Extracurricular activity participation rates of student do not solely depend on the structure of the school the students attend or the students' grade level. For example, participation rates for students in the same grade are higher when those students are not the youngest students in the school (Blyth, Simmons, & Bush, 1978; Gifford & Dean, 1990). In other words, sixth graders in a K–6 school are likely to have higher extracurricular participation rates than sixth graders in a middle school (6–8) where they are the youngest students (Blyth, Simmons, & Bush, 1978). This pattern also applies to ninth graders (Gifford & Dean, 1990).

By far, high school students represent the largest group whose extracurricular activities are studied intensively, and the focus is on their athletic participation. Holland and Andre (1987) conducted a comprehensive review of the literature examining the relationship between participation in extracurricular activities and academic achievement.

They found discrepancies among male student athletes and non athletes concerning the accuracy of GPAs. Further within the literature review, lower scores on standardized achievement test scores (e.g., SAT) among male student athletes revealed that extracurricular involvement in sports accounted for lower test scores than non-athletes. However, no significant differences were found between female student athletes and non-athletes.

In a recent study, Silliker and Quirk (1997) examined high school students' extracurricular involvement and academic performance. This partnership studied 123 high school students who participated in interscholastic soccer during the first quarter of the school year and were not involved in any other major extracurricular activity during the second quarter. The results indicated that, during the soccer season (the first quarter); soccer players had higher GPAs than out of season (the second quarter). Attendance during the season was better. However, off-season attendance results were not statistically significant.

Broh (2002) also scrutinized the relationships between athletics and student outcomes. She analyzed data on students from the National Educational Longitudinal Study of 1988 (NELS-88), including the first and second follow-up see (Haggerty, Dugoni, Reed, Cederlund, & Taylor, 1996). Results of her analysis divulged that participating in interscholastic sports was related to improved mathematics grades, English grades, and mathematics test scores, even after controlling for the selection of higher performing students.

Extracurricular Activities in College

Hood, Craig, and Ferguson (1992) examined the effect of nonacademic activities such as work, watching television, and socializing on the academic achievement of freshman athletes and non-athletes at the University of Iowa. In this study, each athlete was matched with a non-athlete who was similar on variables such as gender, ethnicity, SAT/ACT scores, resident and nonresident status. The researchers also compared the matched groups to a group of randomly selected students from the university, for a total sample size of 2,856. They found that athletes achieved similar grades to non-athletes with similar backgrounds and abilities, with the athletes and non-athletes performing at a level slightly below that of the random sample of university students.

Terenzini, Pascarella, and Blimling (1996) reviewed the literature examining the effects of college students' out of - class experiences on academic, intellectual, and cognitive outcomes. They found that student athletes achieved at about the same level as non-athletes when pre-college achievement and aptitude were taken into account. They also found that level of participation in athletics had a negative relationship to scores obtained on standardized graduate admissions tests.

In studying extracurricular activity involvement, Terenzini and colleagues found "little consistent evidence suggesting that extracurricular involvement per se has a direct impact on students' academic or intellectual development" (p. 155). The studies by Terenzini et al. (1996) and Hood et al. (1992) suggest that, overall, extracurricular activities do not have major positive or negative effects on student achievement at the college level.

Other Activities

Some researchers have ventured beyond athletics to other extracurricular activities. Marsh (1992) conducted one of the first large-scale studies on extracurricular activities using the High School and Beyond database. He examined the relationship between the number of total extracurricular activity participation (TEAP) and a variety of outcome variables in a weighted sample of more than 4,000 students. Controlling for background variables and sophomore outcomes, Marsh reported that, in senior year, total extracurricular activity participation was positively associated with "social self-concept, academic self-concept, taking advanced courses, time spent on homework, postsecondary education aspirations, GPA, parental involvement, [and lower] absenteeism" (p. 557) for students across a variety of backgrounds. Marsh noted that the only meaningful effect sizes were for the relationships with academic and social self concept, but argued that participation in extracurricular activities was important because it can lead to "increased commitment to school and school values, which leads indirectly to increased academic success" (p. 560).

Walker and Stott (2000) are less optimistic, finding that a parallel can be drawn between pressures to perform in sports and pressures on schools to perform. In developing this analogy, the authors hold that schools, like athletes, have been exposed to the temptation of artificially inflating performance levels. The application of such strategies, although sometimes successful in the short term, has led to a number of unpleasant side effects and enduring little change within classrooms. This has given rise in some areas to negative feelings about the future of education.

Eccles and Barber (1999) looked at the risks and benefits of five different types of activities: prosocial activities, team sports, school involvement, performing arts, and academic clubs. They analyzed data on 1,259 students who participated in the Michigan Study of Adolescent Life Transitions from 1983, when they were in the sixth grade, through 1997. Academic achievement was measured using 10th- and 12th-grade GPA and subscale scores from the Differential Aptitude Test. The results of the longitudinal regression analysis showed that participation in any of the five types of activities studied resulted in a better-than-predicted 12th-grade GPA. They also found that students who participated in sports, performing arts, and school involvement activities reported liking school more over the years studied. These findings were consistent with Marsh's (1992), hypothesis about the effect of extracurricular activities on students' commitment to school.

Broh (2002) also reported that the differential effects of extracurricular activities were not limited to interscholastic and intramural sports. She found that participation in music groups was positively related to both math and English grades and math test scores; participation on student council was positively related to both sets of grades; and participation in yearbook was positively related to English grades alone. However, cheerleading was not related to either grades or test scores, and participation in vocational clubs had a small, but significant negative relationship to math and English grades and reading test scores.

Participation in interscholastic sports was also related to increased self-esteem, a more internalized locus of control, spending more time on homework, and increased contact among parents, students, and teachers. However, participation in intramural sports, as opposed to interscholastic sports, was negatively related to math and English grades and test scores.

Gender and Extracurricular Activities

Research has found consistent gender differences in preferences for participation in extracurricular activities e.g., (Fejgin, 1994). Evans, Schweingruber, and Stevenson (2002) examined students' interests in large samples of 11th graders in the United States (N = 1,052), Taiwan (N = 1,475), and Japan (N = 1,119). They uncovered that boys preferred sports and girls preferred music and art, preferences that may well be related to differences in the competence of beliefs in those areas that students have from as early as first grade (Fredricks & Eccles, 2002).

Similarly, in a study using telephone interviews with 194 low-income White and African American students in grades 3–5, Posner and Vandell (1999) found that females participated in academic activities and socialized at higher rates than males, whereas males participated in coached sports at a rate seven times greater than females. According to McNeal's study (1999), males' higher participation rates in sports have also been uncovered after controlling for variables like socioeconomic status and ethnicity.

As for black female athletes, the picture is far different. With the exception of competitive orientation (Wells & Picou, 1980), the research findings are either mixed or negative. For example, mixed effects have been reported for encouragement to attend college from parents, teachers, and peers (Hanks, 1979; Wells & Picou, 1980), educational aspirations (Hanks, 1979; Picou & Hwang, 1982; Wells & Picou, 1980), and number of years of postsecondary education (Hanks, 1979; Picou, McCarter, & Howell, 1985). Negative findings have been reported for educational attainment, occupational status, and adult earnings (Picou, McCarter, & Howell, 1985).

In the Worrell and Bucknavage study, females reported significantly higher participation rates in music, dance, drama/acting, and debate. Sports participation by females has a number of favorable outcomes that likely contribute, however indirectly, to improved academic performance. Zill, Nord and Loomis(1995) found that female athletes were substantially less likely to become pregnant, drop out of school or consume tobacco products. (The last is a marker for poor academic performance.)

In a study of a representative sample of 6th, 8th, and 10th graders in Iceland (N = 3,270), Vilhjalmsson and Kristjansdottir (2003) found that the gender difference in athletics was related to males' higher rates of participation in organized sports clubs. Worrell and Bucknavage (2004) reported similar findings in a study of 1,300 students attending prestige secondary schools in Trinidad. They observed that males participated at greater levels in all of the major sporting activities in school, with significant differences in soccer, cricket, and table tennis.

Ethnicity and Extracurricular Activities

Studies that have examined the effects of high school athletic participation on black male youth present a confusing mélange of contrasting findings. Sports participation seems to have a positive effect on educational aspirations (Braddock, 1981; Hanks, 1979; Picou, 1978; Picou & Hwang, 1982; Wells & Picou, 1980), competitive orientation (Wells & Picou, 1980), self-esteem (Braddock, 1981; Hanks, 1979), college enrollment (Braddock, 1981), college graduation (Braddock, 1981), and adult earnings (Picou, McCarter, & Howell, 1985).

Sports participation has mixed effects on grades (Braddock, 1981; Picou, 1978; Wells & Picou, 1980), encouragement to attend college from parents, teachers, and peers (Hanks, 1979; Picou, 1978; Wells & Picou, 1980), number of years of postsecondary education (Braddock, 1981; Hanks, 1979; Picou, McCarter, & Howell, 1985), and no effect on membership in leading crowds (Wells & Picou, 1980), choice of high school program (Braddock, 1981), peers' educational plans (Picou, 1978), and occupational status (Picou, McCarter, & Howell, 1985).

The impact of high school athletic participation on Hispanic youth, male or female, has never been directly studied. Consequently, no findings, let alone conclusions, are available at the present time. Despite the fact that thousands of black and Hispanic youth participate daily in interscholastic athletic programs, little is known about the social and educational consequences of their participation.

To further complicate matters, there is evidence to support the belief that adolescents' values and social roles are predominantly shaped by the communities in which they live and the adults in their lives. Taylor (1999) points to popular misperceptions among many black youths (e.g., “Although far more African Americans are physicians than NBA players, pervasive mass-media images say otherwise”).

Several studies have examined ethnic minority students’ participation in extracurricular activities. In one study, Lisella and Serwatka (1996) looked at the relationship between extracurricular participation and academic achievement in minority students attending urban schools. Participants consisted of 766 eighth-grade students of African American, Hispanic, or American Indian descent attending poor inner-city schools who had been included in NELS-88.

The pattern of extracurricular involvement for minorities was similar to that of the general student body and was also similar to the pattern for their White peers attending the same inner-city schools. Lisella and Serwatka did find that male minority students who participated in extracurricular activities had significantly lower academic achievement than nonparticipating males, but this pattern did not apply to minority female students.

Other researchers have utilized the NELS-88 data to examine extracurricular participation and academic achievement in minority students. Schreiber and Chambers (2002) looked at data from a stratified sample of 8,305 8th- and 10th-grade minority students included in NELS-88.

Extracurricular activities were categorized as (a) in-school/academic/ organized, (b) in-school/nonacademic/organized, (c) out-of school/nonacademic/ organized, (d) out-of school/nonacademic/ non-organized, and (e) out of-school/ academic/non-organized. Results indicated that, in general, in-school, academic, and organized activities predicted academic achievement, but the effects were different across school years, academic content areas, and ethnic groups.

For example, in eighth grade, in-school/ academic/organized activities were positively related to mathematics and science achievement for Asian/Pacific Islanders; to mathematics, reading, science, and geography/ history for White students; and to geography/history for Latinos, but were not related to any subject area for African Americans. Also, in eighth grade, out-of school/ academic/non-organized activities were related to mathematics and reading achievement for African Americans; mathematics, reading, and science for Asian Americans; and all four subject areas for Caucasians and Latinos.

In another study using NELS-88 data, Gerber (1996) looked at eighth-grade African American and White students who were attending public schools and reported a positive association between participation and academic achievement; however, the relationship was stronger for White than for African American students. More relevant to the present study, Gerber compared the participation rates of the African American and White students and found that, in general, African American students reported greater participation than White students did. However, there were differences when individual activities were examined.

White students reported higher participation in band/orchestra, dance, and religious organizations, whereas African American students reported higher participation in yearbook and computer clubs. McNeal (1998) also used the NELS-88 data, but statistically controlled for socioeconomic status and gender when looking at the participation rates of ethnic minorities. The results of this analysis were consistent with Gerber's and showed that differences in extracurricular participation rates favored racial and ethnic minority students.

In a recent study, Brown and Evans (2002) compared the participation rates of 1,739 students in grades 7–12. Students from several ethnic groups, including African American (17%), Asian American (15%), European American (22%), Hispanic American (18%), and mixed ethnicity (22%), were asked if they participated in sports activities, fine arts activities, in-school activities, or out-of-school activities. The results highlighted significant differences among ethnic groups for all activities except sports. For example, African Americans and European Americans reported significantly higher participation than Hispanic Americans in fine arts, and Asian Americans were less involved in out-of-school activities than European Americans.

Studies on the extracurricular participation rates of different ethnic groups yield a complex pattern of findings with no clear trends. The studies suggest that rates of participation and the relationship of extracurricular activities to academic achievement in ethnic minority groups differ by gender, age, and ethnicity, and are as complicated as the patterns reported for participation in sports activities in other studies e.g., (Broh, 2002).

The 1970 Adolescent Compared to Today's Adolescent

Today's adolescent perceived themselves as having less time to play outside and to be socially active than the adolescents of the past. Do they have more pressures placed on them or are they just different? Major changes have occurred in U.S. society, in American family life, and in the nation's schools during the last three decades.

These include:

- Demographic changes, such as the growing racial and ethnic diversity of the youth population, declines in average family size, and a shrinking of the adolescent and young adult segments of the population, relative to other segments, as a result of the 'birth dearth' of the 1970s (Aguinaga, 1994);

- Family life changes, such as increases in divorce, unmarried child bearing, and maternal employment (Fox, Connolly, & Snyder, 2005).

- The proportion of Blacks completing college increased between 1975 and 2000 The rate for Hispanics has fluctuated between 1975 and 2000 without a statistically significant pattern of increase (Knapp et al., 2005);

- Economic changes, such as stagnant or declining wage rates, especially for young workers with limited skills, a smaller payoff for having a high school diploma and a bigger payoff for a college degree, greater income inequality, and increases in child poverty (Zill & Nord, 1994);

- Cultural changes from 1978, such as the feminist movement, and a shift in the traits that parents value in their children, with parents nowadays placing more emphasis on independence and autonomy, whereas parents in the past placed more emphasis on conformity (Alwin, 1988; Zill, Booth, & Dunn, 1996).

- Educational changes, such as the 'back to basics' movement, increases in the expectations of both parents and youth themselves as to how far they will go in school. At ages 9,13,17, the average scores for Black students were higher in 2004 than in 1973; Hispanic students' average scores in mathematics were higher in 2004 than in 1973; the differences in average scores for White and Black students decreased between the first (1973) and the most recent (2004) assessments in mathematics, although White students continued to outperform Black students in 2004 (Wirt et al., 2004).

- A greater percentage of adolescents in 1999 than in 1978 had access to a computer to learn mathematics, studied mathematics through computer instruction, and used a computer to solve mathematics problems (Knapp et al., 2005).

A number of these developments might be expected to have impacts on the daily lives and time-use patterns of U.S. adolescents. The problem is that different developments seem to have varying or even conflicting implications for youthful time use, and there is no grand theory that would enable one to combine the disparate influences into one integrated hypothesis about how adolescent activity patterns have evolved (Zill & Nord, 1994). There are, however, two contrasting hypotheses that seem to emerge from some of the educational developments enumerated above.

One is that today's high school students should be spending more time studying, doing homework and participating in academic clubs, than participating in other activities (Coleman, 1961). The reasons for predicting the higher educational aspirations of today's youth (and their parents) are as follows: more students are enrolled in college-preparatory programs and taking challenging course like algebra (Knapp et al., 2005), schools require pupils to demonstrate at least minimal competence in core academic subjects before they are promoted or graduate from high school.

On the other hand, there are reasons to question the argument that time in academic pursuits is increasing. Between 1994 and 2004, the total college enrollment rates of 18- to 24-year-olds have increased by 30 percent. During the same time period, the number of men enrolled rose 16 percent, while the number of women enrolled increased by 25 percent (Lemke & Gonzales, 2006).

However, thousands of students that graduate from high school each year are academically unprepared for college. The consequence is that it is relatively easy for a high school graduate to get into some colleges nowadays; demonstrated high achievement is not a prerequisite (though it still at the most prestigious and selective universities).

Indeed, many colleges now give remedial courses to freshmen, teaching skills that were once thought to be mandatory for high school graduates. As a result, approximately Forty percent of freshmen at two-year institutions and twelve to twenty-four of freshmen at two-year colleges take at least one remedial reading, writing, or mathematics course (Parsad and Lewis , 2003). The difficult challenge for students is becoming prepared academically for college coursework.

At the secondary level there has also been grade inflation in American high schools, with many more students getting A's and B's than did so in the past (Suggs, 2004). With the expectation that nearly everyone should complete high school, school administrators are reluctant to fail students. One result is that students in many high schools can get away with not doing all their homework.

Further, with more adolescents in single-parent homes were less likely to participate in either sports or other activities, parental supervision of their adolescent's homework completion may be less extensive than it was in the past (Baum, 1998).

Thus, the contrasting hypothesis is that the average amount of time high school students spend doing homework and studying has not increased, even if teachers are assigning more homework now.

Today's adolescents 53.5 percent of students enrolled in high schools participate in athletics (National Federation of State High School, 2006). The financial support for high school athletics and activities has been declining due to a relatively narrow vision of what 'the basics' of education should be. On the other hand, there is survey evidence from the Educational Longitudinal Study of 2002 that a variety of extracurricular activities remains available to almost all students in public high schools in the United States. Also, participation in music/performing arts showed a significant increase in popularity between 1990 and 2001 (Ingels et al., 2005a).

Comparison of student time use reports from the 1990s with parallel reports from the mid-1970s show more constancy than change. The changes that have occurred are most likely to be in a negative rather than a positive direction as far as intellectual effort and constructive use of time are concerned. In 1990, for example, 10^{th} grade students in the National Educational Longitudinal Study were asked to estimate the total number of hours per week they spent doing homework outside of school.

The average (median) 10th grade student in 1990 reported spending about three hours per week doing homework for all subjects. The percentage reporting some homework time, but less than five hours per week declined slightly, from 63 percent to 59 percent, while the percentage reporting ten or more hours of homework per week increased, but just barely, from 11 percent to 14 percent.

Forty-six percent of 12th grade students in 1976 reported spending five or more hours per week on homework, and so did 46 percent of 12th grade students in 1992. On the other hand, 39 percent of 12th grade students in 1976 reported reading six or more books during the year that were not assigned by teachers, whereas only 26 percent of 12th grade students reported doing this much voluntary reading in 1992.

Areas in which significant change in time use did occur between 1976 and 1992 included the following:

- Reading of books, magazines, or newspapers, where the number of 12th grade students who read daily declined from 59 percent to 47 percent;

- Working around the house, yard, garden, or car, where the number who did household chores daily declined from 41 percent to 29 percent, while the number doing chores at least once a week fell from 78 percent to 68 percent;

- Attending religious services, where the number going at least once a week declined from 41 percent to 32 percent.

Two leisure-time activities that have become more frequent are going to parties and creative writing: the percentage of 12th grade students who report partying with friends at least once a week increased from 31 percent in 1972 to 38 percent in 1992. The proportion, doing some creative writing once a week or more often, climbed from 15 percent in 1976 to 22 percent in 1992. Apart from the modest increase in creative writing, there was one other small sign of growth in academically-oriented activity. The proportions of 10th grade students participating in academic clubs at school were increased by a fifth, from 26 percent to 31 percent, between 1980 and 1990.

The increase was observed when reports of participation in specific types of extracurricular activities in the National Educational Longitudinal Study survey of 10th grade students were compared with responses to similar questions in the High School and beyond base year survey of 10th grade students. On the other hand, the same comparison showed that participation in band, orchestra, or chorus was down by nearly a third, from 31 percent in 1980 to 22 percent in 1990. In addition, involvement in traditional hobby clubs, such as photography or chess, was down by two-thirds, from 21 percent in 1980 to 7 percent in 1990 (National Center for Education Statistics, 1994).

The reasons for these declines are not altogether clear. Many people believe that fewer high schools are offering organized music, art, drama, and hobby activities because of budget cutbacks and policies that downplay the arts in favor of science, math and other 'core' subjects. As noted early, however, it has been indicated that such programs remain available in most public high schools (Ingels, et al., 2005a).

The growth of personal computers in schools may have been partly responsible for the decline in traditional hobby clubs. Levels of participation in school-sponsored athletic teams were comparable to those reported by 10th grade students a decade earlier. Participation in cheerleading and drill teams was down by a third over the decade, however.

Time Management

Stuart (1985) hypothesized that athletes face special circumstances, by noting that practice and performance time reduces the time and energy for academics, and consequently, this can lead to lower scores not only in classrooms but also on standardized tests. It is because of the lower scores, Stuart asserts, that some athletes may have to work harder to succeed academically. In addition to having the challenge of scheduling conflicts between class and competition, their behavior is scrutinized both on and off the field, as athletes have a higher social profile. Due to the fact that students only spend a few hours a day in classes, some colleges require or give students the option to attend study skills and time management workshops (Axelrod-Contrada, 1998).

In an investigation conducted by Misra and Mckean (2000) time management and commitments provide some good insight of college student's stress level when it comes to time management (or lack thereof). Misra and Mckean (2000) analyzed academic stress, anxiety, time management and leisure satisfaction among 249 university undergraduates and found that females had more effective time management skills than did males.

Females also experienced higher academic stress and anxiety. Another finding revealed that males benefited more from leisure activities than their female counterparts did.

The multivariate analysis results uncovered the factors of anxiety, time management and leisure satisfaction as predictors of academic stress. The researchers concluded that strong time management skills seemed to lower academic stress in this particular study. Because of this result, it was stressed that perhaps faculty members and counselors could be of enormous benefit in this regard by emphasizing participation in time management seminars in attempts to improve academic success and well-being of students (Misra & McKean, 2000).

The next study unveiled other concerns, especially as it pertained to time management among Canadian collegiate – an experience that, according to the researchers, is similar to U.S. collegiate in Division 1 colleges. They pointed out that, despite the fact that student athletes benefited from an immediate social circle, subsequent social actions were restricted almost entirely to teammates and other athletes. The researchers also acknowledged that more would have to be done to determine the overall impact of socialization on the future of these athletes (Miller and Kerr, 2002).

A group of researchers have pointed out that other experts also discussed the question of college graduation based on athletic prowess (Peltier, et al., 1999). The Knight Foundation Commission, for example, pointed out that admission and graduation statistics for athletes was far different from those for non-athletic students.

The commission revealed, also that in a typical Division 1 college setting, only 33 percent of male basketball players and 37.5 percent of football players graduated within five years. In other words, it was found that "the majority of athletes entering basketball and football programs at Division 1 schools were unlikely to turn their aspirations of graduation into reality" (Peltier, et al., 1999, p. 234). Again, this is because of the time spent in big-time sports programs – during in-season times, students can expect to spend 50 to 60 hours a week (especially if travel time is included) and 18 hours a week during off season.

The researchers, therefore, questioned the assumption of the athletic scholarships, the ones in which the "high school sport pay-offs" support the belief that athletes can use sports abilities to get a college education (Peltier, et al., 1999). Peltier et al noted that based on the results of the high school athletes and their college experiences, the validity of such claims need to be questioned – while high school sports might help open collegiate doors to athletes, "it does little to guarantee that they will walk out of those doors four, five or six years later with a degree" (Peltier, et al., 1999).

For one thing, if they do not have the academic skills in high school, they are not going to gain them in college. In many high schools, athletes do receive the preferential treatment – while one doesn't see too many athletes going to "basket weaving 101" any more, sometimes teachers might look the other way when it comes to grading athlete papers.

Furthermore, when a high school student's aspiration only surrounds going to the pros, and the chances are few that he will get into the pros, it makes it that much more difficult to justify. But the concern is also that athletes who have solid education credentials while in high school might find collegiate sports monopolizing their time and commitment in this regard (Peltier, et al., 1999).

At present, the National Collegiate Athletic Association (NCAA) (Ward, 1999) Challenging Athletes' Minds for Personal Success Life Skills Program (CHAMPS) stresses many of the developmental necessities of college student-athletes. This program is a chief contributor to the emerging body of literature on their special counseling necessities (Ward, 1999). The Challenging Athletes' Minds for Personal Success Life Skills Program (CHAMPS) is planned out to offer student athletes with academics and experiences that (a) maximize their collegiate experiences, (b) eases victorious changeovers to professional careers, and (c) backs up students' important shares to their society.

The Challenging Athletes' Minds for Personal Success Life Skills Program (CHAMPS) is founded on the assumption that student-athletes have a hard time getting into campus-wide student events, programming, and experiences. The program offers athletics departments with resources and counseling to help them aid student athletes to get involved more fully in the collegiate experience (Ward, 1999).

Of course, the irony in such suggestions is that attending time management seminars means more time taken out of an already burgeoning academic career. When you add the stress of a huge collegiate sports program (such as those outlined in the Division 1 schools), this means more time must be taken in an attempt to try to learn to manage time so that a student athlete can play sports and achieve high academic standards.

This literature review provides a synthesis on extracurricular activity participation, middle and high school athletics, collegiate extracurricular activities, other activities, gender, ethnicity, comparing the 1970 youth to today's youth, and time management to investigate the questions of this study. In sum, the finding that today's adolescents are spending less time in non-academic extracurricular activities, such as band, orchestra, drama and art or hobby clubs, may be a response to the increased emphasis on 'back to basics' education movement. However, it hardly seems like a positive development of the whole youth, except from a very narrow view of what constitutes appropriate use of adolescents' time. The next section will reveal the constructs of this investigation.

CHAPTER THREE: METHODOLOGY

Introduction

The primary purpose of this study was to gain a deeper understanding of the effects of time use and sports participation on academic achievement among African American and Hispanic male high school student athletes. The data from this study is obtained from a large data set compiled after the first follow-up phase of the Education Longitudinal Study of 2002 (ELS: 2002) base-year to first follow-up longitudinal data file. The ELS: 2002 study is a nationally representative longitudinal study conducted by the National Center of Education Statistics (NCES), and presents a profile of American high school sophomores in 2002.

A central construct to this study is the measurement of student achievement in mathematics that relates to student background variables and educational processes. The ELS: 2002 provides information on education related behaviors, high school and transition. Moreover, it provides an abundance of information on their behaviors, tendencies, values and attitudes about their educational experiences. The in-depth information makes the ELS: 2002 data an ideal source for this research. The current chapter begins with a presentation of the research design for this study. Next, the sample to be explored and the assessment battery are described. The data processing and data analysis plan are then described, and the chapter ends with a summary.

Research Design

The researcher utilized secondary data analysis in this study. The research methodology attempts to determine the differences in groups or individuals over time. In the current study, the researcher used variables from the ELS: 2002 to define the groups and conditions that are being compared. The dependent variable is academic achievement as measured by Mathematics Item Response Theory (Math IRT) -estimated number right-scores at the base year and follow-up assessments, this strategy is commonly referred to as a repeated measures or within-subjects design. The ELS: 2002 data allows for the empirical analyses of a nationally representative sample of student athletes' navigation through the educational system.

In estimating a student's math ability, each test question was assigned a level of difficulty. Item Response Theory accounts for the level of difficulty, discriminating ability, and a guessing factor. The item and ability parameters were estimated on a common scale, which uses patterns of correct, incorrect, and omitted answers to obtain ability estimates that are comparable across different test forms. Item Response Theory procedures utilized the pattern of responses to estimate the probability of correct responses for all test questions. As a result, Item Response Theory scoring makes it possible to compare scores obtained from test forms of different difficulty.

The common items present in overlapping forms and in overlapping administrations (10th grade and 12th grade) allow test scores to be placed on the same scale. In the first follow-up survey, Item Response Theory procedures were used to assess longitudinal gains in achievement over time by using 85 common items present in both the 10th- and 12th-grade assessments (Ingels, et al., 2005).

The aim of the current study was to examine changes in academic achievement over time, and using this method allows each student to act as his own control according to (Ingels, et al., 2005). For the sports participation and time use variables, the follow-up assessments were used for the following reasons. First, sports participation was assessed directly only at follow-up. For the remaining time use variables, assessments were conducted at both the base year and first follow-up assessments. However, only the follow-up assessments were used because in this way the independent variables (sports participation, extracurricular activities, etc.) cover the same period (the time between the base year and follow-up assessments) as the dependent measure (mathematics achievement).

Using the base year assessments of the independent variables would mean that a student could have participated in sports (or spent time in extracurricular activities) prior to the base year mathematics assessment (and therefore would indicate this participation), but stopped participating during the time between the base year and follow-up assessments. However, using only the follow-up assessments ensures that the same time period is relevant for both the independent and dependent measures.

Sample

The base year and first follow-up student participants (N = 16,252) for the full-scale ELS: 2002 consisted of spring-term 10th graders in 2002 and spring-term 12th grader in 2004 (excluding foreign exchange students) enrolled in schools in the school target population (Ingels et al, 2005). African American and Hispanic students are the subset within the data that will be examine for this study (N = 2,292). The time use measurement within the data is socialization, study time, and extracurricular activity participation.

The study began in 2002 with a goal to evaluate 10th graders and to follow them through transition periods at 2-year intervals using the same math assessment according to ELS: 2002. Although the base-year study comprised surveys of parents, teachers, school administrators, and library media specialists, as well as the cohort of high school sophomores, to remain concise, this report draws primarily on data from students who were originally sampled which is the primary unit of analysis for the study. The over sampling procedures of Asians and Hispanics implemented was to ensure that each of the subpopulations had a minimum sample size of 1,356 (Ingels et al., 2005b).

Assessment Battery

Mathematics Achievement

The researcher examined data taken from assessment of students (achievement tests in mathematics) and surveys (base year and first follow-up) that were completed by the students.

The base-year (2002) student assessments measured achievement in both reading and mathematics but, for the purposes of this examination only student assessments in mathematics were utilized because reading achievement was not assessed at first follow-up. The first follow-up study reassessed mathematics achievement in 2004, using the same assessment procedures and therefore achievement scores recorded in the base year and first follow-up assessments can be compared as related to sports participation and time use.

Socio-Economic Status (SES)

The assessment of SES variables was calculated by ELS: 2002. This continuous measure of SES is based on five equally weighted standardized components: father's/guardian's education, mother's/guardian's education, family income, father's/guardian's occupation/prestige score from, and mother's/guardian's occupation/prestige score.

Race

The race variables for base year and first follow-up student questionnaires and includes (a) American Indian or Alaska native, (b) Asian or Pacific Islander, including Native Hawaiian, (c) Black including African-American, (d) Hispanic or Latino, (e) more than one race or Multi-racial, and (f) White. Only data from African Americans and Hispanics was included in the current study. 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.

Sports Participation and time use

The follow-up questionnaire contained responses the students gave with respect to school experiences and activities, how they spent their time, plans and expectations for the future, work after high school work experiences, and information pertaining to their community, family, and friends. For sports participation, the three response categories were: (a) did not participate, (b) participated, and (c) participated as an officer, leader, or captain. These responses were recoded into the following categories: 0 = did not participate, 1 = participated or participated as an officer, leader, or captain. The four areas of time use that were included in the current study are extracurricular activities, mathematics homework, watching TV or videos, and playing video/computer games.

Extracurricular activities. For extracurricular activities, students were asked "In a typical week, how many total hours do you spend on all school-sponsored extracurricular activities (sports clubs or other activities)?" The eight response categories were: (a) none, (b) less than one hour per week, (c) 1-4 hours per week, (d) 5-9 hours per week, (e) 10-14 hours per week, (f) 15-19 hours per week, (g) 20-24 hours per week, and (h) 25 hours or more per week. These responses were recoded into the following categories for analysis: 0 = four hours per week or less, and 1= more than 4 hours per week.

Mathematics homework. For mathematics homework, students were asked to state the number of hours that they spent doing mathematics homework per week, and selected from the following categories: (a) not taking math, (b) none, (c) less than 1 hour/week, (d) 1-3 hours/week, (e) 4-6 hours per week, (f) 7-9 hours per week, (g) 10-12 hours/week, (h) 13-15 hours/week, and (i) over 15 hours/week. These responses were recoded for analysis into the following variable: 0 = none or less than 1 hour/week and 1 = more than 1 hour/week.

Watching TV/videos/DVDs. For time spent watching TV/videos, and DVDs, the following responses options were provided for respondents to indicate the number of hours per day: (a) don't watch TV/videos/DVDs on weekdays, (b) less than 1 hour a day, (c) 1 hour or more but less than 2 hours, (d) 2 hours or more but less than 3 hours, (e) 3 hours or more but less than 5 hours, and (f) 5 hours or more a day. For analysis, these responses were grouped into the following category: 0 = less than 3 hours and 1 = 3 hours or more.

Playing video/computer games. For the amount of time spent playing video or computer games per day, the following response categories were offered: (a) don't play video/computer games, (b) less than 1 hour a day, (c) 1 hour or more but less than 2 hours, (d) 2 hours or more but less than 3 hours, (e) 3 hours or more but less than 5 hours, and (f) 5 hours or more a day. The following variable was created for analysis: 0 = none or less than 1 hour, 1 = more than 1 hour.

Data Processing and Analysis

Data Processing

The researcher used a repeated measures design based on Maxwell and Delaney (2004) description to obtain the comparison data from the ELS: 2002 sample. The goal was to measure trends in sports participation and time use with academic success among African-American and Hispanic students. The plan of this study was to measure the groups at the 10^{th} grade year and the 12^{th} grade year. The researcher used the Statistical Package for the Social Sciences software (SPSS - Version 14.0 for Windows) for data analysis. The repeated measures analysis tested for mean differences between the groups in our research study. To support the research hypothesis the repeated measures will test for mean differences based on sports participation and the four time use variables as well as race (African American versus Hispanic). Socio-economic status was used as a covariate. In addition, all two-way interactions between the sports participation, time use, and race variables were examined.

Within-Subjects Factors

The variables Math IRT-estimated number right- scores were taken directly from ELS: 2002 and represented mathematics achievement for the base year and first follow-up studies. The variables are represented in our analysis as the dependent variable and a within-subjects factor (base year and first follow-up).

Between-Subjects Factors

The researcher created five new dichotomous variables (described above in the Assessment Battery section) to define sports participation and the four time use variables. Race is also included as a between-subjects factor, and the covariate variable socio-economic status is also a between-subjects variable.

Data Analysis

Initially, descriptive statistics will be provided for all study variables. This will include frequencies and percentages for categorical variables and means, standard deviations, and ranges for all continuous variables. The correlations between the Math IRT-estimated number right- scores and the other study variables will also be computed. Inferential analyses were then performed to address the research questions of the current study.

The first research question presented in Chapter 1 was:

1. What are the effects of Hispanic and African American male student athletes' time use patterns on their academic achievement, controlling for socio-economic status and time spent completing mathematics homework?

There were three sub-questions:

1a. What are the effects of Hispanic and African American male student athletes' time spent in extracurricular activities on their mathematics achievement, controlling for socio-economic status and time spent completing mathematics homework?

1b. What are the effects of Hispanic and African American male student athletes' time spent watching TV/DVDs on their mathematics achievement, controlling for socio-economic status and time spent completing mathematics homework?

1c. What are the effects of Hispanic and African American male student athletes' time spent playing video/computer games on their mathematics achievement, controlling for socio-economic status and time spent completing mathematics homework?

The second research question is:

2. What are the effects of Hispanic and African American male student athletes' sports participation on their academic achievement, controlling for socio-economic status and time spent completing mathematics homework?

The third research question is:

3. Is there a difference between Hispanic and African American male students' mathematics achievement based on sports participation and time use, controlling for socio-economic status and time spent completing mathematics homework?

There were four sub-questions for the third research question, each related to the interaction between race and sports participation or race and the three time use variables:

3a. Is the effect of sports participation on mathematics achievement the same for Hispanic and African American male student athletes, controlling for socio-economic status and time spent completing mathematics homework?

3b. Is the effect of time spent on extracurricular activities on mathematics achievement the same for Hispanic and African American male student athletes, controlling for socio-economic status and time spent completing mathematics homework?

3c. Is the effect of time spent watching TV/DVDs on mathematics achievement the same for Hispanic and African American male student athletes, controlling for socio-economic status and time spent completing mathematics homework?

3d. Is the effect of time spent playing video/computer games on mathematics achievement the same for Hispanic and African American male student athletes, controlling for socio-economic status and time spent completing mathematics homework?

To address these three research questions, a repeated-measures factorial analysis of covariance was performed. Table 1 shows the variables and statistical methods to be employed to address the research questions. Two-tailed tests and an alpha level of .05 will be used for all inferential analyses.

The covariates will be SES and time spent on math homework, and the independent variables will be race (African American versus Hispanic), time spent on extracurricular activities, time spent watching TV/DVDs, time spent playing video/computer games, and sports participation. All main effects and two-way interactions between the independent variables will be included in the model. Statistically significant interactions will be followed up with simple effects tests. For example, if the race by time spent playing video/computer games interaction is statistically significant, a follow-up analysis will be performed examining the effect of time spent playing video/computer games on mathematics achievement separately for African Americans and Hispanics.

Table 1: Variables and Repeated-Measures Analysis of Covariance Description

Variable	Description	Role
Mathematics Achievement	Mathematics IRT –estimated number right– scores for base year (2002) and follow-up (2004) assessments.	Dependent Variable
Socio-economic status index	Follow-up (2004) assessment of socio-economic status based on parents'/guardians education, income, and occupational prestige scores.	Covariate
Time spent on mathematics homework	Follow-up assessment indicator of time spent on mathematics homework (0 = none or less than 1 hour/week and 1 = more than 1 hour/week).	Covariate
Race	Recoded race variable from follow-up (2004) assessment (0 = African American and 1 = Hispanics).	Independent Variable
Sports Participation	Recoded sports participation variable from follow-up (2004) assessment (0 = did not participate, 1 = participated or participated as an officer, leader, or captain).	Independent Variable
Extracurricular Activities	Recoded time spent in extracurricular activities from follow-up (2004) assessment (0 = four hours per week or less, 1 = more than 4 hours per week).	Independent Variable
TV/DVDs	Recoded time spent watching TV/DVDs per day from follow-up (2004) assessment (0 = less than 3 hours and 1 = 3 hours or more).	Independent Variable
Video Games	Recoded time spent playing video or computer games from follow-up (2004) assessment (0 = none or less than 1 hour, 1=more than 1 hour).	Independent Variable

CHAPTER FOUR: FINDINGS

Introduction

The current chapter presents the results of the analyses described in Chapter Three. Initially, descriptive statistics will be provided for all study variables, including frequencies and percentages for categorical variables (race, sports participation, time spent on mathematics homework, time spent in extracurricular activities, time spent watching TV/DVDs, and time spent playing video games) and means, standard deviations, and ranges for all continuous variables (SES and Math IRT-estimated number right- scores). Results are presented of the inferential analyses that were performed to address the research questions of the current study.

Descriptive Statistics

The final sample consisted of 2,292 male high school students (after removing those who were not African American and not Hispanic and those who did not have scores on than one of the key study variables). Table 1 presents descriptive statistics for the categorical variables for these 2,292 male high school students. Overall, 47.1% of the sample was African American and 52.9% was Hispanic. Most (65.5%) of the respondents did not participate in sports. Nearly three-quarters of the sample (80.9%) spent less than 1 hour per week on homework. Most of the sample (68.6%) spent 4 hours per week or less on extracurricular activities. In terms of time spent watching TV or DVDs, most of the sample (62.1%) spent less than three hours per day on these activities. Finally, respondents were more likely to spent less than 1 hour per day playing video games (61%) that they were to spent 1 hour per day or more (39%).

Table 2: Descriptive Statistics for Categorical Variables

	Frequency	Percentage
Race		
African American	1079	47.1
Hispanic	1213	52.9
Sports Participation		
No	1501	65.5
Yes	791	34.5
Time Spent on Homework		
Less than 1 hour per week	1854	80.9
1 hour or more per week	438	19.1
Time Spent on Extracurricular Activities		
4 hours or less per week	1573	68.6
5 hours per week or more	719	31.4
Time Spent Watching TV/DVDs		
Less than 3 hours per day	1423	62.1
3 hours or more per day	869	37.9
Time Spent Playing Video Games		
Less than 1 hour per day	1398	61.0
1 hour per day or more	894	39.0

Descriptive statistics for the continuous measures are shown in Table 3. Socio-economic status scores ranged from -1.97 to +1.79, with a mean of -.28 (SD = .71). Math IRT-estimated number right- scores for the base year scores ranged from -8.00 to 81.32 with a mean of 35.13 (SD = 14.11). For the first follow-up Math IRT-estimated number right-scores ranged from -8.00 to 80.53 with a mean of 30.61 (SD = 24.45).

Table 3: Descriptive Statistics for Continuous Variables

	Minimum	Maximum	Mean	SD
Socio-economic Status	-1.97	1.79	-.28	.71
Base Year Mathematics	-8.00	81.32	35.13	14.10
Follow-up Mathematics	-8.00	80.53	30.61	24.44

Bivariate Correlations

The correlations between the Math IRT-estimated number right- scores and the other study variables are shown in Table 4. For the correlations where the two variables are continuous (i.e. the correlations between SES and the Math IRT-estimated number right- scores), these are Pearson correlation coefficients, while for the correlations between a dichotomous variables and a continuous variable (i.e. all other correlations in the table), these are point biserial correlations. Socio-economic status correlated positively with both base year mathematics composites ($r = .28$, $p < .001$) and first follow-up Math IRT-estimated number right- scores ($r = .23$, $p < .001$), indicating that those with higher SES scores also tended to have higher Math IRT-estimated number right- scores.

Race was negatively correlated with for the base year Math IRT-estimated number right- scores ($r = .036$, $p > .051$) and was positively correlated for the follow-up Math IRT-estimated number right- scores ($r = .049$, $p < .05$). Sports participation was also positively correlated with both the base year ($r = .15$, $p < .001$) and the first follow-up ($r = .33$, $p < .001$) Math IRT-estimated number right- scores, indicating that those who participated in sports tended to have higher Math IRT-estimated number right- scores. As would be expected, time spent doing homework was positively correlated with both base year ($r = .22$, $p < .001$) and first follow-up ($r = .33$, $p < .001$) Math IRT-estimated number right- scores, indicating that those who spent more time on homework tended to have higher Math IRT-estimated number right- scores.

Time spent on extracurricular activities was also positively correlated with the base year ($r = .19$, $p < .001$) and first follow-up ($r = .34$, $p < .001$) Math IRT-estimated number right-scores, indicating that those who spent more time in extracurricular activities tended to have higher Math IRT-estimated number right- scores. Time spent watching TV and DVDs was not significantly correlated to base year Math IRT-estimated number right-scores ($r = .007$, $p > .05$) and was not linearly related to first follow-up Math IRT-estimated number right- scores ($r = .06$, $p < .05$), indicating that those who spent more time watching TV and DVDs tended to have lower Math IRT-estimated number right-scores.

Finally, time spent playing video games was not significantly correlated to base year Math IRT-estimated number right- scores ($r = .008$, $p > .05$), but was not linearly related with first follow-up Math IRT-estimated number right- scores ($r = .111$, $p < .05$), indicating that those who spent more time playing video games had lower scores on the Math IRT-estimated number right- scores at the first follow-up assessment but not at the base year assessment.

Table 4: Correlations between Mathematics IRT Scores and Other Study Variables

	Base Year Mathematics	Follow-up Mathematics
Socio-economic status composite	.280***	.233***
Race	.036	.049*
Sports Participation	.146***	.329***
Time Spent Doing Homework	.220***	.333***
Time Spent on Extracurricular	.191***	.347***
Time Spent Watching TV/DVDs	.007	.064**
Time Spent Playing Video Games	.008	.110***

Note: *p<.05, **p<.01, ***p<.001

Inferential Statistics

The results of the repeated-measures factorial analysis of covariance was performed to address the three research questions of the current study are presented. The analysis revealed several within-subjects effects, which are displayed in the Table 5. The main effect for time was statistically significant, F (1, 2274) = 4.20, p < .05. This indicates that the mean Math IRT-estimated number right- scores at the base year assessment (M = 35.76, SE =.37) was significantly lower than the mean Math IRT-estimated number right-scores at the first follow-up assessment (M = 36.15, SE =.58).

The time by time spent completing homework interaction was statistically significant F (1, 2274) = 74.89, $p < .001$, with larger gains for those who spent more time on homework. The time by time spent on extracurricular activities interaction was statistically significant F (1, 2274) = 33.24, $p < .001$, with those who did not spend time on extracurricular activities having lower Math IRT-estimated number right- scores at the first follow up than the base year assessment (M = 34.25, SE = .46 versus M = 31.53, SE = .72, respectively) while those who did spend time on extracurricular activities Math IRT-estimated number right- scores increased (M = 37.28, SE = .57 at base year and M = 40.76, SE = .89 at first follow up).

The time by time spent playing video games interaction was statistically significant F (1, 2274) = 3.90, $p < .05$. Examining the means indicated that those who did not engage in gaming had Math IRT-estimated number right- scores that went down from the base year (M = 36.18, SE = .48) to follow up (M = 35.63, SE = .75) assessments, while those who did engage in gaming had Math IRT-estimated number right- scores that went up from base year (M = 35.35, SE = .50) to first follow up (M = 36.66, SE = .78). The time by sports participation interaction was statistically significant F (1, 2274) = 20.58, $p < .001$. Examination of the means indicated that those who did not participate in sports had Math IRT-estimated number right- scores that were higher at the base year (M = 35.53, SE = .51) than at the first follow up (M = 33.47, SE = .81) while those that did participate in sports had Math IRT-estimated number right- scores than were higher at the first follow up (M = 38.82, SE = .81) than at the base year (M = 36.00, SE = .52).

The time by sports participation by time spent on extracurricular activities interaction was statistically significant F (1, 2274) = 38.72, p < .001. Among those who did not participate in sports, those who did not participate in extracurricular activities had higher Math IRT-estimated number right- scores at the base year (M = 34.53, SE = .40) than the first follow up (M = 36.11, SE = .64) while those who participated in extracurricular activities had higher Math IRT-estimated number right- scores at the first follow up (M = 40.84, SE = 1.48) than at the base year (M = 36.53, SE = .94). Among those who did participate in sports, both those who did and did not participate in extracurricular activities had higher Math IRT-estimated number right- scores at the first follow up (M = 36.96, SE = .81 at first follow up compared to M = 33.97, SE = .81 at the base year for those who did not participate in extracurricular activities and M = 40.68, SE = .96 at the first follow up compared to M = 38.03, SE = .61 at base year for those who did participate in extracurricular activities).

The time by sports participation by time spent playing video games interaction was statistically significant F (1, 2274) = 5.65, p < .05. Among those who did not engage in gaming, mathematics achievement went down from base year (M = 36.18, SE = .48) to follow up (M = 35.63, SE = .75), while for those who did engage in gaming, Math IRT-estimated number right- scores went up from base year (M = 35.34, SE = .50) to first follow up (M = 36.67, SE = .78). The time by time spent on extracurricular activities by time spent playing video games interaction statistically significant F (1, 2274) = 4.19, p < .05.

Among those who did not participate in gaming, those who did not participate in extracurricular activities had higher scores at the base year (M = 33.97, SE = .63) than the first follow up (M = 29.21, SE = 1.00) while those who participated in extracurricular activities had higher Math IRT-estimated number right- scores at the first follow up (M = 42.06, SE = 1.15) than at the base year (M = 38.40, SE = .73). Among those who did participate in gaming, those who also participated in extracurricular activities had higher Math IRT-estimated number right- scores at the first follow up (M = 39.47, SE = 1.29) than at base year (M = 36.16, SE = .82), while those who did not also participate in extracurricular activities has lower Math IRT-estimated number right- scores at first follow up (M = 33.86, SE = .98) than at the base year (M = 34.53, SE = .63 at the first follow up compared to 38.03, SE = .61 at base year for those who did participate in extracurricular activities).

The time by time spent on watching TV/DVDs by time spent playing video games interaction was also statistically significant F (1, 2274) = 8.14, $p <$ .05. Among those who did not participate in gaming, those who did not watch TV or DVDs had higher Math IRT-estimated number right- scores at the base year (M = 35.62, SE = .50) than the first follow up (M = 33.49, SE = .79), while those who did watch TV or DVDs had higher Math IRT-estimated number right- scores at the first follow up (M = 37.78, SE = 1.18) than at the base year (M = 36.74, SE = .75).

Among those who did participate in gaming, both those who did and did not watch TV or DVDs had higher Math IRT-estimated number right- scores at the first follow up (*M* = 38.09, *SE* = 1.10 at first follow up compared to *M* = 35.77, *SE* = .70 at the base year for those who did not watch TV or DVDs and *M* = 35.23, *SE* = 1.03 at the follow up compared to 34.92, *SE* = .65 at base year for those who did watch TV of DVDs).

Table 5: Results of the Repeated-Measures Factorial Analysis of Covariance

Source	Sum of Squares	*df*	Mean Squares	*F*	*P*	Partial η^2
Within Subjects Effects						
Time	799.508	1	799.508	4.184	.041	.002
Time by SES	112.573	1	112.573	.589	.443	.000
Time by Homework	14303.712	1	14303.712	74.859	.000	.032
Time by Race	1220.974	1	1220.974	6.390	.012	.003
Time by Extracurricular	6355.043	1	6355.043	33.259	.000	.014
Time by Video Games	735.008	1	735.008	3.847	.050	.002
Time by Sports Participation	3938.880	1	3938.880	20.614	.000	.009
Time by Sports Participation by Extracurricular	7406.020	1	7406.020	38.760	.000	.017
Time by Sports Participation by TV/DVDs	1335.469	1	1335.469	6.989	.008	.003
Time by Sports Participation by Video Games	1072.933	1	1072.933	5.615	.018	.002
Time by Extracurricular by Video Games	796.819	1	796.819	4.170	.041	.002
Time by TV/DVDs by Video	1566.166	1	1566.166	8.187	.004	.004
Error (Time)	434504.716	2274	191.075			

The results for the between-subjects effects are shown in Table 6. The main effect for SES was statistically significant, F (1, 2274) = 138.02, $p < .001$. The correlational results in Table 4 indicated that respondents with higher levels of SES also tended to have higher levels of mathematics achievement, and that this was true for both the base year assessment and the first follow up assessment. The main effect for time spent doing homework was also statistically significant, F (1, 2274) = 72.60, $p < .001$. The point biserial correlations in Table 4 indicated that those who did more homework had higher mathematics composite scores both at the base year assessment and the first follow up assessment.

The between-subjects main effects of the independent variables (race, time spent on extracurricular activities and sports participation) were also statistically significant. First, the main effect for race was statistically significant, F (1, 2274) = 27.60, $p < .001$. This indicates that African Americans (M = 34.18, SE =.51) tended to score lower than Hispanics (M = 37.74, SE =.54). Second, time spent on extracurricular activities was statistically significant, F (1, 2274) = 61.47, $p < .001$. This indicates that those who spent 5 hours or more per week on extracurricular activities tended to have higher Math IRT-estimated number right- scores (M = 39.02, SE =.62) than those who spent 4 hours or less per week on extracurricular activities (M = 32.89, SE =.50). Third, the main effect for sports participation was statistically significant, F (1, 2274) = 13.88, $p < .001$. This indicates that those who participated in sports (M = 46.75, SE =.32) had higher Math IRT-estimated number right- scores than those who did not participate in sports spent 1 hour per day or more playing video games (M = 45.85, SE =.33).

The interaction between sports participation and time spent on extracurricular activities was statistically significant F (1, 2274) = 8.506, $p < .05$. There was a larger difference between those who participated in extracurricular activities and those who didn't among those who did not participate in sports (M = 30.32, SE = .44 if they did not participate in extracurricular activities and M = 38.68, SE = 1.02 if they did participate in extracurricular activities) compared to those who did participate in sports (M = 35.46, SE = .88 if they did not participate in extracurricular activities compared to M = 39.34, SE = .67 if they did participate in extracurricular activities).

The interaction between sports participation and time spent watching TV/DVDs was statistically significant, F (1, 2274) = 9.917, $p < .05$. For those who did not participate in sports, there was a positive effect of watching TV or DVDs (M = 35.96, SE = .78 if they did watch TV or DVDs compared to 33.04, SE = .70 if they did not), while for those who did participate in sports, there was a negative effect of watching TV or DVDs (M = 38.45, SE = .73 if they did not watch TV or DVDs compared to 36.38, SE = .86 if they did). The interaction between sports participation and time spent playing video games was statistically significant F (1, 2274) = 7.818, $p < .05$. For those who did not participate in sports, there was a positive effect of gaming (M = 33.36, SE = .69 if they did not participate in gaming versus 35.64, SE = .79 if they did), while for those who did participate in sports, there was a negative effect of gaming (M = 38.45, SE = .79 if they did not engage in gaming but 36.37, SE = .77 if they did).

The interaction between time spent on extracurricular activities and time spent playing video games was statistically significant F (1, 2274) = 10.13, $p < .05$. For those who did not engage in extracurricular activities, there was a positive effect of gaming (M = 31.59, SE = .69 if they did not engage in gaming and M = 34.19, SE = .68 if they did not), while for those who did engage in extracurricular activities, there was a negative effect of gaming (M = 40.23, SE = .80 if they did not engaging gaming but M = 37.81, SE = .89 if they did).

Table 6: Results of the Repeated-Measures Factorial Analysis of Covariance

Source	Sum of Squares	*df*	Mean Squares	*F*	*P*	Partial η^2
Between Subjects Effects						
SES	56064.923	1	56064.923	138.706	.000	.057
Homework	69702.777	1	69702.77	172.447	.000	.070
Race	11199.520	1	11199.520	27.708	.000	.012
Extracurricular	24822.698	1	24822.698	61.412	.000	.026
Sports Participation	5593.968	1	5593.968	13.840	.000	.006
Sports Participation by Extracurricular	3464.225	1	3464.225	8.571	.003	.004
Sports Participation by TV/DVDs	4003.419	1	4003.419	9.905	.002	.004
Sports Participation by Video Games	3151.135	1	3151.135	7.796	.005	.003
Extracurricular by Video Games	4087.926	1	4087.926	10.114	.001	.004
TV/DVDs by Video Games	4858.322	1	4858.322	12.020	.001	.005
Error	919146.900	2274	404.198			

The interaction between time spent watching TV/DVDs and time spent playing video games was also statistically significant F (1, 2274) = 12.06, $p < .05$. Figure 1 shows the mean Math IRT-estimated number right- scores at the base year and first follow up assessment for each of the two video game groups. For those who played video games less than 1 hour per day, Math IRT-estimated number right- scores were higher at the base year assessment (M = 36.18., SE =.48) than they were at the first follow up assessment (M = 35.63, SE =.75). For those who played video games 1 hour or more a day, Math IRT-estimated number right- scores were lower at the base year assessment (M = 35.34, SE =.50) than at the follow up assessment (M = 36.67, SE = .78). Therefore, we can conclude that a statistically significant difference exist between the base year assessment and the first follow-up assessment among African American and Hispanic male high school student athletes.

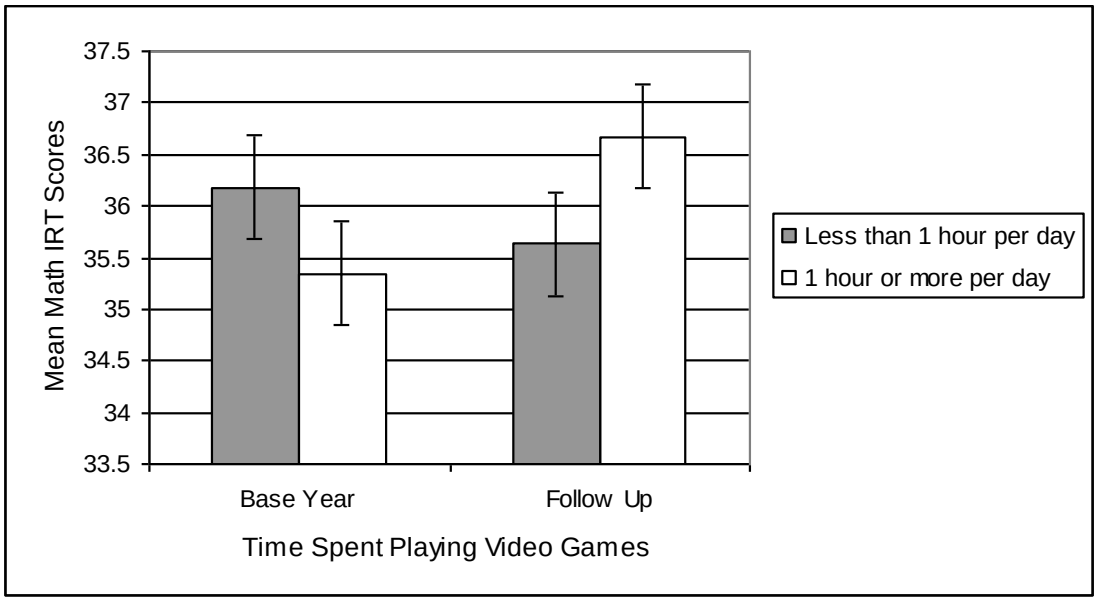

Figure 1: Time and Time Spent Playing Video Interaction

In addition to the statistically significant covariate effects and main effects, time by sports participation by time spent on watching TV/DVDs interaction was also statistically significant F (1, 2274) = 7.03, $p < .05$. Among those who did not participate in sports, those who spent less than 3 hours per day watching TV/DVDs had lower Math IRT-estimated number right- scores (M = 33.03, SE =.70) than those who spent 3 hours or more per day watching TV/DVDs (M = 35.96, SE =.78). Among those who did participate in sports, those who spent less than 3 hours per day watching TV/DVDs had higher Math IRT-estimated number right- scores (M = 38.45, SE =.73) than those who spent 3 hours or more per day watching TV/DVDs (M = 36.38, SE =.52), as shown in figure 2. Therefore, we can conclude that for those who participated in sports there was a negative effect of watching 3 hours per day or more watching TV/DVDs, whereas for those who did not participate in sports there was actually a beneficial effect of watching TV/DVDs for 3 hours per day or more per day. No other interaction between subject variables was statistically significant.

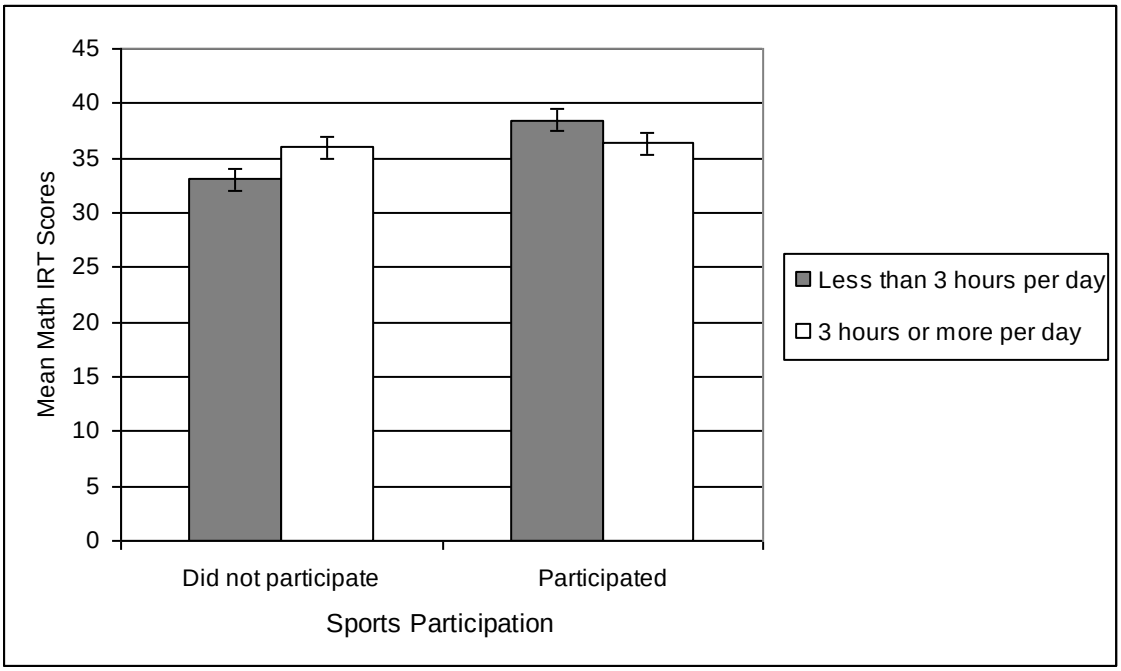

Figure 2: Sports Participation and Time Spent Watching TV/DVDs Interaction

Research Question 1

The first research question presented in Chapter 1 was: What are the effects of Hispanic and African American male student' time use patterns on their academic achievement, controlling for SES and time spent completing mathematics homework? There were three sub-questions.

(1a). The first sub-question was: What are the effects of Hispanic and African American male students' time spent in extracurricular activities on their mathematics achievement, controlling for socio-economic status and time spent completing mathematics homework? The test of the main effect for time spent on extracurricular activities was statistically significant F (1, 2274) = 61.41, p <.001, as shown in Table 6.

(1b). The second sub-question was: What are the effects of Hispanic and African American male students' time spent watching TV/DVDs on their mathematics achievement, controlling for socio-economic status and time spent completing mathematics homework? The main effect for time spent watching TV/DVDs was not statistically significant F (1, 2274) = .372, p >.05. This indicated that there was no effect of time spent watching TV/DVDs on mathematics achievement when controlling for SES and time spent completing mathematics homework as shown in Appendix D. However, it should be noted that there was a small but statistically significant negative correlation between time spent watching TV/DVDs and mathematics achievement both at the base year and first follow-up assessments when SES and time spent completing mathematics homework were not controlled.

(1c). The third sub-question was: What are the effects of Hispanic and African American male students' time spent playing video/computer games on their mathematics achievement, controlling for socio-economic status and time spent completing mathematics homework? The main effect for time spent playing video/computer games was not statistically significant F (1, 2274) = .019, p >.05. The means indicated that those who spent less than 1 hour per day playing video games (M=35.91, SE .519) had lower Math IRT-estimated number right- scores than those who spent 1 hour per day or more playing video games (M = 36.01, SE = .540) when controlling for SES and time spent completing mathematics homework. The 95% confidence interval for the mean difference between nonparticipants and student athletes groups ranged from 34.36 to 38.20, as shown in Appendix E.

Research Question 2

The second research question was: What are the effects of Hispanic and African American male students' sports participation on their academic achievement, controlling for socio-economic status and time spent completing mathematics homework? The main effect for sports participation was statistically significant F (1, 2274) = 13.84, p <.001. This indicated that there were statistically significant differences between those who participated in sports and those who did not in terms of academic achievement, when controlling for SES and time spent completing mathematics homework. Again, however, it is important to note that there were small but statistically significant positive correlations between sports participation and academic achievement (both at the base year and first follow-up assessments) when SES and time spent completing homework were not controlled as shown in Appendix B.

Research Question 3

The third research question was: Is there a difference between Hispanic and African American male students' academic achievement based on sports participation and time use controlling for socio-economic status and time spent completing mathematics homework? There were four sub-questions to the third research question.

(3a). The first sub-question was: Is the effect of sports participation on mathematics achievement the same for Hispanic and African American male students, controlling for socio-economic status and time spent completing mathematics homework?

The interaction between race and sports participation was not statistically significant F (1, 2274) = .390, p >.05. This indicated that the effect of sports participation (or more accurately, the lack of an effect for sports participation) was the same for African American and Hispanic male student athletes, as displayed in Appendix D.

(3b). The second sub-question was: Is the effect of time spent on extracurricular activities on mathematics achievement the same for Hispanic and African American male students, controlling for socio-economic status and time spent doing mathematics homework? The race by time spent on extracurricular activities interaction was not statistically significant F (1, 2274) = .003, p >.05 as shown in Appendix D. This indicated that the positive effect of extracurricular activities was the same for African American and Hispanic male student athletes.

(3c). The third sub-question was: Is the effect of time spent watching TV/DVDs on mathematics achievement the same for Hispanic and African American male students, controlling for socio-economic status and time spent completing mathematics homework? The race by time spent watching TV/DVDs interaction was not statistically significant F (1, 2274) = .65, p >.05 as shown in Appendix D. This indicated that any effect of time spent watching TV/DVDs was the same for African American and Hispanic male student athletes on their academic achievement.

(3d). The forth sub-question: Is the effect of time spent playing video/computer games on mathematics achievement the same for Hispanic and African American male student athletes, controlling for socio-economic status and time spent completing mathematics homework? The interaction between race and time spent playing video/computer games was not statistically significant F (1, 2274) = .003, p >.05 as shown in Appendix D. This indicated that the detrimental effect of time spent playing video/computer games was the same for African American and Hispanic male student athletes on their academic achievement.

CHAPTER FIVE: SUMMARY

Summary of Findings

In this investigation, the researcher has assessed indicators (socioeconomic status, time use patterns, sports participation, and race) within the construct of academic achievement among African American and Hispanic male student athletes. Their contribution to the main effects revealed that statistically significant differences exist between the non sports participant and sports participant groups. A statistically significant difference was found among student athletes and their non-athletic peers in their overall Math IRT-estimated number right- scores selected for this analysis.

The first research question was: What are the effects of Hispanic and African American male student' time management on their academic achievement, controlling for SES and time spent completing mathematics homework? African American and Hispanic male student athletes who spent 5 hours or more per week on extracurricular activities tended to have higher Math IRT-estimated number right- scores. African American and Hispanic male student athletes who spent more time watching TV and DVDs tended to have lower Math IRT-estimated number right- scores. African American and Hispanic male student athletes who spent more time in extracurricular activities tended to have higher Math IRT-estimated number right- scores.

African American and Hispanic male student athletes who spent more time on homework tended to have higher Math IRT-estimated number right- scores that those who spent less than 1 hour per day playing video games had higher Math IRT-estimated number right-scores than those who spent 1 hour per day or more playing video games.

The second research question was: What are the effects of Hispanic and African American male students' sports participation on their academic achievement, controlling for socio-economic status and time spent completing mathematics homework? The main effect for sports participation was not statistically significant, indicating that there was no difference between those who participated in sports and those who did not in terms of mathematics achievement, when controlling for SES and time spent completing mathematics homework. Again, however, it is important to note that there were small but statistically significant positive correlations between sports participation and mathematics achievement (both at the base year and first follow-up assessments) when SES and time spent doing mathematics achievement were not controlled.

The third research question was: Is there a difference between Hispanic and African American male students' academic achievement based on sports participation and time use controlling for socio-economic status and time spent completing mathematics homework? The interaction between race and sports participation was not statistically significant, indicating that the effect of sports participation (or more accurately, the lack of an effect for sports participation) was the same for African American and Hispanic male student athletes.

Similarly, the race by time spent on extracurricular activities was not statistically significant, indicating that the positive effect of extracurricular activities was the same for African American and Hispanic male student athletes. The race by time spent watching TV/DVDs interaction was also not statistically significant, indicating that any effect of time spent watching TV/DVDs (which disappeared when controlling for SES and time spent doing homework) was the same for African American and Hispanic male student athletes. The interaction between race and time spent playing video/computer games was not statistically significant, indicating that the adverse effect of time spent playing video/computer games was the same for African American and Hispanic male student athletes. Finally, it is noteworthy that effective use of time (i.e., playing video games less) and sports participation positively influences academic achievement of African American and Hispanic males high school student athletes.

Discussion

There has been considerable debate regarding the benefits and drawbacks of interscholastic sports, particularly with regard to the relationship between athletic success and academic success. School-sponsored athletics fall within the general rubric of extracurricular activities (or, alternatively, co-curricular activities). Such activities are considered inherently educational. Results of data analysis presented in this study contradict the zero sum theory.

According to Stephens and Schaben (2002), extracurricular activities are not a diversion but rather an extension of a good educational program. Students who participate in sports and/or extracurricular activities tend to have higher test scores, better attendance records, lower dropout rates and fewer discipline problems than non participants.

Given that, few studies have used more stringent evaluation methods of the interaction between factors among sports participants. Baines and Stanley (2003) point to the difficulty in the transfer of motivation from the sports environment to the academic one as a reason for poor academic performance. While this may be the case for some African American and Hispanic student athletes, many look forward to the opportunity of continuing their education at the university level. These youths who often entertain hopes of success in professional sports may underestimate the amount of academic effort required to remain eligible for varsity play at the high school and university level.

Ascertaining the contribution that such sports and/or extracurricular activities make towards the mission of academic achievement – closing the achievement gap – is a complex task. Does this particular issue mean that student athletes of color should avoid sports at the cost of athletics? Does it mean that athletics should be concentrated on, with the idea that academics just does not matter? The answer to the above is – of course not. This is not a black or white issue, but involves shades of gray. The point is that students at all age levels are faced with pressures that their parents and grandparents were not faced with (at least on an academic level).

Kindergartners are already expected to read, second graders are expected to know cursive and other academic information, their older peers know. Added to that is the high stakes testing mentality, as part of the "No Child Left Behind" Act (NCLB 2001). Today students' plates are full already and when you add athletics to the mix there is more demand placed upon theses student athletes. Especially among high-quality athletic programs, you may end up with student athletes who are in need of time management skills.

Without the time management skills, student athletes face burnout and other potentially problematic scenarios. There are some things that need to happen in order for student athletes to succeed. What needs to happen here, then? Emphasis should be placed back on the Physical Education classes and sports as part of an overall educational curriculum. When sports are placed in their proper context – as a way to build healthy bodies, and healthy minds, there is less pressure to excel at the sports (Hillman, Castelli, & Buck, 2005). More emphasis on using sports to develop the whole person as a viable tool will benefit student athletes.

This of course, would take a major shift in thinking when it comes to sports in schools. The prominence of winning at all costs ends up truly having a dire impact on most student athletes. It does not matter if these children are in kindergarten or college. The effects of this is that student athletes graduate from college (if they graduate at all) already burned out. (Almost as burned out as some men and women who have been in the workforce for 30 years or more).

In addition, there is little proof that athletics beyond college actually has an impact on the person's career choice or chances of job placement. We have all heard the one about the All-American high school quarterback who comes back to his 20th class reunion as a failure in life. Sometimes, in fact such preferential treatment to high school and college athletes can have negative effects. When a person does not place the appropriate amount of focus (time & energy) on their academics and places too much is emphasis on athletics, this choice has a negative effect on student athletes.

This leads us to another issue; academics need to be stressed above and beyond athletics. Some colleges give lip service to this – some are actually pretty good at insisting their student athletes' graduate with high GPAs. Moreover, life skills such as time management should be imbedded within the regular academic curriculum. Nevertheless, it is not only the colleges that are the problems. High schools, Middle schools and Elementary schools sometimes allow their star athletes to slide, not allowing them the benefit of hard study. The result is functional illiterate athletes who are great at following hand signals. For example, a quarterback who cannot read a newspaper or job application, academics was not a priority in his life. No schools are doing their athletes a favor if they are not holding these students to the same tough standards they might hold their non-athletes to.

As for the need of time management strategies, more focus needs to be devoted to quality study time and less to athletics. This means less practice time (two hours instead of four hours of practice) should be the standard at the middle and high school level. Again, it also goes back to the notion of only winning on the field.

Instead, greater emphasis needs to be placed on winning within the classroom instead of only on the football field or basketball court. As a result you develop student athletes that are not quite as burned out and who benefit from a balanced lifestyle and enjoys their sport more.

In addition, less stress in general needs to be placed on students. It is not sports alone that cause problems. Students are expected to be "well rounded." This means you are likely to find students in athletic programs, drama programs, chess club, yearbook staff and various other activities. The more extracurricular activities there are, or so it seems, the better well rounded the student will become and the more likely he or she will go to college and from there, into the real world.

We are bringing up a generation of over-stressed, overanxious students who simply cannot function. They would like to begin their daily journey; however, they are too tired and become uninterested. This tiredness is a result of being overwhelmed by sports/extracurricular activities commitments and not enough time for academics. For example, the majority of high school student athletes start their day 5:30 a.m. and it around 9 pm or later. Upon completion of their homework for six or seven classes, they may get 4 or 5 hours of sleep during the weeknights.

As a comparison, most working professionals' hours are not as long. Student athletes do not sleep enough on average and it not only impacts the student's ability to learn, but also impacts the student's health as well.

If student athletes do not get the proper rest, he or she is at risk to contract illness that are likely able to keep him/her out of school, putting the student further behind on his/her studies in school. Again, add sports competition to the mix (and other extracurricular activities) and the student athletes' well being suffers.

Setting priorities and managing time effectively is a basic skill to managing individual performance. The pressure to find innovative ways to achieve goals, and enjoy life outside of academics is even more intense in today's less structured, information-driven society. Meeting the daily challenge of managing personal responsibilities requires learning strategies designed to meet individual needs, which create more balance within student athletes' daily lives.

The S.P.I.R.E.S. Conceptual Model (Survey, Plan, Initiate, Reflection, Evaluation, Success) is a systematic approach developed by the researcher from a student athlete perspective in order to help student athletes improve intellectually, physically and emotionally. The student athlete would begin by surveying the current task or events. For example, a point guard on the basketball team would survey the court before he/she calls a play. Afterwards, a plan of action would be formulated (i.e., design a play to attack the opponents 3-2 zone defense). The student athlete would then initiate the plan of action by setting up the offense or defense and execute the play exactly how the coach designed it.

At this point, the student athlete may need a time out. During the time out, the student athlete time would reflect on how well or poorly the play was executed. After reflecting on the task or daily events, the student athlete would evaluate the strengths and weakness of the previous plan. Next, the student athlete would make adjustments or modifications as needed. He/she would re-arrange and move uncompleted tasks or events to the next day of practice with the goal of completing the each task. Last and importantly, the student athlete would schedule entertainment or break time (i.e., an hour or two for you) in order to break up the monotony of his/her daily routine. The goal of this time management technique is to assist student athletes with placing proper emphasis on academics while not completely ignoring the nonacademic aspect of life. This strategy supports living a balance lifestyle and development of the total person. Success on and off the court can be achieved by using this strategy appropriately.

Recommendations for Future Research

The present study examined various factors that influence academic achievement among African American and Hispanic male high school student athletes. The researcher hypothesizes that Sports/Extracurricular Activity Participation and effective management of discretionary time enhances the academic achievement level of student athletes. This is referred to as the Sports Life Theory. Conceptually, this investigation revealed differences among African American and Hispanic male high school student athletes and their non-athletic peers.

However, the question of why this difference exists remains unanswered. Clearly, further analyses are necessary to investigate the relationships between students' time management skills, academic outcomes, interaction effects of various indicators and the quality of the interactions are needed. The process needs to further investigate the decision making skills utilized by student athletes concerning the use of their discretionary time. We do not know, for example how much control student athletes in various settings exercise over their discretionary time. When or at what age should we teach time mastery skills? To what extent do student athletes plan out their uses of time versus making decisions on the spur of the moment? Other research agendas may include the following: comparing the effects of interscholastic sports participation on academic performance to the effects of sports participation outside of school; investigating influence among the different academic subject areas by sports participation; comparing sports participation perspectives of other countries and their levels of academic performance to those of the United States.

The goal is to provide student athletes with more tools to make positive decisions and manage their time efficiently. In an effort to uncover detailed trends, accurate data files are needed. By building upon additional data and these insights, future research will fortify student athletes on their journey into the real game of life.

Conclusion

The primary focus of this research is to find strategies to help each student athlete maximize his or her potential, more research on the relationship between effective use of time and sports participation is required.

Many students, even if they are not involved in athletics, end up graduating from college. Eventually, some former student athletes find that they simply cannot manage their lives effectively. Time use efficiency requires that students are aware of the activities that fill their time (Kelley, 2002). There should be some emphasis placed on time management from a fairly early level, even within academic settings.

Some student athletes learn decision making skills using the trial by fire approach. While some student athletes learn to multi-task quite effectively, others simply cannot grasp the concept. Unfortunately, none of the literature really focuses on whether or not time management classes in school actually help students out upon graduation. However, if students have an inkling of how they need to behave in the real world, they might experience a smoother transition from academia into the real world.

Adding one more requirement to student athletes' plate is simply overwhelming today. We have no doubt that participation in sports is also linked to an increase in self-esteem, positive body image, and self-confidence as well as decreased incidence of depression, pregnancy, and smoking initiation (Nieman, 1999). All of these issues affect the student athletes' well being.

Their well being and development is being compromise under the disguise of more being better and the infamous "winning at all costs attitude." Due to the time management research among student athletes, it is difficult to support the need for and implementation of a time management curriculum. We can only surmise what the difficulties are, based on simple logic.

A few studies cited in this paper pointed out that student athletes especially at the large revenue producing collegiate programs, are expected to put in a bunch of hours, even during the off-season, to ensure their places on particular teams. With this added pressure, it should not be too surprising to see a future generation of student burn-outs who might suffer from ulcers and other stress-related diseases, such as stroke, high blood pressure and heart attacks.

In short, there is absolutely nothing wrong with the idea of sports in school. However, when the school relies on sports to the cost of everything, it is the student athlete who ends up suffering. Moreover, when this person ends up suffering, society as a whole suffers as well. It is not necessary to abolish sports programs or to place every student on a time management track.

Our focus on sports needs to shift and reality needs to reign when it comes to these programs. We need adequate preparation of our youth concerning everyday tasks such as effective management of their time and finances. Sports are important but it has its place. Academics, first and foremost must continue to take precedent over any other type of activity. Student athletes must have the capability of juggling a myriad of responsibilities successfully in order to attain their academic and non-academic goals.

APPENDIX A: IRB APPROVAL LETTER

University of Central Florida

Office of Research & Commercialization

July 11, 2006

Dr. Vincent Mumford and
Keith Riley
3518 West Jefferson Street
Orlando, FL 32805

Dear Dr. Mumford and Mr. Riley:

The University of Central Florida's Institutional Review Board (IRB) received your protocol IRB #06-3611 entitled **"Research on the Time Use Patterns of African American and Hispanic Male High School Student Athletes and Academic Achievement."** The IRB Chair reviewed the study on 7/10/2006 and did not have any concerns with the proposed project. The Chair has indicated that under federal regulations (Category #4, research involving the collection or study of existing data, documents, 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) this research is **exempt** from further review by our IRB, so an approval is not applicable and a renewal within one year is not required.

Please accept our best wishes for the success of your endeavors. Should you have any questions, please do not hesitate to call me at 407-823-2901.

Cordially,

Joanne Muratori

Joanne Muratori
UCF IRB Coordinator
(IRB00001138, FWA00000351, Exp. 5/13/07)

Copies: IRB File

JM: jm

APPENDIX B: DESCRIPTIVES AND CORRELATIONS TABLES

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
F1 Math IRT estimated number right for base year scores	2292	-8.00	81.32	35.1299	14.10433
F1 Math IRT estimated number right for F1 scores	2292	-8.00	80.53	30.6151	24.44134
F1 Socio-economic status composite, v.1	2292	-1.97	1.79	-.2774	.71021
Valid N (listwise)	2292				

Correlations

		F1 SES com-posite, v.1	RACE	F1 TEAM	F1 HW OUT	F1 EXTRA	F1 TV DVD	F1 GAMING
F1 Math IRT estimated number right for base year scores	Pearson Correlation	.280	.036	.146	.220	.191	.007	.008
	Sig. (2-tailed)	.000	.085	.000	.000	.000	.742	.693
	N	2292	2292	2292	2292	2292	2292	2292
F1 Math IRT estimated number right for F1 scores	Pearson Correlation	.233	.049	.329	.333	.347	.064	.110
	Sig. (2-tailed)	.000	.020	.000	.000	.000	.002	.000
	N	2292	2292	2292	2292	2292	2292	2292

APPENDIX C: WITHIN-SUBJECTS CONTRASTS

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	TIME	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
TIME	Linear	799.508	1	799.508	4.184	.041	.002
TIME*F1SES1	Linear	112.573	1	112.573	.589	.443	.000
TIME*F1HWOUT	Linear	14303.712	1	14303.712	74.859	.000	.032
TIME*RACE	Linear	1220.974	1	1220.974	6.390	.012	.003
TIME*F1EXTRA	Linear	6355.043	1	6355.043	33.259	.000	.014
TIME*F1TVDVD	Linear	69.618	1	69.618	.364	.546	.000
TIME*F1GAMING	Linear	735.008	1	735.008	.050	.002	.000
TIME*F1TEAM	Linear	3938.880	1	3938.990	20.614	.000	.009
TIME*RACE * F1TEAM	Linear	533.058	1	533.058	2.790	.095	.001
TIME*RACE * F1EXTRA	Linear	21.426	1	21.426	.112	.738	.000
TIME*RACE * F1TVDVD	Linear	183.601	1	183.601	.961	.327	.000
TIME*RACE * F1GAMING	Linear	265.257	1	265.257	1.388	.239	.001
TIME*F1TEAM * F1EXTRA	Linear	7406.020	1	7406.020	38.760	.000	.017
TIME*F1TEAM * F1TVDVD	Linear	1335.469	1	1335.469	6.989	.008	.003
TIME*F1TEAM * F1GAMING	Linear	1072.933	1	1072.933	5,615	.018	.002
TIME*F1EXTRA * F1TVDVD	Linear	22.583	1	22.583	.118	.731	.000
TIME*F1EXTRA * F1GAMING	Linear	796.819	1	796.819	4.170	.041	.002
TIME*F1TVDVD * F1GAMING	Linear	1566.166	1	1566.166	8.197	.004	.004
Error		434504.716	2274	191.075			

APPENDIX D: BETWEEN-SUBJECTS EFFECTS

Tests of Between-Subjects Effects

Measure: MEASURE_1
Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	2500839.902	1	2500839.902	6187.161	.000	.731
F1SES1	56064.923	1	56064.923	138.706	.000	.057
F1HWOUT	69702.777	1	69702.777	172.447	.000	.070
RACE	11199.520	1	11199.520	27.708	.000	.012
F1EXTRA	24822.698	1	24822.698	61.412	.000	.026
F1TVDVD	150.344	1	150.344	.372	.542	.000
F1GAMING	7,854	1	7.854	.019	.889	.000
F1TEAM	5593.968	1	5593.968	13.840	.000	.006
RACE * F1TEAM	157.749	1	157.749	.390	.532	.000
RACE * F1EXTRA	1.254	1	1.254	.003	.956	.000
RACE * F1TVDVD	262.632	1	262.632	.650	.420	.000
RACE * F1GAMING	1.308	1	1.308	.003	.955	.000
F1TEAM * F1EXTRA	3464.225	1	3464.225	8.571	.003	.004
F1TEAM * F1TVDVD	4003.419	1	4003.419	9.905	.002	.004
F1TEAM * F1GAMING	3151.135	1	3151.135	7.796	.005	.003
F1EXTRA * F1TVDVD	263.107	1	263.107	.651	.420	.000
F1EXTRA * F1GAMING	4087.926	1	4087.926	10.114	.001	.004
F1TVDVD * F1GAMING	4858.322	1	4858.322	12.020	.001	.005
Error	919146.900	2274	404.198			

APPENDIX E: ESTIMATED MARGINAL MEANS

Estimated Marginal Means

1. TIME

Measure: MEASURE_1

TIME	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	35.763[a]	.369	35.040	36.487
2	36.146[a]	.580	35.009	37.283

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

2. F1EXTRA * TIME

Measure: MEASURE_1

F1EXTRA	TIME	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
.00	1	34.249[a]	.458	33.352	35.147
	2	31.531[a]	.719	30.120	32.942
1.00	1	37.277[a]	.568	36.164	38.391
	2	40.762[a]	.892	39.012	42.512

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

3. F1GAMING * TIME

Measure: MEASURE_1

F1GAMING	TIME	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
.00	1	36.182[a]	.478	35.245	37.119
	2	35.631[a]	.751	34.158	37.104
1.00	1	35.345[a]	.498	34.369	36.320
	2	36.662[a]	.782	35.128	38.195

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

Estimated Marginal Means

4. F1TEAM * TIME

Measure: MEASURE_1

F1TEAM	TIME	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
.00	1	35.529[a]	.514	34.521	36.538
	2	33.473[a]	.808	31.888	35.057
1.00	1	35.997[a]	.517	34.984	37.011
	2	38.820[a]	.812	37.227	40.413

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

5. F1TEAM * F1EXTRA * TIME

Measure: MEASURE_1

F1TEAM	F1EXTRA	TIME	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
.00	.00	1	34.532[a]	.404	33.739	35.325
		2	26.105[a]	.636	24.858	27.351
	1.00	1	36.527[a]	.940	34.684	38.369
		2	40.841[a]	1.477	37.945	43.737
1.00	.00	1	33.967[a]	.809	32.379	35.554
		2	36.957[a]	1.272	34.462	39.452
	1.00	1	38.028[a]	.613	36.826	39.230
		2	40.682[a]	.963	38.793	42.571

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

6. F1TEAM * F1GAMING * TIME

Measure: MEASURE_1

F1TEAM	F1GAMING	TIME	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
.00	.00	1	35.495[a]	.632	34.256	36.733
		2	31.234[a]	.993	29.287	33.181
	1.00	1	35.564[a]	.728	34.136	36.993
		2	35.712[a]	1.145	33.467	37.957
1.00	.00	1	36.869[a]	.741	35.416	38.323
		2	40.028[a]	1.165	37.744	42.313
	1.00	1	35.125[a]	.712	33.729	36.521
		2	37.611[a]	1.119	35.417	39.806

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

Estimated Marginal Means

7. F1EXTRA * F1GAMING * TIME

Measure: MEASURE_1

F1EXTRA	F1GAMING	TIME	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
.00	.00	1	33.967[a]	.634	32.723	35.210
		2	29.206[a]	.997	27.251	31.160
	1.00	1	34.532[a]	.625	33.306	35.758
		2	33.856[a]	.982	31.930	35.783
1.00	.00	1	38.397[a]	.734	36.958	39.837
		2	42.056[a]	1.154	39.794	44.319
	1.00	1	36.157[a]	.818	34.554	37.761
		2	39.467[a]	1.285	36.946	41.987

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

8. F1TVDVD * F1GAMING * TIME

Measure: MEASURE_1

F1TVDVD	F1GAMING	TIME	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
.00	.00	1	35.622[a]	.503	34.634	36.609
		2	33.487[a]	.791	31.935	35.038
	1.00	1	35.769[a]	.698	34.401	37.137
		2	38.089[a]	1.096	35.939	40.239
1.00	.00	1	36.743[a]	.752	35.267	38.218
		2	37.775[a]	1.182	35.457	40.094
	1.00	1	34.920[a]	.654	33.638	36.203
		2	35.234[a]	1.028	33.219	37.249

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

9. F1TEAM * F1TVDVD * TIME

Measure: MEASURE_1

F1TEAM	F1TVDVD	TIME	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
.00	.00	1	34.935[a]	.644	33.671	36.198
		2	31.147[a]	1.013	29.161	33.133
	1.00	1	36.124[a]	.722	34.709	37.540
		2	35.799[a]	1.134	33.574	38.023
1.00	.00	1	36.456[a]	.668	35.145	37.767
		2	40.429[a]	1.051	38.368	42.489
	1.00	1	35.539[a]	.793	33.984	37.093
		2	37.211[a]	1.246	34.768	39.654

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

Estimated Marginal Means

10. RACE

Measure: MEASURE_1

RACE	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
.00	34.174[a]	.509	33.176	35.171
1.00	37.736[a]	.539	36.678	38.794

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

11. F1EXTRA

Measure: MEASURE_1

F1EXTRA	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
.00	32.890[a]	.497	31.916	33.864
1.00	39.019[a]	.616	37.811	40.228

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

12. F1TEAM

Measure: MEASURE_1

F1TEAM	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
.00	34.501[a]	.558	33.407	35.595
1.00	37.408[a]	.561	36.308	38.509

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

Estimated Marginal Means

13. F1TEAM * F1EXTRA

Measure: MEASURE_1

F1TEAM	F1EXTRA	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
.00	.00	30.319[a]	.439	29.458	31.179
	1.00	38.684[a]	1.020	36.684	40.684
1.00	.00	35.462[a]	.879	33.739	37.185
	1.00	39.355[a]	.665	38.051	40.660

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

14. F1TEAM * F1TVDVD

Measure: MEASURE_1

F1TEAM	F1TVDVD	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
.00	.00	33.041[a]	.700	31.669	34.413
	1.00	35.962[a]	.783	34.425	37.498
1.00	.00	38.442[a]	.726	37.019	39.865
	1.00	36.375[a]	.860	34.687	38.062

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

15. F1TEAM * F1GAMING

Measure: MEASURE_1

F1TEAM	F1GAMING	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
.00	.00	33.364[a]	.686	32.020	34.709
	1.00	35.638[a]	.791	34.088	37.189
1.00	.00	38.449[a]	.805	36.871	40.027
	1.00	36.368[a]	.773	34.853	37.884

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

Estimated Marginal Means

16. F1EXTRA * F1GAMING

Measure: MEASURE_1

F1EXTRA	F1GAMING	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
.00	.00	31.586[a]	.688	30.236	32.936
	1.00	34.194[a]	.678	32.864	35.524
1.00	.00	40.227[a]	.797	38.665	41.789
	1.00	37.812[a]	.888	36.071	39.553

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

17. F1TVDVD * F1GAMING

Measure: MEASURE_1

F1TVDVD	F1GAMING	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
.00	.00	34.554[a]	.546	33.482	35.626
	1.00	36.929[a]	.757	35.444	38.414
1.00	.00	37.259[a]	.817	35.658	38.860
	1.00	35.077[a]	.710	33.686	36.469

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

18. F1GAMING

Measure: MEASURE_1

F1GAMING	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
.00	35.907[a]	.519	34.890	36.924
1.00	36.003[a]	.540	34.944	37.062

a. Evaluated at covariates appeared in the model: F1 Socio-economic status composite, v.1 = -.2774, F1HWOUT = .1911.

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