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The future value of interscholastic participation: An analysis of the impact of participation on future earnings and educational attainment

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The future value of interscholastic participation: An analysis of the impact of participation on future earnings and educational attainment

by

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A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Education (Education Leadership)

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TABLE OF CONTENTS

LIST OF TABLES.....	iv
ABSTRACT	vii
CHAPTER 1: INTRODUCTION.....	1
Purpose of the Study.....	5
Description of the Design and Methodology	5
Organization of the Study.....	7
Conclusion.....	8
CHAPTER 2: REVIEW OF LITERATURE.....	10
Historical Perspectives	10
Present Value.....	15
Theory of Human Capital.....	26
Future Value	34
Conclusion.....	46
CHAPTER 3: DESIGN AND METHODOLOGY.....	48
Research Questions and Hypotheses.....	49
Research Design.....	50
Methodology	57
Limitations of the Study.....	62
Conclusion.....	66

CHAPTER 4: DATA ANALYSIS	67
Selection Criteria.....	67
Students in the Study.....	67
Participation Data.....	73
Findings from the Models of Association.....	80
Findings from the Bivariate Linear Regression Model.....	85
Findings from the Multiple Regression Model.....	110
Conclusion.....	119
CHAPTER 5: DISCUSSION	121
Discussion of the Findings.....	121
Implications for Educational Practice.....	126
Conclusion.....	137
APPENDIX A.....	140
Definitions of Terminology.....	140
APPENDIX B.....	143
Variables from NELS:88.....	143
Variables Created for this Study.....	144
REFERENCES	145

LIST OF TABLES

Table 1: Student Demographic Information	69
Table 2: Student Socioeconomic Status	70
Table 3: Total Family Income	71
Table 4: Parent Educational Status	72
Table 5: Parent Marital Status	73
Table 6: Team Sports Participation Data.....	74
Table 7: Individual Sports Participation Data	75
Table 8: High School Sports Participation Data.....	76
Table 9: High School Cheer/Dance Participation Data	77
Table 10: High School Performing Arts Participation Data.....	78
Table 11: High School Activities Participation Data	79
Table 12: High School Activities Participation Data with Demographic Information	80
Table 13: Correlation between Participation in High School Activities and Future Earnings.....	82
Table 14: Correlation between Participation in High School Activities and Educational Attainment	84
Table 15: Bivariate Linear Regression Analysis of the impact of Grade 10 Activities on Future Earnings.....	87
Table 16: Bivariate Linear Regression Analysis of the impact of Grade 12 on Future Earnings.....	88
Table 17: Bivariate Linear Regression Analysis of the impact of Total Activities on Future Earnings.....	89
Table 18: Bivariate Linear Regression Analysis of the impact of Participation on Future Earnings using Gender as a Control Variable	90

Table 19: Bivariate Linear Regression Analysis of the impact of Participation on Future Earnings using Race as a Control Variable	90
Table 20: Bivariate Linear Regression Analysis of the impact of Participation on Future Earnings using Socioeconomic Status as a Control Variable	92
Table 21: Bivariate Linear Regression Analysis of the impact of Participation on Educational Attainment using Marital Status as a Control Variable	93
Table 22: Bivariate Linear Regression Analysis of the impact of Participation on Future Earnings using Parent Education Level as a Control Variable	95
Table 23: Bivariate Linear Regression Analysis of the impact of Athletic Participation on Future Earnings using Cheer / Dance and Performing Arts Participation as a Control Variable.....	96
Table 24: Educational Attainment	98
Table 25: Bivariate Linear Regression Analysis of the impact of Grade 10 Activities on Educational Attainment	99
Table 26: Bivariate Linear Regression Analysis of the impact of Grade 12 Activities on Educational Attainment	100
Table 27: Bivariate Linear Regression Analysis of the impact of Total Activities on Educational Attainment	101
Table 28: Bivariate Linear Regression Analysis of the impact of Participation on Educational Attainment using Gender as a Control Variable.....	102
Table 29: Bivariate Linear Regression Analysis of the impact of Participation on Educational Attainment using Race as a Control Variable	103
Table 30: Bivariate Linear Regression Analysis of the impact of Participation on Educational Attainment using Parent Socio-Economic Status as a Control Variable.....	105
Table 31: Bivariate Linear Regression Analysis of the impact of Participation on Future Earnings using Parent Marital Status as a Control Variable	106
Table 32: Bivariate Linear Regression Analysis of the impact of Participation on Educational Attainment using Parent Education Level as a Control Variable	107
Table 33: Bivariate Linear Regression Analysis of the impact of Total Athletic Participation on Educational Attainment using Cheer/Dance and Performing Arts Participation as a Control Variable.....	109

Table 34: Multiple Linear Regression Analysis of the impact of Participation and Parents' Educational Level on Future Earnings	112
Table 35: Multiple Linear Regression Analysis of the impact of Participation and Parents' Educational Level on Educational Attainment.....	113
Table 36: Multiple Linear Regression Analysis of the impact of Participation and Total Family Income on Future Earnings.....	114
Table 37: Multiple Linear Regression Analysis of the impact of Participation and Total Family Income on Educational Attainment	115
Table 38: Multiple Linear Regression Analysis of the impact of Participation, Parents' Educational Level, and Total Family Income on Future Earnings.....	116
Table 39: Multiple Linear Regression Analysis of the impact of Participation, Parents' Educational Level, and Total Family Income on Educational Attainment	117
Table 40: Multiple Linear Regression Analysis of the impact of Participation, Parents' Educational Attainment, Total Family Income, Parent Marital Status, Race, and Gender on Future Earnings.....	118
Table 41: Multiple Linear Regression Analysis of the impact of Participation, Parents' Educational Attainment, Total Family Income, Parent Marital Status, Race, and Gender on Educational Attainment	119

ABSTRACT

The purpose of this research was to investigate the future value of interscholastic participation in extracurricular activities on the individual student level. In this study, two relationships were examined: (a) the relationship between high school student participation and postsecondary educational attainment, and (b) the relationship between high school student participation and future wage earnings. For decades, there has been an overwhelming sentiment that participation in athletics and other extracurricular activities is beneficial to the student. However, very little research has been conducted on extracurricular activities, let alone the relationship between activities and future benefits.

Four different analyses were used in this study: (1) correlational analysis relating participation in activities to future earnings; (2) correlational analysis relating participation in activities to educational attainment; (3) bivariate linear regression models accounting for the relationship between participation and both future earnings and educational attainment, with controls for student gender and race, and parental socioeconomic status, marital status, and education; and (4) a multiple regression model accounting for the effects of participation and family demographics while in high school on future earnings and educational attainment. Data were extracted from the National Education Longitudinal Study of 1988 (NCES, 2002) from the second (1990), third (1992), and fourth (2000) follow-ups. The NELS:88 database was selected for this study because its variables were consistent with the purposes of the study and because it contained longitudinal data on a large number of students who participated in athletics and activities in high school. NELS:88 contained data

on a large number of students across a wide variance of populations, mixing both public and nonpublic schools along with students of a variety of demographic categories.

This study indicated that no practical relationship exists between participation in interscholastic activities and future wage earnings and future educational attainment.

Recommendations based on the findings of this study include an examination of the research related to activities and a critical examination of participation at the local level. Next, leaders must define the role of activities in their community and use that knowledge and understanding to formulate a mission statement that can serve their activities' program.

CHAPTER 1. INTRODUCTION

Educators across the United States today face a myriad of issues, including, but not limited to, the challenges of the No Child Left Behind Act, the call for increased academic rigor in our high schools, and an economy that can best be described as volatile, impacting the funding of all schools. In the face of economic challenge, school administrators often must contend with the difficult task of prioritizing what is important and what is not in terms of educational offerings. As diverse as American schools are, so too are the decisions made in terms of what receives the highest priority in the educational setting. In many cases, the first cut often involves extracurricular activities.

McNeal (1998) pointed out that “educational resources are differentially and inequitably distributed in American high schools” (p. 183). School resource inequity mirrors societal inequity, yet in public education there is an assumption of equality. This can be seen in the different methods in which schools elect to handle activities when financial resources are limited. In Alaska, for the “49,500-student Anchorage School District, the choice was to cut programs” (Reeves, 2006). In San Jose, California, the superintendent proposed cutting athletics at all 11 city high schools (Lemire, 2009). In school districts in Ohio, however, similar cuts led to the private funding of athletics, either through donations or student fees. This type of outside funding is common across the country and has created a divide between schools (Reeves, 2006), further highlighting McNeal’s notion that “American education institutions reproduce existing inequalities in society” (1998, p. 183).

An obvious question is whether there is value in extracurricular activities. Clearly those who supported their athletic programs in Ohio, either through private donations or by paying a participation fee, felt there was some value in participation in athletics and

activities. It is likely that those feelings were present in Alaska's high schools, yet the resources to support the programs in these schools were absent.

For decades, there has been an overwhelming sentiment that participation in athletics and other extracurricular activities is beneficial to the student. In *The Case for High School Activities* (n.d.), the National Federation of State High School Associations (NFHS) identified three general benefits inherent to participation in high school extracurricular activities:

1. Extracurricular activities support the mission of schools.
2. Activities are inherently educational.
3. Activities have long-lasting effects.

Most people feel that athletic activities benefit students in some capacity. These activities are fun, they are enjoyed by many, and they generate a great sense of individual and group accomplishment. Community pride resonates much greater from a victory in a football game than from a victory in a spelling bee or math competition. These feelings of connection and pride in the local high school are present in any community and in any high school across this nation. Extracurricular activities are important to high schools. However, the question remains whether these activities contribute to the overall education of the individual student.

Many would argue that participation in extracurricular activities provides students an extension of the classroom and teaches life lessons. McNeal (1998) noted that "it is likely that differential access and participation results in a less-than equitable distribution of various social skills" (p. 183). In addition, McNeal wrote that:

students who are excluded from extracurricular participation may be losing an alternative pathway to increased achievement and self-esteem . . . [and] participation in extracurricular activities may also be an avenue through which parents of higher socioeconomic status (SES) transmit various types of social and cultural capital to their children. (p. 183)

While the NFHS has presented its beliefs outlining the benefits of extracurricular activities, one could expect an organization dedicated to the mission of supporting high schools in the field of extracurricular activities to do just make such claims. The specific benefits outlined in *The Case for High School Activities* (n.d.) included statements that students in high school athletics are less likely to drop out from high school, are less likely to have discipline problems in high school, and have higher grade point averages.

Other studies have produced similar results. A Connecticut College report in 2005 found that youth participation and involvement in extracurricular activities had a positive impact on student achievement. The two studies cited in the report demonstrated that the benefits were greatest for students who participated in the most activities. The studies also showed that eleventh grade students who participated in activities in their junior year of high school had a much more robust, predictable academic adjustment to the rigor of high school and psychological adjustment to the demands of peer pressure in high school (Connecticut College, 2005).

Other studies also have found benefits to student participation in athletics. One study conducted on a single-school level examined the impact that participation on a high school soccer team had upon grade point average and attendance for individual students. For example, Silliker and Quirk (1997) found that the 123 high school participants on two soccer

teams had higher grade point averages during the soccer season than during the off-season. The report also noted a higher attendance rate, although it was statistically insignificant. Studies conducted by Sabatino (1994), Whitely (1999), and Burnett (2000) demonstrated similar results.

Studies of postsecondary education also have noted the importance of participation in high school activities related to college admission. Thompson (2008), for example, noted that participation in activities in high school is an important factor that college admission panels consider. He cited that such participation speaks to a student's character and to his or her ability to communicate.

While Sabatino (1994), Whitely (1999), and Burnett (2000) all found some positive correlation in terms of the impact of athletic and extracurricular participation in their research, questions remain when considering causality and the future impact of participation. In 1969, Walter Schafer wrote that:

interscholastic athletics share with other competitive sports the distinction of being among the least studied of all social phenomena . . . high school sports are marked by rich and abundant folk-wisdom about the reasons for their existence and strength . . . their consequences for society, the community, the school, and participant. (p. 40)

It is this folk wisdom about the reasons for the existence and strength of extracurricular activities, rather than research in the field, that has led to their support for years. Yet, in challenging times, both in society and in the field of education, administrators of secondary schools, district-level managers, and school boards are faced with decisions relating to program cuts. No longer are qualitative statements, unsupported by substantial data, appropriate resources for such decision making. Unfortunately, there are few studies in

existence today that demonstrate a measured understanding of the value of participation in athletics and activities.

Two areas of interest with respect to placing a value on participation in terms of future benefit are educational attainment and wage earnings. Limited research exists that connects either factor to participation in interscholastic activities. The NFHS list of general benefits of extracurricular activities includes a statement that “activities have long-lasting effects” (*The Case*, n.d.). However, there is no reference to what exactly these effects include.

Purpose of the Study

The purpose of this study is to investigate the future value to students of interscholastic participation in extracurricular activities. In this study, two relationships were examined: (a) the relationship between high school student participation and postsecondary educational attainment, and (b) the relationship between high school student participation and future wage earnings. Limited research exists in this area and, with the challenges of student achievement and funding in schools, the issue of the value of student participation is relevant. Continued research in this area is necessary to inform both students and school districts as to the value of participation in high school athletics and activities.

Description of the Design and Methodology

The primary question answered in this study was whether a significant relationship exists between participation in high school athletics and activities and a student’s postsecondary educational attainment and future wage earnings. The study began with a four-part review of the research. The first section recounted the history of interscholastic participation in schools. The second section described the present value of student

participation in high school athletics and activities. This information highlighted the research that exists on student participation and was framed around the themes of academic achievement and student development.

The third section of the research review focused on the theory of human capital and its basic notion that “the earnings of more educated people are almost always well above average” (Becker, n.d.). Becker (1992) found both tangible and intangible gains ranging from cultural advancement to improvement in earnings and portability in the workplace. The cost is simply the time spent on these investments and those individuals studying the theory of human capital in recent years have related this to the field of education. The final section of the review of the research focused on the impact of participation on future aspects of a student’s life. This review was oriented on future wage earnings and future educational attainment.

Data were extracted from the National Education Longitudinal Study of 1988 (NCES, 2002), following the fourth data collection wave that was conducted in the year 2000. The NELS:88 database was selected for this study because its variables were consistent with the purposes of the study and because it contained longitudinal data on a large number of students who participated in athletics and activities in high school. The NELS:88 database also contained follow-up information related to postsecondary educational attainment and wage earnings beyond high school.

Four different analyses were conducted in this study: (a) the correlation between participation in activities and future earnings, (b) the correlation between participation in activities and educational attainment, (c) bivariate linear regression, and (d) multiple regression.

Correlational studies were used to analyze the variables. Similar to the regression calculations, the independent variable remained participation in interscholastic activities. The dependent variable was future earnings or educational attainment.

Bivariate linear regression was used to study the sum of participation in activities that an individual reported in relation to their future earnings and educational attainment. In this mode, participation was measured as a scale variable indicating the total number of activities in which an individual participated during high school.

Multiple regression techniques were used to study other variables beyond just the sum of participation in activities that an individual reported in relation to their future earnings and educational attainment. Analysis was conducted using the number of activities participated in combined with total family income, the number of activities participated in combined with parent education level, and the number of activities participated in combined with both total family income and parent education level as independent variable combinations. One final calculation included an analysis using participation, parents' educational attainment, total family income, parent marital status, race, and gender.

Organization of the Study

This study is organized into five chapters. Chapter 1 provides an overview of the purpose and design of the study. Chapter 2 reviews the literature related to the present value of participation in athletics and activities, the theory of human capital and its implications in the field of education, and the future value of participation. Chapter 3 discusses the design and methodology of the study and addresses the appropriateness of the statistical model and the research instrument. Chapter 4 presents the results of the statistical analysis. Chapter 5

provides an interpretation of the results obtained and presents recommendations for future practice and study.

Conclusion

In an article in the November, 2008 edition of *High School Today*, a school superintendent discussed the value of combining academics and athletics into his school's mission statement. He noted that "one does not have to sacrifice for the other" (Schneider, 2008, p. 9). Throughout the article, school attendance, grade point average, and team athletic achievement were used to justify the author's point that participation in athletics, at least at his high school, had some value on a student's present achievement level and on the school as a whole.

A review of articles written by school personnel on the same subject in most athletic and school trade publications likely would be very similar. In most cases, the grade point averages of students in athletics and activities would be reported as higher than those of students not involved in activities and the attendance records of students in athletics and activities would reflect fewer absences than those of students not involved in activities. Based upon that information, many in the field would feel justified in their support of athletics and activities.

Although these quantitative and qualitative reports seem to support positive claims of regarding participation in athletics and activities, many assumptions are made within the preparation and reporting of each study and therefore further study is necessary. The purpose of this study was to use advanced statistical techniques to investigate the future value of interscholastic participation in extracurricular activities rather than accept anecdotal or simple statistical evidence. This study demonstrated to those in the field of education,

both administrators and policy makers, that such review was possible. No longer do school officials need to make tough decisions without significant statistical information related to student participation in athletics and extracurricular activities.

CHAPTER 2. REVIEW OF LITERATURE

This chapter presents a review of the literature in five distinct sections. In each section, relevant research is used to inform the dissertation study. The first section focuses on defining and outlining the history and evolution of extracurricular activities in secondary education. The second section reviews literature surrounding the present value of extracurricular activities or the value to students at the time they are participating in the activity. The third section examines Becker's theory of human capital in greater depth. The fourth section serves as a link between this theory and the future value of investments made in extracurricular activities. The final section of this chapter is a summary.

Historical Perspectives

This section of the literature review examines the rise of athletics and activities in schools in America through time. While work began on the study of school-sponsored activities early in the twentieth century, the rise in popularity of such activities and their subsequent study has only recently grown.

A study conducted at the conclusion of the 2006–2007 school year by the National Federation of State High School Associations found that participation in high school athletics for that same school year rose by over 183,000 students to an all-time high of 7,342,910 students, a proportional increase of 2.49% over the previous year (“High school sports,” 2008, p. 53). The NFHS represents the local governing bodies of sports and activities within each state and the District of Columbia.

This growth does not come without concern. Issues such as “No Pass/No Play” in Texas, North Carolina, and, most recently, Iowa, and “pay to play” in other areas of the country - an issue Hoff and Mitchell (2006) examined in depth have come to the forefront.

“No Pass/No Play” is a philosophy and policy in some locations whereby students must pass all classes to be eligible for extracurricular activities. “Pay to play” refers to requiring students to pay for the privilege of participating in their school’s activities. These issues have fueled debates related to the value and importance of extracurricular activities. McNeal (1998) examined the fact that “these activities are often among the first items to be targeted for budget cuts in times of fiscal constraints” (p. 183).

These issues are not new. As early as 1932, Brammell noted that careful study of athletic activities should be done to ensure that “certain evils” (p. 735) do not develop. In 1961, Coleman wrote that “status criteria in leading-crowd membership, on popularity - demonstrates conclusively that athletics is far and away more important as a value among high schools students than academic achievement” (p. 33).

Whether 80 years ago or today, the issues surrounding high school extracurricular participation, more specifically athletic participation, represent a struggle over the manner in which we educate our young adults. Much like the evolution of the struggle, so too have extracurricular activities evolved over time in the educational setting.

Today, the term extracurricular activity, while diverse across various social, civic, and arts-driven disciplines, resonates most commonly in the athletic arena. Within that arena, the activities are as diverse as the populations and locations of American high schools. High schools typically house students in grades 9 to 12, with students ranging in age from 14 to 18 years old. One recent study found that, on average, schools offered 14 extracurricular sports programs (Cohen, Taylor, Zonta, Vestal, & Schuster, 2007). The NFHS sponsors over 100 individual sport programs nationwide, including 10 adapted sports to service the needs of students with various disabilities (*NFHS participation*, n.d.). While

all schools do not offer all sports, for instance, in Iowa it is unlikely that there are sailing teams due to the lack of bodies of water in which to sail. Most states offer a diverse array of athletic opportunities, ranging from more traditional sports such as baseball, basketball, and football, to sports with newly-found interest such as kayaking, rodeo, and curling.

It is important to note the evolution of these athletic ventures lends greater understanding to the strong support shown to schools and communities throughout America. Benjamin Rader categorized the development of American sport into “four distinct periods: The Age of Folk Games (1607-1800); The Rise of Organized Sports (1800-1890); The Ascendancy of Organized Sports (1890-1950); and the Age of Televised Sports (1950-present)” (as cited in Riess, 1990, p. 312). Through each of these eras, the structure and organization associated with athletics grew, from community games that were played solely for recreation in the Age of Folk Games, to a rise in sports in communities in the 1800s, to the inclusion of sport in school up until about 1950, to today, where sports are part of everyday life and culture from school to the community.

Burnett (2000) noted that sports at the turn of the twentieth century were simply a recreational activity. The first intercollegiate contests “were not instituted until 1852, and yet, by 1900, the majority of high schools had followed colleges incorporating athletics into the schools” (p. 1). At this time, sports as a recreational activity evolved into sports as a more “vital part of the educative process” (p. 1).

Rader’s work highlighted the fact that sports mirrored the changes in society at the time. The evolution of athletics was “primarily the joint product of industrial capitalism, the evolution of American society and culture (in an urban setting), and the exigencies of each

sport's internal requirements (organization, rules management, finances, and ethos)" (as cited in Riess, 1990, p. 312).

The Carnegie Foundation completed significant work on the study of athletics in the early 1900s. This work outlined the change in secondary schools from low demand and significance placed on physical activity and enjoyment to more demand for competitive play. The notion behind this shift was that athletic competition played a major role in "curing the ills of urban, technological democracy. These arguments included a concern with juvenile delinquency, adolescent sexuality, the social problems of urbanization, leisure time, social unrest, industrialization, and economic individualism" (as cited in Spring, 1974, p. 486).

Luther Gulick, the principal founder and first president of the Playground and Recreation Society of America, introduced class athletics into public schools in New York City in 1906. Gulick felt that through athletics the young men of the day would be "conditioned by the rules of the game . . . It is for this freedom and this control that play gives preparation and training" (as cited in Spring, 1974, p. 488). As the importance of sport grew, so did the need for control. With some resistance, sports became a part of the schools, and "the major factor motivating educators' systematic involvement in these organizations was the perceived need to reestablish adult control" (Gutowski, 1988, p. 72).

The primary organization of sport and the development of morality occurred in high schools, which were rapidly changing at this same time. The goals of high schools shifted from almost purely academic to the development of what American educational reformer John Dewey called the "whole child" (as cited in Burnett, 2000, p. 2). The *Cardinal Principles Report* stated in 1918 that the major goals of the high school were to give men

“common ideas, common ideals, and common modes of thought, feeling, and action that made for cooperation, social cohesion, and social solidarity” (Spring, 1974, p. 492). The report focused on the formation of objectives for secondary education and called for the all-out inclusion of “participation of pupils in common activities . . . such as athletic games” (p. 492).

In 1920, the NFHS was formed, adding a layer of legitimacy to athletic competition as high school sports grew in number and participation. It was at this time that an internal strife began which still exists today, namely the pitting of academic interests against that of student interests, which were seen at the time as residing outside the world of academic advancement (Burnett, 2000).

The largest expansion of sport in high schools took place after World War II, when sports grew out of increased media coverage and economic gain specifically related to college and professional sports. The growth of leisure time and an increased value in human culture caused sports to flourish (Burnett, 2000; Spring, 1974).

Girls began participating in high school sports in large numbers only after the passage of Title IX of the Education Amendments to the Civil Rights Act in 1972. In the year prior to the passage of this law, fewer than 300,000 girls participated in athletics in high schools nationwide; in 2005-2006, three million girls participated in athletics in our nation’s high schools (Stevenson, 2007, p. 487). The legislation was passed in 1972, enacted in 1978, and strengthened by Congress in 1987 and again by the Supreme Court in 1992, thus ensuring girls similar opportunities to benefit from athletic competition as boys (p. 491).

Many of the same issues that once plagued interscholastic athletics still exist today. There are still questions as to the value of athletic participation, the emphasis placed upon

athletics relative to academics, the social impact that athletics have had in areas such as bi-gender participation and the inclusion of diverse groups, and whether or not schools should sponsor and support athletics or if athletics should be held outside of the context of the educational setting.

In 1969, Walter Schafer wrote that:

interscholastic athletics share with other competitive sports the distinction of being among the least studied of all social phenomena . . . high school sports are marked by rich and abundant folk-wisdom about the reasons for their existence and strength . . . their consequences for society, the community, the school, and participant. (p. 40)

In the nearly 40 years since Schafer's comment, little has changed in terms of the advancement of research and understanding.

Present Value

The NFHS has compiled a list of three general benefits of extracurricular activities (*The Case*, n.d.):

1. Activities support the mission of schools.
2. Activities are inherently educational.
3. Extracurricular activities have long lasting effects.

The first two benefits center on the present. Through case studies, the NFHS has developed these benefits and demonstrated each in a variety of settings. In these studies, factors relating to academic achievement and student development are highlighted, further building a case for student involvement in activities.

This section focuses on the present value of participation in activities and those direct benefits to students within the context of the present, the time in which they are

participating in a high school extracurricular activity. Included are indicators that we have seen across the country such as higher student achievement and student development.

Academic Achievement

This section focuses on the topic of academic achievement, which refers primarily to grade point average, school attendance, discipline, and dropout status. Much of the research on academic achievement in this area focuses on the concept of *No Pass/No Play*, a practical approach in some school districts across America to ensure that participation in extracurricular activities is maintained as a privilege and not a right (Reeves, 1996). The research is framed in this context given that it appears to be the primary method of attack that opponents use to challenge funding, support, and participation in athletics and activities. Those opposed see extracurricular activities as detrimental to the educational process; those in favor of extracurricular activities see them as an enhancement.

The Challenge of Higher Standards

Two of the most-cited studies related to academic achievement and extracurricular participation were authored by Melissa Sabatino and Joseph O'Reilly. Both scholars' work focused on the impact of No Pass/No Play on schools in the southwestern United States. Sabatino and O'Reilly found that, when challenged with stricter standards, students involved in athletics responded at least somewhat positively to increased academic expectations. Ralph McNeal's work did not focus on any pass-to-play schemes, but rather on academic achievement as a byproduct of participation.

Sabatino (1994), a researcher for the Austin (Texas) Independent School District, conducted a study of Texas House Bill 72, a major reform bill passed in 1984 to overhaul the education system in that state. Included in HB 72 was legislation that enacted a No

Pass/No Play rule for high school athletes. At the time, No Pass/No Play was a rule in Texas that excluded a student from participating in extracurricular activities for a period of six weeks if he or she failed to maintain a passing grade in all subjects. Sabatino's research looked at the comparative numbers across a broad area of indicators from the 1984–1985 school year (the year before HB 72 was enacted) and the 1992–1993 school year.

Sabatino's research showed that more students remained eligible to participate in extracurricular activities under the No Pass/No Play provision (1994). Her numbers indicated that in the year prior to HB 72's enactment, the percentage rate of high school students eligible to participate in extracurricular activities was approximately 41%. Eight years later, that percentage had risen to 47%. Furthermore, students involved in athletics saw the most dramatic increase in eligibility rates, advancing from 47% to 60% compared to (p. 9).

Sabatino went on to analyze the dropout rate in the two-year comparison. The findings in this area were not as clear as those in her eligibility study. The dropout rate in 1984–1985 was at 13% for those not involved in extracurricular activities compared to 5% for those involved in an activity. The findings for the 1992–1993 school year proved to be similar: 10% of those not involved in an extracurricular activity dropped out compared to 3% of high school students involved in an activity (p. 14).

One assumption made by opponents of such legislation is that students, when faced with rules that require higher achievement, will simply lower their standards and not enroll in courses that require additional effort. Sabatino (1994) examined enrollment in honors courses and found that HB 72 did not have a negative impact on student participation in honors courses. The overall percentage of students enrolled in honors courses advanced

from 24% in 1984–1985 to 35% in 1992–1993 (p. 17). The number of students participating in extracurricular activities during the fall of 1992–1993 was up 12 percentage points from 36% in 1984–1985, negating the premise that students would choose easier paths to maintain their eligibility (p. 17).

Sabatino (1994) concluded that “the No Pass/No Play provision may not have met the optimistic hopes of some legislators; however, the negative impacts that many feared also have not manifested” (p. 3). She went on to add that the legislation “appears to have a slightly positive effect on students involved in extracurricular activities” (p. 3).

A similar study, conducted in the Mesa (Arizona) Unified School District arrived at a different set of conclusions than did Sabatino. O’Reilly (1992) studied all students in grades 7–12 in the district after Arizona’s Board of Education enacted the No Pass/No Play rule in 1989. Hypotheses for the study were that under the No Pass/No Play rule student grade point averages would increase, fewer students would be ruled ineligible, and the rule would have a disparate effect on minority groups (p. 7).

With respect to grade point averages, O’Reilly (1992) found there was an increase in this indicator from the year prior to the rule’s initiation. O’Reilly discovered, however, that this increase was part of an overall trend witnessed within the school district that also could be accounted for by “creeping grade inflation or consistently better student performance” (p. 11). Thus, the conclusion that grade point averages might have increased solely because of the rule was likely false.

O’Reilly examined student eligibility over the period, finding that the number of students that were ruled academically ineligible to participate in athletics and extracurricular activities declined the first year after the rule was implemented. The data revealed, however,

that the district saw an increase in the number of students ineligible the second year. O'Reilly (1992) accounted for this by demonstrating that the percentage of students ineligible over a five year period, encompassing years both prior to and after the enactment of the No Pass/No Play rule, was consistently declining in a range between 34% and 28% (p. 10).

In examining the effect on minority groups, O'Reilly showed that the rule had “no clear impact on many of the academic outcome measures” (1992, p. 45) such as academic performance, dropout rates, or enrollment in honors classes. The data indicated, however, that a far greater number of ethnic group representatives were ruled ineligible compared to their White counterparts in the district. The percentage of White participants ineligible (10.7–15.0%) proved to be much lower than the subgroups of Hispanics (21.2–27.8%), African-Americans (16.5–32.8%), and Native Americans (29.2–41.1%) (p. 33).

O'Reilly concluded that the rule did not appear to have overwhelmingly positive results but that there was a disproportionately negative impact on minority groups regarding eligibility. He went on to state that the data did not suggest failure or success at that time due to a limited frame of reference. O'Reilly (1992) pointed out that the minimal positive benefits of the rule “must not be outweighed by long term negative consequences” (p. 47). Included in his discussion was the long-noted correlation between student activity and academic success and later success.

McNeal (1998) also outlined the value of what he called the “extracurriculum” (p. 184). In his work, he pointed to the numerous correlational studies that link extracurricular activities to success, including academic success. Using the first two waves of the NELS:88 data set (while students were still in school), McNeal's work demonstrated the importance

and value of extracurricular participation for all students while in school. McNeal (1998) found that activities were neither “fully beneficial or fully detrimental for all students” (p. 190).

Grade Point Average

Following Sabatino and O’Reilly’s work, two other researchers conducted similar research in North Carolina and Texas, this time focusing on grade point averages. Whitley (1999) conducted a study in North Carolina similar to those of Sabatino and O’Reilly, although North Carolina did not currently have a No Pass/No Play rule in effect. Whitley compared academic achievement, attendance, discipline, and the dropout rates of nonathletes to those of athletes and demonstrated that the “educational performance of athletes is better than that of nonathletes” (p. 224).

The grade point average of the athletes in Whitley’s study proved to be 22.66% higher than that of nonathletes, and athletes missed on average 6.06 less days of school a year than nonathletes (1999, p. 225). A similar trend was noted in discipline referrals: athletes were 10% less likely to receive a discipline referral compared to their nonathlete counterparts. The dropout rate indicated that 9.2% of nonathletes dropped out of school prior to graduation, opposed to just 2% of athletes (Whitley, 1999, p. 226).

Whitley (1999) generalized that “there is a direct relationship between participation in athletics and academic success. Therefore the popularity of sports in our society should be utilized as a tool for improving the educational performances of our young people” (p. 228). Whitley stated that schools should not eliminate interscholastic athletics and activities. Eliminating those opportunities for students, either through budgetary measures or academic

restrictions, would not “help solve the problem of mediocre performance by American public school students” (Whitley, 1999, p. 229).

Burnett (2000) also outlined the many positive aspects of extracurricular activities and the negative impact that No Pass/No Play legislation has had in some areas. He wrote that those involved in an extracurricular activity were less likely to have an unexcused absence from school, less likely to have skipped a class, more likely to maintain a grade point average above a 3.0, and more likely to earn a bachelor’s degree or higher (p. 3).

Burnett (2000) also addressed the notion of the No Pass/No Play concept specifically with respect to the state of Texas. He pointed out that the policies “overwhelmingly affected poor, black males greater than any other social group” (p. 4). Texas schools have experienced what Burnett called social failures where policies have led to abuses in the system, cheating, and teachers who lower the standards within their classroom. He also noted that many students simply dropped out when “their primary source of success, athletics, [was] eliminated” (p. 4).

Each of these authors noted some positive impact regarding increased grade point averages and the connection between participation and academic success. Each of these are indicators of increased student achievement.

Student Development

In 1999, McNeal wrote that there had been a shift in the role that schools play in America over the past two decades. That role has become “more ‘academic’ and less ‘developmental;’ in other words academic achievement has become nearly the sole focus of many secondary schools” (p. 306). McNeal noted that the operation of schools in a clearly academic manner hurts students, reiterating the value of participation in extracurricular

activities. With the multiple challenges facing education today, many schools have eliminated or underfunded programs that are not seen as academic. McNeal concluded that “we should be focusing not on how to curtail them, but rather on how schools can facilitate involvement” (p. 306).

Along with academic achievement, which McNeal pointed out drives our schools today, participation in activities is seen to have a positive influence on the development of the adolescent. Topics related to this area include the development of self-confidence, self-esteem, and leadership skills. This section reviews studies of the impact of participation on individual student development.

Interpersonal and Personal Development

Purely quantitative research would yield incomplete results in the overall study of the value of participation. Many different studies demonstrate that participation is far more important than just improved grades and better attendance. Interpersonal and personal development may be learned through participation. A number of studies have demonstrated a positive impact beyond tangible numbers in their studies, typically highlighting self-esteem, self-confidence, and communication.

A recent study by three educators at the University of Illinois pointed out the positive benefits of participation in extracurricular activities. Evaluating the experiences and subsequent responses of over 450 high school students, Hansen, Larson, & Dworkin (2003) found that both personal and interpersonal development were enhanced through student participation in athletics and other extracurricular activities.

The completed work produced results demonstrating that students developed “basic emotional, cognitive, and physical skills” (Hansen et al., 2003, p. 27), along with the

development of initiative and a definition of self. They also found that participation in activities enhanced interpersonal development, including team-building, relationship development among peers, and the development of other skills and relationships, thus providing “resources such as access to assistance and information” (p. 27).

Burnett (2000) reported on the intrinsic values that participation in extracurricular activities can bring, such as character-building, self-confidence, self-esteem, and a competitive spirit. These four attributes were seen not only as positive in terms of individual student development, but also excellent counterarguments to those who favor academic-based restrictions on participation.

Smith (1986) wrote about the case against No Pass/No Play in the *Progressive Review*. In his essay, he outlined the many values, relationships, and teachings gained through participation in activities. Without raw numbers or factual data, he cited the need for participation without strict guidelines, merely on the basis of the value of that participation.

While much of the data centered on No Pass/No Play, some research has examined activities based on their own merit. Broh (2002) examined participation in activities and their promotion of student development using the NELS:88 data set. He studied those students in grades 10 and 12 participating in all activities including athletics, music, and other school clubs.

Broh first examined the social benefits of participation and concluded that “participating in sports during the 10th and 12th grades significantly improves self-esteem, locus of control, and time on homework” (2002, p. 78). Each was found to be significant at the less than 10% level. In addition, Broh found that participation in sports greatly enhanced

the ability for students to relate with and connect with other students, thus helping them as social human beings.

Jordan (1999) studied the impact of athletic participation on African-American students. In his examination, he set out to determine what factors, if any, contributed to the successful education of young African-American students. Jordan used NELS:88 data to establish two key points about all students involved in athletic activities in high school. First, he found that the relationship between participation in athletics in high school and the notion of self-concept was positive and significant. In addition, Jordan found that sports had a positive and significant impact on a student's academic self-confidence. He concluded that "sports and physical activity can help adolescents who participate in them develop self-efficacy, self-confidence, and feelings of competence by virtue of the mastery of skills and talents that such participation engenders" (p. 67). Thus, if these elements are bolstered by sport, it would make sense that they can and do make a difference in the daily lives of students.

Values Education

One area of interest today is values education in schools. Some scholars have examined the impact of extracurricular participation on values such as competitiveness, poise, and leadership.

McNeal (1998) discussed the importance of values education through participation in student activities. He wrote that "there is a clear distinction between the focus in athletics on competitiveness, aggression, and the internalization of a hierarchical role structure and the focus in fine arts on behaviors such as poise and the application of classroom-based

knowledge” (p. 184). Much of McNeal’s work centered on access to the extracurriculum and the importance of such activities.

One other area that often is discussed relative to participation in activities is leadership development and leadership ability. Dobosz and Beaty (1999) explored this notion using a single high school as a sample. The two authors studied a sampling pool of 100 students at a suburban, college-preparatory high school near Chicago. Using an independent measure of leadership ability, they found that “high school athletes did, in fact, outscore their nonathlete peers on the leadership ability measure” (p. 219). This proves consistent with the literature that supports athletic participation as a positive influence on adolescents.

The Female Athlete

An increasing amount of literature exists on female athletes. Troutman and Dufur (2007) examined the female athlete specifically. In their work, they found that:

in terms of health, female athletes report fewer mental problems, eating and dietary problems, and general health problems than do nonathletes. In addition, high school athletes report higher self-concepts, express a more internal locus of control, and have fewer discipline problems. (p. 444)

In addition, they noted that “team sports helped protect girls, but not boys, with low GPAs from depression” (p. 445).

In addition, there has been research conducted that demonstrates that females who participated in athletics are less likely to become pregnant in their teenage years than peers who are not participating. Sabo et al. (1998) studied 699 families over the course of four years and found that female athletes were less likely to be sexually active, which led to a

number of recommendations, including the expansion of sports for girls. Reppucci (1987) indicated that sports were an effective vehicle in communities to reduce teenage pregnancy, but found that many areas of the country were failing to use this as a vehicle of social change.

Equally as important as academic achievement is the development of the student. The role of participation in athletics and activities in that process appears to be profound. Whether in the development of self-esteem, self-confidence, or leadership, the value or participation is noted in various studies.

Conclusion

To date, no studies, including this one, exist that demonstrate a causal link between participation in extracurricular activities and academic achievement. Numerous studies, however, demonstrate that a strong correlation does exist between success in the classroom and participation in extracurricular activities. Further research has indicated more qualitative findings of support for participation in extracurricular activities related to student development. Both are strong indicators of the present value of participation in extracurricular activities in the life of a high school student.

Theory of Human Capital

This section focuses on the theoretical context surrounding this study. The theory of human capital has grown in stature and popularity since its original, formal introduction in 1960. In short, Becker (1993) stated that the theory concentrates on the “activities that influence future monetary and psychic income by increasing the resources in people. These activities are called investments in human capital” (p. 11). This theory postulates that

“education and training are the most important investments in human capital” (p. 17).

Becker contended that the greater the investment in human capital, the greater the return.

In 1993, Becker wrote that “a bibliography on the economics of education prepared in 1957 would have contained less than 50 entries, whereas one issued in 1964 listed almost 450” (p. 3). In the same context, he noted that a similar bibliography in the 1970s would have included well over 1,300 entries. Of those 1,300, to which no present-day estimate was made in the literature, very few connect the relationship between the participation in extracurricular activities, which are often seen as an investment in students’ lives, and any sort of future value.

In the minds of most Americans, the term capital refers to money, whether in the form of cash or property. Beyond the notion of simple tangible items, however, lies the notion that there are intrinsic, intangible items that can be called capital. Herein lies the notion of human capital.

A Historical Analysis of Human Capital

With roots in early America, the theory of human capital has grown as our capitalist society has grown. This section investigates that development of the theoretical basis for this study.

As Sweetland (1996) pointed out, “human capital theory formally evolved in this century, but its bona fide conceptualization was articulated centuries ago” (p. 343). Early economists such as Adam Smith, John Stuart Mill, and Alfred Marshall all addressed the issue of human capital in early America. For example, Mill wrote that:

utilities fixed and embodied in human beings . . . the labour being in this case employed in conferring on human beings qualities which render them serviceable to

themselves and others. To this class belongs the labour of all concerned in education; not only schoolmasters, tutors, and professors, but governments, so far as they aim successfully at the improvement of the people . . . and all labour bestowed by any persons, throughout life, in improving the knowledge and cultivating the bodily or mental faculties of themselves or others. (Mill, 1926, p. 46)

Fisher (1906) summarized what Smith, Mill, and Marshall found years later, stating that “wealth in its broadest sense includes human beings” (p. 51).

Blaug wrote in 1976 that “the birth of human-capital theory was announced in 1960 by Theodore Schultz” (p. 827), yet it has origins in early America as is noted in the words of Smith, Mill, Marshall, and Fisher. It has connections to periods in the early to mid-twentieth century as well. Blaug credited the work of John R. Walsh, Jacob Mincer, and Milton Friedman, as well as Simon Kuznets’ book, *Income from Independent Professional Practice*, as contributions, but noted that it is Schultz and Becker who tied the subjects together (p. 827).

In his presidential address to the American Economic Association in 1960, Schultz first addressed the subject and formalized the theory into a working model. In his speech, he stated that “much of what we call consumption constitutes investment in human capital. Direct expenditures on education, health, and internal migration to take advantage of better job opportunities are clear examples” (1961, p. 1). Many of Schultz’s initial findings were based upon the rise in the national income from 1900–1956 and the further importance placed upon education during that period of time (Schultz, 1961; Sweetland, 1996).

Schultz found that there were three classes of expenditures. The first was pure expenditure, the second was pure investment, and the third was a combination of the two.

He noted that education, partly an investment and partly a consumption, fit into the third classification. He further explained the difficult challenge of allocating for education between the second and third categories, citing that “the problem of allocating costs of education in the labor force between consumption and investment does not arise to plague us when we turn to the contribution that education makes to earnings and to national income” (Schultz, 1961, p. 13).

Schultz’s work also focused on five categories of investment: (a) health facilities and services; (b) on-the-job training; (c) formally organized education at elementary, secondary, and higher levels; (d) study programs for adults; and (e) migration by individuals and families to adjust to the job market. While he discussed each element, Schultz’s focus was on the third element, education. He noted that “the income of the United States has been increasing at a much higher rate than the combined amount of land, man-hours worked and the stock of reproducible capital used to produce the income” (Schultz, 1961, p. 6). His challenge was to determine why; his answer was an investment in human capital.

Out of Schultz’s discussion in 1960 came a benchmark study in the theory. The work of Denison attempted to explain the economic growth in the nation over the same period of time. He found that the average annual growth rate was 2.93% and estimated that 2.0 percentage points of the growth was attributable to an increase in total inputs, of which 0.67 percentage point was education (Denison, 1962, p. 266).

Schultz (1963) again addressed the nation in aggregate, examining all economic growth. In his findings, he wrote that “it is essential to distinguish between the return and the rate of return for reasons already presented. It must be borne in mind that the measured return of schools is implying that part of earnings attributed to education” (p. 58). He

touched upon the notion that individual returns were present as well as social returns, the first time the notion of human capital was expressed on a micro-level.

Becker took the theory and examined the individual returns of each investment in human capital related to education and training and connected that to the individual's level of income. His findings were simply that "the earnings of more educated people are almost always well above average" (n.d.).

Becker and Human Capital

Gary Becker (1992) is widely seen today as one of the foremost scholars related to the theory of human capital. This section focuses on his work and the theory of human capital. Becker summarized human capital analysis in his Nobel Lecture in Economics in 1992, writing that "human capital analysis starts with the assumption that individuals decide on their education, training, medical care and other additions to knowledge and health by weighing the benefits and costs" (p. 43). The benefits included both tangible and intangible gains ranging from cultural advancement to improvement in earnings and portability in the workplace. The cost is simply the time spent on these investments.

Once thought of as a controversial topic because it categorized humans as machines, the theory is now widely accepted in the field of economics. There are, however, still some who oppose the theory; those individuals typically align themselves with the thought that the emphasis on the material good detracts from the cultural effects of education, which to some are more important (Becker, 1993). It is the "schooling, a computer training course, expenditures on medical care, and lectures on the virtues of punctuality and honesty" (p. 15) that are considered capital in this case. These produce "human, not physical or financial, capital because you cannot separate a person from his or her knowledge, skills, health, or

values the way it is possible to move financial and physical assets while the owner stays put” (p. 16).

Sweetland (1996) noted that the theory of human capital has strong ties to the economy, and individuals react with their investments in such capital based upon market factors. The cost of education is one such market factor. Consider that when the economy is going well, there is a general public tendency to place the emphasis on education. Becker (1993) examined this, highlighting the perceived value of education in the 1980s. Sweetland studied the converse as well, citing that when the economy is going poorly, it is often education that is blamed publicly. Becker examined this during the 1970s, demonstrating fewer high school graduates during that period went on to college. This indicated a publicly perceived devaluation of a college education.

The concept of human capital investments responding rationally to market factors can be seen equally in the advancement of women in the workplace. While more women graduated from high school than men in the 1960s, they did not enter typical fields that had higher wages; the fact that married women typically did not enter the workforce impacted this greatly. Today, with more women than ever in the workforce and with the acceptance of women in diverse fields, “the value to women of market skills has increased enormously, and they are shunning traditional ‘women’s fields’ to enter accounting, law, medicine, engineering, and other subjects that pay well” (Becker, 1993, p. 19). Thus, women now are seeing the benefit of an investment in human capital, once seen as unimportant due to the nature of their role in the home and society, “the decline of family size, divorce rates, and the rapid expansion of the service sector” (Becker, 1992, p. 45).

While Denison (1962) and Schultz (1961, 1963) derived their theoretical approach from the macro level, the economic approach to understanding behavior is best understood at the individual level. It is not, however, truly the individual level that is of interest, but the smaller group of individuals, not to the level of a culture or society, but a small, homogenous grouping. This is true because “rational individual choice is combined with assumptions about technologies and other determinants of opportunities . . . laws, norms and traditions to obtain results concerning the behavior of groups” (Becker, 1992, p. 52). It is these smaller groups of people, perhaps subsets of a sect of society, who chose similar things that are important to study.

While the focus of this study is on high school education, it is important to note some of Becker’s findings relative to a college education. He noted that:

real wage rates of young high school dropouts have fallen by more than 25 percent since the early seventies . . . young people without a college or a full high school education are not being adequately prepared for work in modern economies. (n.d.)

According to Becker, economists Murphy and Welch noted that the “premium on getting a college education in the eighties was over 65 percent . . . The earnings advantage of high school graduates over high school dropouts has also greatly increased” (as cited in Becker, n.d.). Thus, the relationship between increased education and increased wage opportunities has a positive correlation.

Becker’s connection of human capital and education is relatively simple. The greater number of resources attained by an individual, the greater his or her potential beyond the present. In other words, the more education, training, and experience, the greater he or she has for increased value beyond the present day. That value beyond today is measured in

such things as wages and positional advancement. To get ahead in the world, one should invest in his or her education and training.

Beyond Becker

The concept of human capital is not something that can be described in a single theory, but rather is a compilation of many different, yet similar, theories rooted in the same general idea. This section focuses on the work beyond Becker's own.

The concept of human capital rests on the "idea that people spend on themselves in diverse ways, not for the sake of present enjoyments, but for the sake of future pecuniary and nonpecuniary returns" (Blaug, 1976, p. 829). Ultimately, it comes down to individual choice. Blaug found that:

the traditional pre-1960 view among economists was that the demand for post-compulsory education was a demand for a consumption good, and as such depended on given "tastes," family incomes and the price of "schooling" in the form of tuition costs. (p. 829)

Much of that was determined based upon social class, not the potential for rewards at a later date. Since the 1960s, that movement has changed. Today, students make decisions outside of their means to ensure that they can be rewarded in future days.

The impact of education on the decision making of individuals based upon future value is clearly outlined in the theory of human capital. These future values are defined by Weisbrod (1962) as financial returns, financial options, and opportunity options. Although other factors influence future value, a positive correlation existed between increased investments in human capital and future value. The value of one's ability to obtain additional education, thus enhancing further options, and other options to include "job

options, income-leisure-security options, additional-schooling options, on-the-job learning options, way of live options” (p.113) was seen as beneficial to the individual specifically education, and salary.

Taking Becker’s very simple notion that training and education advance a person’s future value, Blaug and Weisbrod demonstrated strong returns in terms of social class and money earned. Both pointed to education and training, investments in human capital, as the primary impetus for such growth.

Conclusion

While much of the nature of the theory of human capital has purely economic roots, Becker and others have made an adequate translation to the field of education. The important concept to grasp related to human capital was summarized best by Psacharopoulos and Patrinos (2004) when they pointed out that at the individual level, “it is established beyond any reasonable doubt that there are tangible and measurable returns to investment in education” (p. 118).

Future Value

There has been only limited research conducted on the subject of whether participation in extracurricular athletics and activities carries with it a future value. This section reviews the literature in existence today related to the concept of future value in three categories: wage attainment, educational attainment, and the value of an education.

The NFHS has compiled a list of three general benefits of extracurricular activities. Two of these three benefits center on the present - that activities support the mission of schools and that activities are inherently educational - and were discussed in an earlier

section of this chapter. The third benefit of extracurricular activities is that they have long-lasting effects.

Studying the impact of athletic participation on future value related to individuals or groups of individuals is not easily done. In order to complete such work, it is necessary to study cohorts over extended periods of time, which is difficult, tedious, and, in many cases, not convenient for the researcher. Thus, scant literature exists which covers the impact of athletic participation on variables beyond school, much the same way as the body of work concerning present value relating to athletic participation is limited. Some studies, however, do exist that present important findings relative to this study, although most are from the field of economics and not from education.

Wage Attainment

One of the primary connections between future value and participation in athletics and activities exists in wage earnings. There are a numbers of studies that demonstrate the greater education a person attains will impact his or her future wage earnings. These studies demonstrate that the “education” gained through the interscholastic athletic and activities experience and demonstrate had a positive impact on future wage attainment. In other words, those participating in athletics and activities earned more money later in life than their peers who did not participate.

Barron, Ewing, and Waddell (2000) considered the effects “of participation in high school athletics on later educational attainment and labor market outcomes in terms of wages and employment” (p. 409). In their work, the authors used the National Longitudinal Study of Youth and the National Longitudinal Study of the class of 1972. Their study focused on males in 1,000 high schools beginning in 1972. Follow-ups were conducted

periodically from 1972 through 1979 and again in 1984. Fifty-seven percent of the males surveyed in 1984 “identified themselves as having participated in athletics” (p. 412). Their first finding revealed there was no correlation between employment and participation in high school athletics. In other words, just because an individual participated in high school athletics, he was not more or less likely to have a job. They did, however, make two discoveries pertaining to wage rate and educational attainment that pointed to human capital. With respect to compensation, Barron et al. (2000) found that those involved in their study who participated in high school athletics earned a higher wage in 1985 than did nonathletes, approximately 12 years beyond graduation from high school. They noted that “the wage rate for males who participated in athletic activities in high school is 12% higher [in one data set] . . . and 32% higher [in the other data set]” (p. 415).

Lleras (2008) used the NELS:88 database to examine future wage rates and educational attainment, which will be discussed later in this section, for a Grade 10 cohort, 10 years later. Lleras found that the data “are a stratified nationally representative sample of approximately 24,500 eighth grade students in 1,052 public and private schools who were re-interviewed in tenth grade (1990)” (p. 891), and then again in subsequent years to include 10 years beyond high school. Three items from the NELS:88 survey were used in this study to determine participation in extracurricular activities. Unlike Barron et al. (2000) who only focused on males in athletics, Lleras focused on three categories of participation: (a) athletic participation; (b) academic clubs or academic-related clubs (i.e., yearbook, student government); and (c) fine arts activities (i.e., band, orchestra, choir).

Lleras (2008) found that students involved in activities in their tenth grade year (athletics and academic clubs) had higher earnings 10 years later. In addition, she found that

for males the “main effect of fine arts participation on earnings was negative” (p. 899). She noted, however, that for females and African-Americans, participation in the fine arts proved to be beneficial in terms of later earnings. Lleras (2008) concluded that participation in high school activities, particularly athletics and academic-related activities, produced positive results in terms of higher wages 10 years later.

Eide and Ronan (2001) also examined the notion of the effects of athletic participation on educational attainment, discussed in a later section, and earnings. Using the nationally representative *High School and Beyond* data set, specifically the 1980 sophomore cohort, the two examined outcomes in future years compared to participation in Grade 10 and Grade 12.

For males in the study, the impact of athletic participation (either in Grade 10 or Grade 12, not varsity specific) was consistent with other studies. The results for White males demonstrated a significant positive impact of sports participation on wage earnings. For nonwhites, the same held true. The results for varsity athletic participation were far different. White male varsity participants were found to have a wage earnings rate that was “not significantly different from zero” (Eide & Ronan, 2001, p. 437). Their study found that Black and Hispanic males who participated in varsity athletics had higher earnings rates later in life.

The study demonstrated the positive effect of athletic participation on wage attainment for females. The findings in both cases (varsity and general athletic participation) for women, however, did not produce positive results. There was no positive effect on future earnings for females who participated in athletics or varsity athletics in high school. The authors noted the fact that this follow-up on earnings was taken only 10 years after high

school, and it was possible that the females in this study had not had the opportunity to advance beyond entry-level positions to demonstrate a more robust wage rate (Eide & Ronan, 2001).

Grogger (1996) identified the impact of school expenditures related to future earnings of the individual student. It is important to consider this element because of the large amount of dollars being spent on extracurricular activities and the potential for cash-strapped school districts to eliminate expenditures in this area. Grogger found that a 10% increase in school spending equated to an increase in student wages by only 0.68% (p. 632). At first glance, it would be difficult to advocate for any additional funding based upon this figure. The challenge here is finding a more effective use of money to serve students. Perhaps that is in athletics, perhaps not. Grogger's work did not specifically address athletics, but did demonstrate that teacher expenditures had no effect upon student wage rates increasing later in life. Thus, given other literature, one might suggest that spending more on athletics might be a wise investment.

Otto and Alwin (1977) examined participation in athletics in light of three forms of attainment: educational, occupational, and income. Educational attainment referred to the number of years of formal education completed. Occupational attainment referred to the type of job and the status of that job. Income referred to income level earned beyond high school.

Using a sample of 340 males studied over time, Otto and Alwin (1977) examined each form of attainment. With respect to occupational aspirations and attainment, a similar set of findings was present. Otto and Alwin (1977) stated that "participation in athletics has a significant effect on occupational attainment statistically controlling on socioeconomic

origins, mental ability, academic performance, and participation in athletics” (p. 110). The findings for occupational aspirations were similar.

Income was equal in terms of its relationship to the effect of participation in high school athletics. Otto and Alwin found that “data reveal that participation in athletics in high school also has a positive effect on income fifteen years later” (1977, p. 110). Touching on the notion of human capital and future value, they summarized their study:

The long-term effects of participation in athletics underscore the significance of adolescent performance criteria other than academic performance in the status attainment process. It has been argued elsewhere that like an academic curriculum, extracurricular activities provide a forum for developing attitudes and skills from which status goals evolve and upon which future success is grounded. (p. 112)

Educational Attainment

A similar number of studies connected participation in athletics and activities to future educational attainment. In other words, participation was an indicator of a higher level of the educational level beyond high school that an individual attained. These studies demonstrated that those who participated in high school athletics and activities did achieve beyond high school to a greater degree.

Barron, Ewing, and Waddell’s (2000) findings concerning educational attainment also yielded significant results, similar to their findings related to wage attainment. Educational attainment for the purpose of this study was defined as earning a degree beyond a high school diploma. Once again, men who participated in athletics were found to have a 25% higher rate of educational attainment in one data set; in the other data set that number was found to be a 35% higher rate (Barron et al., 2000, p. 413). In some respects, this made

sense given that that the group also found that those involved in athletics in the study had a higher class rank. In their conclusion, Barron et al. (2000) pointed to human capital, noting that:

the time devoted to athletics does not result in the acquisition of less human capital and lower subsequent wages, as would be the case if the only role for athletic participation is as a signal of those who place a high value on the consumption of athletics. (p. 420)

Lleras, who studied both wage and educational attainment, uncovered a positive relationship between participation in activities and educational attainment. Although participation in fine arts proved to have little effect, participation in athletics and academic clubs proved to increase the odds of higher educational attainment by “11.5% and 12.5%, respectively” (2008, p. 897). She made this assessment while pointing out that further participation in athletics and academic clubs “was associated with greater educational attainment and earnings” (p. 900) while controlling for factors such as cognitive abilities, socioeconomic factors, and further educational attainment.

Otto and Alwin (1977) also examined participation in athletics with respect to educational attainment. Educational attainment referred to the number of years of formal education completed. Using a sample of 340 males studied over time, they studied attainment both aspiration and attainment. The researchers found that participation in athletics had a positive effect on educational aspirations and/or a desire to earn a postsecondary degree. The same positive effect was noted with respect to educational attainment as well.

Eide and Ronan (2001) also examined the notion of the effects of athletic participation on educational attainment as well as earnings, discussed earlier in this section. Using the nationally representative *High School and Beyond* data set, specifically the 1980 sophomore cohort, two examined outcomes in future years compared to participation in the Grade 10 and Grade 12. For males in the study, the impact of athletic participation (either at Grade 10 or Grade 12, not varsity specific) was consistent with other studies. The results for White males demonstrated a significant positive impact of sports participation on the probability of graduating from college. For nonwhites, the same held true. The results for varsity athletic participation were far different. White male varsity participants were found to be less likely to graduate from college (significant at the 10% level) (Eide & Ronan, 2001, p. 437). Their study found that Black and Hispanic males who participated in varsity athletics graduated at a higher rate.

Eide and Ronan demonstrated the positive effect of athletic participation in educational attainment for females. In both varsity sports participation and athletic participation in general, the findings demonstrated that athletic participation had a positive impact on educational attainment, compared to those who did not participate in athletics in high school (with the one exception of Black and Hispanic females who participated in athletics, not varsity athletics).

In their review, Philips and Schafer (1971) pointed to a study conducted by Schafer and Rehberg (1970) that compared athletes and nonathletes. The findings were that athletes generally receive slightly better grades, a present value function of athletic participation, yet also a future value function as it potentially opened doors for further educational attainment. Second, athletes were less likely to be delinquent, a fact with ties to present and future value.

And finally, athletes from blue-collar backgrounds were found to be more upwardly mobile than their nonathletic peers (as cited in Philips & Schafer, 1971).

In summary, Schafer and Rehberg made salient points related to the discussion of athletic participation and future value. They noted “convincing evidence that American interscholastic athletes achieve educational goals more than do comparable nonathletes. We have some preliminary evidence that indicates that the athletes share norms that exert a strong pro-school influence on them” (as cited in Philips & Schafer, 1971, p. 336). Although not stated, it can be deduced that such strong norms in support of school tended to serve as a catalyst for an increased desire to obtain additional human capital and, thus, potentially attain more education and earn higher wages.

Further economic studies found additional positive connections to athletic participation. Lipscomb (2007) studied the impact of sports participation in both the present, with math and science test scores, and in the future, with the expectation of future degree attainment. Using NELS:88, he studied those students who participated in any sport or club. His findings were that test scores in math and science increased 1.5–2.0% for those who participated in athletics or activities at one time during high school. There were varying degrees of success related to when the students actually participated (throughout school, in Grade 10 only, etc.).

In addition, the study examined future degree attainment. In general, students who participated in athletics and activities in high school had a 5% greater likelihood of expecting to earn a bachelor’s degree. In other words, those who participated in athletics and activities expected to go on to graduate from college more than their peers who did not participate in extracurricular activities (Lipscomb, 2007, p. 472).

Overall, Lipscomb (2007) derived present value from higher test scores and expectations of educational attainment and related those to future values. He stated that “extracurricular involvement provides short-run investment returns on outcomes that are positively correlated to labor market success” (p. 472).

Troutman and Dufur (2007) explored high school sports participation and females. Using NELS:88, they examined whether or not females who participated in high school athletics had higher rates of postsecondary degree attainment than did their nonathletic counterparts. The only variable related to participation used was athletic participation and was a measure of any athletic participation in Grade 10 or Grade 12. In the sample, approximately 42% of high school females participated in an interscholastic sport in either Grade 10 or Grade 12. Troutman and Dufur found that “on average, girls who engaged in high school sports were more likely than were those who did not to have completed college 6 years after graduating from high school” (p. 454). In this study, post-secondary educational attainment was defined as earning a bachelor’s degree. In addition, those females who participated in a sport had higher expectations of educational attainment than those who did not participate. They included an analysis that controlled for all factors relating to the school setting. Given the nature of female athletes and the past literature which suggested that private school females might be more greatly impacted by their “neighborhood,” (Troutman & Dufur, 2007), there proved to be no advantage or disadvantage to private vs. public school attendance when the variable of school type was controlled for in the study. In this case, “the odds of graduating from college in 6 years are 41% higher for females who played interscholastic sport than the odds of completion among females who did not engage in high school athletics” (p. 458).

The Value of an Education

A set of studies exists that demonstrated the positive relationship between student values and expectations, an orientation toward educational and occupational achievement, participation in interscholastic athletics and activities, and educational and wage attainment. These studies demonstrated that athletes were more likely to be oriented toward college and higher wages. In other words, students in athletics and activities were more goal-oriented.

Snyder (1969) studied the relationship between participation in activities and high school student values, specifically those values related to educational and occupational achievement. Using an initial sample made up of the high school class of 1962 in a small, diversified Midwestern community, a longitudinal study was conducted. Of the graduates, 50–55% went on to college. At the time the data were collected, 1,000 students were enrolled in the school. The initial sample included 343 students; a follow-up survey accounted for only 186 students after five years (p. 263).

Three main findings were elicited from this study. First, “students who were oriented toward athletics (boys) and activity leadership (girls) were more likely to complete college than were students who preferred to be remembered as either popular or as scholars” (Snyder, 1969, p. 269). Second, there existed a positive correlation between high school participation in social activities to include athletics and clubs and both high school and college educational achievement (better grades and graduation). Finally, there was a positive association between participation in high school activities and occupational status. These findings led Snyder to write:

it is evident, however, that participation in activities and athletics is not necessarily contrary to academic pursuits. They are mutually supportive . . . [participation] is

associated positively both with immediate and later educational achievement and also with eventual occupational status. (p. 270)

Two studies emerged in a five-year period that addressed the notion of educational expectations. Studies by Rehberg and Schafer (1968) and Spreitzer and Pugh (1973) both addressed the effect of interscholastic athletic participation on college aspirations. Rehberg and Schafer examined data collected from six schools, three public and three private, with nearly 800 senior males attending. Their study involved a survey of 785 students that asked questions pertaining to college expectations and involvement in high school sports. From the data, the researchers emerged with the following analysis:

These data have shown that a greater proportion of athletes than non-athletes expect to enroll in a four-year college, even when potentially confounding variables of status, academic performance, and parental encouragement are controlled. This relationship is marked among boys not otherwise disposed toward college, that is, those from working-class homes, those in the lower half of their graduating class, and those with low parental encouragement to go to college. (p. 739)

Spreitzer and Pugh (1973) conducted a secondary evaluation of a data set collected at the University of Connecticut where a probability sample of 5,326 high school seniors had been collected. Similar to Rehberg and Schafer (1968), Spreitzer and Pugh found that “the association between athletic participation and higher educational goals is not eliminated when controlling for parental socio-economic status, parental academic encouragement, student grade average, and measured intelligence” (p. 180).

Both studies highlighted the fact that athletics play a role in the development of expectations of students beyond the classroom or playing field in high school. Accounting

for outside variables of influence, in both cases a positive relationship between athletic participation and future expectations of a college education was noted.

Conclusion

A great deal of interconnectivity exists between the present value of participation in interscholastic athletics and activities and the future value of such participation. What could be considered a present value taking into consideration the fact that activities promote self-esteem could also be considered a future value in that a student with higher self-esteem might make for a better member of the workforce.

Ultimately, the connection between participation in athletics and activities and human capital boils down to the notion that athletics and activities are inherently educational in the high school setting. This was seen as Gulick moved the structure from the public sector to the field of education in New York City and as the NFHS was formed in the early 1920s. Control was seen as a positive, and control in the arena of the schoolhouse was seen as a must. Perhaps no one person ever stated the value of athletic participation as eloquently as Supreme Court Justice Byron White when he wrote:

Sports and other forms of vigorous physical activity provide educational experience which cannot be duplicated in the classroom. They are an uncompromising laboratory in which we must think and act quickly and efficiently under pressure and then force us to meet our own inadequacies face-to-face and to do something about them, as nothing else does . . . Sports resemble life in capsule form and the participant quickly learns that his performance depends upon the development of strength, stamina, self-discipline and a sure and steady judgment. (as cited in Barron et al., 2000, p. 409)

As athletics and activities have expanded, so has the cry for more opportunities for students. McNeal (1998) wrote about the need to expand access to activities, specifically athletics, to include all demographic groups. His claim was that the focus of the debate on athletic and activity participation needed not to be on the justification of such activities because the research is markedly in support of such educational efforts. Rather, the focus needed to be on finding “ways to maintain the benefits of the extracurriculum as an alternative pathway for minorities, while finding ways to further enhance access for other groups” (p. 190).

The studies outlined herein have demonstrated a variety of different points of view rooted in research. In those studies outlined related to present value, at least some level of positive impact could be discussed relative to participation on academic achievement and student development. With respect to future value, there were studies that demonstrated a positive connection between participation and wage and educational attainment.

It is through the study of economics and, more specifically, through the study of human capital that we discover value in athletics and activities at the high school level. There are numerous studies contained herein that highlight such effects of participation in interscholastic sports. Unlike other areas of education, there is very limited research today on the future value of such participation and much more on the present value.

CHAPTER 3. DESIGN AND METHODOLOGY

Chapter 3 discusses the design of this study as well as the methodology employed in the analysis of the research questions. The chapter begins with an overview of the research questions that guided this study and continues with an analysis of the database used. Also in the chapter is a description of the statistical model used and the methodology employed. The chapter concludes with a description of the limitations of this study.

In his analysis of extracurricular activity involvement, Becker (1992) noted both tangible and intangible gains for participants that ranged from cultural advancement to improvement in earnings and portability in the workplace. The cost is simply the time spent on these investments, and those individuals studying the theory of human capital in recent years have related this to the field of education.

Very few studies, however, have been conducted that have demonstrated any relationship between the development of human capital and participation in interscholastic athletics and activities. Most studies have focused on the present value of athletic and activity participation in such tangible areas as grade point average and dropout rate, along with intangible assets such as “basic emotional, cognitive, and physical skills” (Hansen et al., 2003, p. 27).

Barron et al. (2000) pointed to human capital and one perception that athletics took away from the overall education of young people. They noted that:

the time devoted to athletics does not result in the acquisition of less human capital and lower subsequent wages, as would be the case if the only role for athletic participation is as a signal of those who place a high value on the consumption of athletics. (p. 420)

Research Questions and Hypotheses

The purpose of this study was to investigate the relationship between interscholastic participation in extracurricular activities and two areas of future value: postsecondary educational attainment and future wage earnings. Limited research exists in this area and, with the challenges of student achievement and funding in schools, the issue of the value of student participation is relevant.

This purpose, the investigation of the relationship between participation in extracurricular activities and postsecondary educational attainment and future wage earnings, was pursued by analyzing the NELS:88 following the fourth data collection wave that was conducted in the year 2000 and by using sections of data collected throughout the study. The group studied in NELS:88 is best defined as the high school class of 1992. The study examined whether participation in extracurricular activities, defined in this study as participation in high school athletics and/or the performing arts at the student's high school, had an influence on a student's postsecondary educational attainment or on a student's future earnings.

There were two primary research questions for this study. These questions were: (a) Does a relationship exist between high school student participation in interscholastic activities and postsecondary educational attainment? and (b) Does a relationship exist between high school student participation in interscholastic activities and future wage earnings? In the case of each question, the hypothesis was that significant relationships do exist between participation in interscholastic activities and future educational attainment and future wage earnings.

Research Design

Understanding the theory of human capital and its basic notion that “the earnings of more educated people are almost always well above average” (Becker, n.d.) is critical to the study of future earnings and educational attainment. In other words, the more education a person has, the greater his or her future earnings will be and the more likely he or she will be to attain a higher level of education. The assumption made herein is simply that participation in athletics and activities in a secondary school setting is educational and, thus, an investment in human capital.

Using the theoretical context that interscholastic activities are inherently educational, this study examines the relationship between that interscholastic experience and the future earnings of the individuals who participated in an activity in high school, as well as between the interscholastic experience and educational attainment or the level of education an individual achieves.

The initial task in investigating whether a significant relationship existed between interscholastic participation and future value was to identify an appropriate source of individual-level data that helped answer the research questions. The second task was to identify the proper statistical model. The next section describes both the data used and the statistical model employed in this study.

Data

A review of both available datasets and data that could be created led to the selection of the NELS:88 as an appropriate database for this study. According to the National Center for Education Statistics (NCES), NELS:88 is a “nationally representative sample” (2002, p. 2) of individuals first surveyed in eighth grade in the year 1988. The study tracked their

progress through a series of four follow-ups conducted in 1990, 1992, 1994, and 2000. This study was conducted by the NCES in the U.S. Department of Education, the primary federal entity for collecting and analyzing data related to education.

The NCES (2002) designed this survey with the intent of collecting data over time in a cohort study format to measure: (a) the effectiveness of high school; (b) the transitions between eighth grade, high school, and the workplace; and (c) changes in the operation of education over time. The actual survey work was conducted by the National Opinion Research Center (NORC) at the University of Chicago (base year through the third follow-up) and the Research Triangle Institute (RTI) in North Carolina (fourth follow-up) (p. 5).

In 1988, the surveyed individuals were in the eighth grade. “Students, two teachers, parents, and one school administrator completed extensive interviews regarding academic achievement, academic participation, academic motivation, and demographic data” (Smith, 2006, p. 214) in the initial data collection phase. In this initial phase, there were 1,052 schools studies and questionnaires were given to nearly 25,000 students. In the first follow-up, fewer students participated, and the interviews again included teachers, parents, and administrators. Beyond the first follow-up, only the students were interviewed, and additional data were collected about them through official documents such as high school and college transcripts. At this time, the study featured a “clustered, stratified national probability sample of 1,052 public and private 8th-grade schools” (NCES, 2002, p. 6).

NELS:88 “enables researchers to conduct analyses on three levels: crosswave (by following a single group of individuals as they develop over time), cross-sectional (at a single point in time), and cross-cohort (by comparing NELS:88 findings to those of HS&B

and NLS-72)” (NCES, 2002, p. 10). The base year (1988) featured data collection through interviews with students, parents, school administrators, teachers, and with cognitive tests. The only other year that was as exhaustive was the second follow-up in 1992 when students were nearing completion or had completed high school. In this follow-up, transcript analysis was also conducted. In the fourth and final follow-up, only the students were interviewed and transcript reviews were performed.

In the base year, a two-stage probability design was used to select a nationally representative sample of eighth grade schools and students. A pool of 1,057 schools cooperated. From those 1,057 eligible schools, 698 participated (NCES, 2002, p. 12). A random selection of eighth grade students at these schools yielded a total number of 24,599 individual participants, all of which were second-term eighth grade students in 1988 (NCES, 2002, p. 6).

The base-year design consisted of four components: (a) surveys and tests of students; (b) surveys of parents; (c) surveys of school administrators; and (d) surveys of teachers. In these surveys, general demographic information was collected along with information on a range of topics that dealt with future aspirations, attitudes toward school, and social aspects. Testing was conducted in four subject areas: reading, mathematics, science, and social studies. The parent and teacher surveys focused on individual students as well as general characteristics about the school. The administrator survey completed by principals focused on the school climate.

The second wave of data collection (the first follow-up) was completed in 1990 when the majority of students would have been in the tenth grade year of high school, two years after the initiation of the project. During this phase, an additional set of tenth grade

students was added to the initial group of participants to account for individual student losses due to movement or a lack of academic promotion (NCES, 2002, p. 13). This first follow-up featured surveys similar to the initial round with the exception of the parent survey, which was not repeated in this round of collection. In addition, achievement tests were administered to participating students. Initially, 21,474 students who were in the eighth grade in 1988 were selected for participation in the first follow-up. A “freshened” sample of 855 students who were considered eligible by virtue of their current enrollment in Grade 10, yet were not in the base year time frame, was added to the study to account for losses due to movement or a lack of advancement to the tenth grade. The information necessary to generate a degree of consistency with those studied in the base year and the first follow-up was collected from the 855 additional students.

The second follow-up was conducted in 1992 near the completion of high school or four years beyond the eighth grade for most students. In this follow-up, each student was interviewed and additional data were collected from data such as high school transcripts relating to student’s academic progress. This follow-up featured all of the components (with only one teacher survey opposed to two) of the base year study along with a review of the student’s high school transcript. A similar sample “freshening” took place in the second follow-up, featuring 279 students who were enrolled in neither the eighth grade in the base year study nor Grade 10 in 1990. The final sample size for 1992 was 20,923 students (NCES, 2002, p. 14).

The third follow-up was conducted in 1994 and was designed to measure the ongoing progress of students in the cohort as they advanced beyond high school. While earlier data collection took the form of face-to-face surveys and interviews, the data were

collected in this wave via computer-assisted phone interviews and field follow-ups. In all, 15,875 individuals were studied in the third follow-up.

In the fourth and final follow-up in 2000, interviews of 12,144 members of the three previous cohorts were conducted. The mean age of the individuals at this time, six years after the most recent follow-up (1994) was 26, which led to greater information about postsecondary education and employment. This follow-up took place in 2000, six years after the third follow-up and 12 years after the initial cohort was studied, and was conducted with computer-aided telephone interviews and transcript evaluations. This follow-up was designed to collect data pertaining to the change in students' lives beyond high school, into the workforce, and postsecondary education. In all, 15,237 individuals were sampled, yielding 12,144 members from the previous three follow-ups and the base year study.

Combined with the National Longitudinal Study of the high school class of 1972 (NLS-72), High School and Beyond (HS&B), and the Educational Longitudinal Study of 2002, NELLS:88 was designed to describe the educational experiences of students over the course of four successive decades beginning in the 1970s. Each study "provides bases for further understanding the correlates of educational success in the United States" (NCES, 2002, p. 10).

While NELLS:88 is clearly a longitudinal cohort study, the analysis in this study in this case can best be described as *ex-post facto* research, taking the variables developed in the NELLS:88 data set and simply studying their relationships (Alsbury, 2001). Because of the longitudinal nature of NELLS:88, it proved to be a unique source of data because it accounted for the experiences of students while still in high school as well as accounting for post-high school graduation activities. Best and Kahn (1998) noted that "*ex-post facto*

research is widely and appropriately used, particularly in the behavioral sciences” (p. 138). Lord (1973) indicated that ex-post facto research was appropriate and powerful when the control of a single, independent variable would be highly unrealistic, which would be the case in most educational settings. Best and Kahn also stated that “descriptive research methods deal with the relationship between unmanipulated variables. Because the events of conditions have already occurred, the researcher merely selects the relevant variables for an analysis of their relationships” (p. 129).

The NELS:88 database was selected for this study because the variables were consistent with the purpose of the study. NELS:88 contained data on a large number of students across a wide variance of populations, mixing both public and nonpublic schools along with students of a variety of demographic categories. NELS:88 was designed to describe the educational experience, not just at any one point in time but through time. Because NELS:88 examined the activities of students during their high school experience and their success in terms of postsecondary educational and wage attainment, the data contained in NELS:88 served as an adequate measure for the research questions in this study. The specific variables selected from NELS:88 for this study are described both in the Methodology section of this chapter and in Appendix B.

Statistical Model

In addition to the selection of an appropriate source of data for this study, the implementation of a statistical model was critical. The intent of this study was to analyze the individual-level relationships between interscholastic participation and future educational and wage attainment. Four different modes of analysis were used in this study: (a) bivariate linear regression, (b) multiple regression, (c) the correlation between participation in

activities and future earnings, and (d) the correlation between participation in activities and educational attainment.

Bivariate linear regression was used to study participation in activities that an individual reported in relation to their future earnings and educational attainment. This model was selected due to the fact that the only analysis desired was the direct, singular relationship between activities, measured in different singular and combined format, in which an individual participates and future earnings and educational attainment, not accounting for additional variables. In this model, participation was measured as a scale variable indicating the total number of activities in which an individual participated during high school. Future earnings was measured as a scale variable, while educational attainment was measured as an ordinal variable.

Multiple regression was used to study other variables beyond just participation activities, measured in different singular and combined format, in which an individual participates reported in relation to their future earnings and educational attainment. The variable indicating the number of activities in which an individual participated during high school, the scale variable indicating total family income, and the ordinal variable indicating parent education level were all used as independent variables. The dependent variable future earnings was measured as a scale variable while educational attainment was measured as an ordinal variable. Analysis was conducted using the number of activities participated in combined with total family income, the number of activities participated in combined with parent education level, and the number of activities participated in combined with both total family income and parent education level as independent variable combinations. One final calculation included an analysis using participation, parents' educational attainment, total

family income, parent marital status, race, and gender as independent variables with both future earnings and educational attainment as independent variables.

A directional Somer's d coefficient was calculated to assess the relationship between participation (defined in this model as an ordinal variable with qualities of participant or nonparticipant) and future earnings (measured as an ordinal variable). A similar analysis was conducted within a series of different variable combinations indicating different levels of participation. Somer's d was used in this analysis due to the nature of the ordinal variables selected for analysis.

A directional Somer's d coefficient was calculated to measure the relationship between participation (defined in this model as an ordinal variable with qualities of participant or nonparticipant) and educational attainment (measured as an ordinal variable). A similar analysis was conducted within a series of different variable combinations indicating different levels of participation. Somer's d was used in this analysis due to the nature of the ordinal variables selected for analysis.

These procedures permitted a full analysis of the variables influencing future wage earnings and educational attainment as related to participation in extracurricular activities. This analysis went beyond a simple singular study of the relationship by accounting for other variables in such a relationship.

Methodology

This study limited the possible number of variables and analyses to focus on the primary and secondary research questions. At the individual level, the focus remained on participation in interscholastic activities and on future educational attainment and wage earnings. Further demographic variables including student gender and race, family

socioeconomic status, parental marital status and parent educational level while the student was in high school were analyzed as covariates to add richness to the study.

Selection of the Sample

The initial NELS:88 survey focused on a “clustered, stratified national probability sample of 1,052 public and private 8th-grade schools” (NCES, 2002, p. 6), featuring nearly 25,000 students. No more than 24 students were selected from any one school. The sample used for this study came from the fourth and final follow-up conducted in the year 2000, where interviews of 12,144 members of the three previous cohorts were conducted. The mean age of the individuals at this time, six years after the most recent follow-up (1994), was 26. In most cases, the individuals would have been eight years removed from high school and, in all cases, 12 years removed from the eighth grade. This sample was selected primarily because of its connection to the educational attainment and wage attainment of the individuals at this point in time.

Variable Selection

A series of variables were used in this study and came from the base year and each of the four follow-ups of the NELS:88, collected in 1988, 1990, 1992, 1994, and 2000. The independent variables consisted of different variables from the NELS:88 data set that centered on participation. These variables were used both independently (participation in a team sport [baseball, basketball, football, soccer, swimming, other], participation in an individual sport [cross-country, gymnastics, golf, tennis, track, wrestling], participation in cheerleading, participation on pom-pom/drill team, participation in school band/orchestra, and participation in a school play/musical) as a sum of varying levels of different participation and as one joint variable to indicate overall participation in any activity. In

addition, participation variables were examined in both the first and second follow-ups (1990 and 1992). This differed from the work of Lleras (2008), who used the NELS:88 dataset to study educational attainment and future earnings, yet examined participation data collected in 1990. In addition, the variables of total family income and parent educational level were used in this analysis.

The dependent variables used in this study relate to future earnings and educational attainment. Future earnings were analyzed using data from the fourth follow-up in NELS:88, collected in 2000, including the current earnings rate of the individual measured in 2000 and the income of the respondent in the years of 1997, 1998, and 1999. Educational attainment was reflected in a variable defined in 2000, the fourth follow-up of NELS:88, as the highest postsecondary education degree attained. This differed from the work of Troutman and Dufur (2007), who focused only on females and bachelor's degree attainment in their study using NELS:88.

Data Analysis

Data analysis in this study was guided by the theory of human capital, in this case demonstrated by participation as it related to the variables of future earnings and educational attainment. Data analysis was conducted using a bivariate linear regression model, a multiple regression model, and a directional Somer's d coefficient calculation.

A bivariate linear regression model was estimated for each dependent variable: future earnings and educational attainment. The three assumptions outlined in the work of Green and Salkind (2005), necessary for regression results to be valid are: (a) a normal distribution in the population of the dependent variable for each level of the independent variable, (b) constant population variance of the error of estimation of the dependent

variable for different values of the independent variable, and (c) the fact that all observations are independent of each other and constitute a random sample of the population (p. 275).

Each assumption was met in this study of the NELS:88 data set. This calculation of a bivariate linear regression problem related an independent variable (predictor) and a dependent variable (criterion) for each individual and demonstrated how well values of the independent variable predicted values of the dependent variable in each instance. The level of statistical significance for this study was .05.

In linear regression, what is known about one variable is used to make predictions about other variables, and “a less frequent but equally plausible use is to test hypotheses” (Keppel & Zedeck, 1989, p. 58). As Green and Salkind (2005) highlighted, bivariate linear regression computes the following equation that relates the predicted Y scores (\hat{Y}) to X scores. The equation includes a slope weight for the independent variable and an additive constant:

$$\hat{Y} = B_{slope}X + B_{constant}$$

\hat{Y} represents the dependent variable, which in this case relates to either future earnings or educational attainment. X refers to the independent variable, participation. B_{slope} is the slope and $B_{constant}$ is the y intercept. The computation completed assessed how accurately values of Y (future earnings or educational attainment) are predicted by the linear equation.

A multiple regression model was estimated for each dependent variable: future earnings and educational attainment. The same three assumptions outlined by Green and Salkind (2005) (p. 286) were met in this study of the NELS:88 data sets in the population, and (b) the variables represent a random sample of the population and are independent of

other scores of the same variables (p. 286). Each assumption was met in this study of the NELS:88 data set. The multiple regression model measured how well the independent variables predicted the dependent variable in each instance. The level of significance for this study was .05.

As Green and Salkind (2005) highlighted, with multiple linear regression, each individual has scores on multiple independent variables and on a dependent variable (p. 283). In this case, with two predictors, the linear equation is:

$$\hat{Y} = B_1X_1 + B_2X_2 + B_{constant}$$

\hat{Y} represents the dependent variable, which in this case relates to either future earnings or educational attainment. X_1 refers to the independent variable, participation, in each case and X_2 is either total family income or parent education level. B_1 and B_2 are the slope weights for each variable and $B_{constant}$ the y intercept. The model assessed how accurately the future earnings or educational attainment was predicted by the linear relationship involving each independent variable combination.

Somer's d measures the association between two variables which are ordinal in nature (Newson, n.d.). In the first set of calculations, the dependent variable, future earnings, was an ordinal variable, while the independent variable indicating participation was also ordinal. In the second instance, the dependent variable, educational attainment, was ordinal. The independent variable was ordinal, indicating participation.

These statistical methods are employed to test null hypotheses about relationships between variables. Best (1981) noted that:

a null hypothesis states there is no significant difference or relationship between two or more parameters. It concerns a judgment as to whether apparent differences or

relationships are true differences or relationships or whether they merely result from sampling error. (p. 270)

Best and Kahn (1998) pointed out that:

most hypotheses are the opposite of the null hypothesis. In such a case, if the researcher rejects the null hypothesis, they accepted the research hypothesis, concluding that the magnitude of the observed variable relationship is probably too great to attribute to sampling error. (p. 12)

Two types of analytical error can occur. Type I error is best defined as the rejection of a null hypothesis when it is really true (Best & Kahn, 1998, p. 393). As Adler and Clark (2003) stated, “when the chances are greater than 5 in 100, or ‘ $p > .05$,’ social scientists generally decline to take the risk of inferring that a relationship exists in a larger population” (p. 477). For this study, a significance level was established as $p < .05$, which increased Type I error but limited the likelihood of committing a Type II error, or not rejecting the null hypothesis when it is really false (Best & Kahn, p. 393).

Data analysis was completed using the Statistical Package for the Social Sciences (SPSS). This analysis was completed following the tagging of all relevant variables in the Electronic Codebook that accompanied NELS:88. This created a file from which the data set could be created for this study. Findings from the SPSS analyses are reported in Chapter 4.

Limitations of the Study

This study is limited by the fact that it studied only one cohort of students in the United States. While the NELS:88 data set is a “nationally representative sample” (NCES, 2002, p. 2) of individuals first surveyed in eighth grade in the year 1988, it is only a sample of those students in that particular year. For other eighth grade cohorts, since that time, the

environmental factors impacting both participation in interscholastic activities and the opportunities for postsecondary education and wage earnings have changed. These factors include an explosion in the number of activities offered and an increased importance placed upon participation by varied stakeholders, leading to a participation explosion. A study conducted at the conclusion of the 2006–2007 school year by the NFHS found that participation in high school athletics for that same school year rose by over 183,000 students to an all-time high of 7,342,910 students, a proportional increase of 2.49% over the previous year (“High school sports,” 2008, p. 53). The study itself is also limited as the number of students in 1988 participating in the study was nearly 25,000, while in 2000, only about 12,000 responded, thus limiting the sample size.

This study is also limited by the fact that it stopped in 2000. Considering that the mean age of the respondents studied in 2000 was only 26, further detail could be gleaned respective to wage earnings after that year. Welch (2000) examined different wage rates and found that the weekly wage for both males and females reached its apex after 20 years of work experience (p. 445). At age 26 in the year 2000, the average individual with a bachelor’s degree would only have been in the workforce for approximately four years, far from the peak of wage earnings. While one could assume that wage earnings would be in direct, positive proportion to experience and age, as is indicated in the graphical interpretations provided by Welch, this could be refuted over time. Further consider that *Forbes* magazine noted that the nine top-paying jobs in America all were in the field of medicine and required advanced degrees (Maidment, 2008). Most advanced degrees take 8 to 10 years to complete and based upon that, it is important to note that those in highest

paying jobs would not be in the workforce at age 26. In other words, the greater the range in years from eighth grade, the wider the earnings range.

The study also is limited by participants and their responses to the survey question relating to participation in extracurricular activities. The degree of participation, both in terms of level or time, cannot be gleaned by the participants' survey response, and only reflects participation in grades 10 and 12. We thus, are unable to gauge whether a certain level of participation in terms of participation duration (one year, four years) or participation level (varsity, junior varsity) impacts future endeavors.

The NELS:88 dataset limits this study in four different areas. These are the exclusion of subsets of the student population, internal inconsistency, missing values, and a lack of context from schools.

The first of these areas relates to the exclusion of subsets of the population. The National Opinion Research Center at the University of Chicago released a study after the initial data collection in 1998 that outlined the fact that Hispanic and Asian student samples were limited because the test and survey instruments were written in English only (Ingels, Rizzo, Rasinski, 1989). Furthermore, students with disabilities were also not included in the population because "tests would be unsuitable and persons having physical or emotional problems that would make participation in the survey unduly difficult or unwise" (Ingels, Rizzo, Rasinski, 1989, p. 5). This exclusion limits the data in terms of examining some subsets of the student population in any analysis.

The second such limitation in NELS:88 deals with internal inconsistency. Throughout the surveys, there are questions that are considered "additive" (Stull, Morse-Kelly, Rigsby, 1995, p. 17). There are questions that require the participant to consider

different areas of their school experience and indicate time spent on each area. One example relative to this study relates to selecting activities. It would be possible for a 9th grade student to participate in four activities, a 10th grade student to participate in four different activities, and so on. In all, a student could participate in 16-24 activities in his or her high school career, never committing to one or more. Thus, any cumulative study of the number of activities a student participated in throughout high school could be limited.

There are two main issues related to this particular study with respect to missing values. First, Stull, Morse-Kelly, and Rigsby (1995) examined missing values and found them to be “not a random phenomenon” (p. 15). The group indicated that the majority of cases with missing values were typically male, and a large proportion of the cases were from African-American and Latino populations (1995). This had the potential to limit some data related to males and different ethnic groups, thus potentially limiting results. Second, there are different kinds of missing answers. There are answers that relayed the message that the school did not have a particular program and others which relayed the message that the student just did not care to answer the question, both omissions were treated the same in NELS:88 (Stull, Morse-Kelly, Rigsby, 1995). In this case, because a school lacked a baseball team could have been treated the same as an individual baseball player simply not identifying himself as a participant, limiting the dataset and the results.

Another limitation of this study dealing specifically with NELS:88 was the lack of context related to schools. Stull, Morse-Kelly, Rigsby (1995) indicated that no school district information was provided with the dataset. This limited this study specifically because of a lack of understanding relative to the offerings given a student. With information related to school finances or community expectations as each related to

extracurricular offerings, further analysis could have been completed on the impact of participation both in the present and future. In addition, such information would have provided a greater understanding as to why or why not more or fewer students participated at one school as opposed to another.

Conclusion

Chapter 3 began with a statement of the research questions that guided this study. The chapter then presented a detailed description of the selected data set and a general description of the research design and methodologies used throughout the study. The limitations of the study also were reviewed. Chapter 4 presents an in-depth analysis of the data and a description of the methods used to analyze these data. Chapter 5 reviews the implications of the findings from the statistical analysis and outlines recommendations for future research and practice.

CHAPTER 4. DATA ANALYSIS

Chapter 4 begins with a description of the data collected for this study followed by a discussion of the criteria used to select participants. Included in this description is an overview of the demographic characteristics of those students and their families. This is followed by a discussion of participation data and all recoding that was performed to prepare student data for statistical analysis.

This chapter then focuses on how the statistical models in this study were constructed. In the first model, the association between participation and future earnings and educational attainment was calculated. The second model featured a bivariate linear regression model that was estimated for each dependent variable: future earnings and educational attainment. The final model used a multiple regression calculation that was estimated for each dependent variable: future earnings and educational attainment. In each case, a series of independent variables used in a singular and combined nature were utilized.

Selection Criteria

The target population for this study was every student who participated in activities while in high school. The National Educational Longitudinal Study (NELS: 88) sample from which this study's sample was drawn initially consisted of 12,144 students. These students completed the fourth and final follow-up to the NELS:88 survey in 2000 which included questions pertaining to their current educational and employment status. Student and family variables of interest were tagged and exported using the NELS:88 database and imported into SPSS 13.0 for Windows. This program was utilized to manipulate the data extracted.

Students in the Study

According to the National Center for Education Statistics (NCES), NELS:88 is a “nationally representative sample” (2002, p. 2) of individuals first surveyed in eighth grade in the year 1988. Follow-up surveys were conducted in 1990, 1992, 1994, and 2000. Students who participated in the fourth follow-up, completed in 2000, made up the sample for this study because information pertaining to educational and employment status was collected at that time. The 12,144 participants were first narrowed after 743 participants were removed because of incomplete financial information. The sample was again reduced after 2,410 participants were removed because of incomplete education status information. In all, a total of 8,991 participants made up the sample used for this study.

Student Demographic Information

Demographic information pertaining to the student sample is provided in Table 1. As the table illustrates, two of the student variables in the study were categorical variables that related to student demographics: gender and race. The table shows that females outnumbered males in this study and that over 67% of the population of the sample defined themselves as White, not Hispanic. This is consistent with the limitations outlined in Chapter 3 of this study with respect to missing data, as is seen in Table 1 and was highlighted by Stull, Morse-Kelly, and Rigsby (1995), specifically related to males and non-white students. Based upon this information, it is possible that males and non-white students are under-represented in this analysis.

Table 1
Student Demographic Information

Variable	Frequency (N=8,991)	%
<i>Gender</i>		
Male	4,150	46.2
Female	4,841	53.8
<i>Race</i>		
American Indian or Alaska Native	71	0.8
Asian or Pacific Islander	556	6.2
Black, not Hispanic	747	8.3
White, not Hispanic	6,063	67.4
Hispanic or Latino	1,161	12.9
More than one race	247	2.7
Missing race information	146	1.6

Family Demographic Information

In addition, demographic information pertaining to the family is also included and highlighted in Tables 2 through 5. The socioeconomic status (SES) of the family unit in which the student was living during the second follow-up in 1992 was collected. This variable represents an estimation of the SES of the family by centile as reported in NELS:88 in 1992, during the second follow-up. Table 2 demonstrates that the mean SES centile was 64.42. Centile data differs from quartile data in that it refers to each of the numbered points between 1 and 100 as opposed to a value that falls in one of four equal parts of the data set.

Table 2
Student Socioeconomic Status

Quartile	Frequency (N=8,991)
Quartile 1	34.00
Quartile 2	60.00
Quartile 3	82.00

Information highlighting to total family income was collected during the second follow-up in 1992. Table 3 highlights that 22.6% of the sample population lived in a family where the total income was less than \$25,000. Nearly one half of the sample population lived in a family with a total income in 1991 between \$25,000 and \$75,000. This information is included to support the socioeconomic data provided in Table 2.

Table 3
Total Family Income

Income Level	Frequency (N=8,991)	%
None	34	.4
Less than \$1,000	22	.2
\$1,000 - \$2,999	45	.5
\$3,000 - \$4,999	65	.7
\$5,000 - \$7,499	147	1.6
\$7,500 - \$9,999	236	2.6
\$10,000 - \$14,999	405	4.5
\$15,000 - \$19,999	459	5.1
\$20,000 - \$24,999	631	7.0
\$25,000 - \$34,999	1,075	12.0
\$35,000 - \$49,999	1,611	17.9
\$50,000 - \$74,999	1,616	18.0
\$75,000 - \$99,999	574	6.4
\$100,000 - \$199,999	517	5.8
\$200,000 or more	190	2.1
Missing Information	1,364	15.2

The education level of the parents of the sample population was also recorded. This variable represents the highest educational level of either parent in the family, as reported by the parent during the second follow-up in 1992. Table 4 indicates that nearly 33% of all respondents in the sample completed college.

Table 4
Parent Educational Status

Education Level	Frequency (N=8,991)	%
Didn't Finish HS	597	6.6
HS Grad or GED	1,371	15.2
HS, Some College	3,353	37.3
College Graduate	1,460	16.2
M.A. or Equal	904	10.1
Ph.D., M.D., Other	552	6.1
Missing Information	754	8.5

One final piece of demographic information pertaining to the family was marital status of the family unit in which the student in the sample population was living at the time. These data were collected in interviews with the parent during the second follow-up in 1992. Table 5 demonstrates that over 70% of the respondents in the sample lived in a family where the parental unit members identified themselves as married. Parent marital status proved beneficial to this analysis as Keith and Finlay (1988) documented lower educational attainment and lower social class backgrounds for those from divorced families.

Table 5
Parent Marital Status

Marital Status	Frequency (N=8,991)	%
Single, Never Married	185	2.1
Married	6,347	70.6
Divorced / Separated	1,102	12.3
Widowed	222	2.5
Living Like Married	68	.8
Missing Information	1,067	11.7

Participation Data

NELS:88 includes participation data on high school activities from two collection periods: the first follow-up in 1990 and the second follow-up in 1992. Those time periods closely represent a student's tenth grade and twelfth grade experience in high school. This data is best broken out into the following participation categories: team sports participation, individual sports participation, sports participation, cheer/dance participation, performing arts participation, high school activities participation.

Team Sports Participation

NELS:88 identified team sports as baseball/softball, basketball, football, soccer, swim team, and a category identified as other team sports (inclusive of hockey, volleyball, and other team sports). In the first follow-up in 1990, team sports participation was identified as a single variable for each sport, baseball/softball, basketball, football, soccer, swim team, and other team sports. For the purpose of this study, these variables were merged together to form a single team sports variable for this follow-up. In the second

follow-up in 1992, team sports participation was identified as a single variable in NELS:88. Students with missing information were coded as a non-participant for the purpose of this study. A single variable was created using team sports participation data from both the first and second-follow ups to create an overall high school team sports participation variable. As seen in Table 6, there was a decline in overall participation between grade 10 and grade 12. Overall, nearly 40% of students in this study participated in a team sport in high school.

Table 6
Team Sports Participation Data

Variable	Frequency (N=8,991)	%
<i>10th Grade Team Sports Participation – 1990</i>		
Participant	3,308	36.8
Non-Participant	5,683	63.2
<i>12th Grade Team Sports Participation – 1992</i>		
Participant	2,582	28.7
Non-Participant	6,409	71.3
<i>High School Team Sports Participation</i>		
Participant	3,560	39.6
Non-Participant	5,431	60.4

Individual Sports Participation

NELS:88 identified individual sports as cross-country, gymnastics, golf, tennis, track, and wrestling. In both the first follow-up in 1990 and the second follow-up in 1992, individual sports participation was identified as a single variable. Students with missing

information were coded as a non-participant for the purpose of this study. A single variable was created using individual sports participation data from both the first and second follow-ups to create an overall high school individual sports participation variable. Table 8 highlights that nearly thirty percent of all students in this sample participated in an individual sport in high school.

Table 7
Individual Sports Participation Data

Variable	Frequency (N=8,991)	%
<i>10th Grade Individual Sports Participation – 1990</i>		
Participant	1,808	20.1
Non-Participant	7,183	79.9
<i>12th Grade Individual Sports Participation – 1992</i>		
Participant	1,742	19.4
Non-Participant	7,249	80.6
<i>High School Individual Sports Participation</i>		
Participant	2,499	27.8
Non-Participant	6,492	72.2

Total Sports Participation

A single variable was created using team sports participation and individual sports participation data from both the first and second-follow ups to create an overall high school sports participation variable. Table 8 highlights that nearly 42% of all high school students

in this sample participated in one sport or another, team or individual, during their high school career.

Table 8
High School Sports Participation Data

Variable	Frequency (N=8,991)	%
<i>High School Sports Participation – 1990</i>		
Participant	3,239	36.0
Non-Participant	5,752	64.0
<i>High School Sports Participation – 1992</i>		
Participant	3,377	37.6
Non-Participant	5,614	62.4
<i>High School Sports Participation</i>		
Participant	3,940	43.8
Non-Participant	5,051	56.2

Cheer/Dance Participation

NELS:88 identified two other areas of activity participation: cheer participation and dance (pom-pom) participation. In the first follow-up in 1990, cheer and dance participation were identified as two separate single variables for each activity. For the purpose of this study, these variables were merged together to form a cheer/dance variable for this follow-up. In the second follow-up in 1992, cheer/dance participation was identified as a single variable in NELS:88. Students with missing information were coded as a non-participant for the purpose of this study. A single variable was created using cheer/dance participation data from both the first and second-follow ups to create an overall high school cheer/dance

participation variable. As seen in Table 9, cheer/dance participation is relatively low in terms of participation numbers compared to athletic participation.

Table 9
High School Cheer/Dance Participation Data

Variable	Frequency (N=8,991)	%
<i>High School Cheer/Dance Participation – 1990</i>		
Participant	692	7.7
Non-Participant	8,299	92.3
<i>High School Cheer/Dance Participation – 1992</i>		
Participant	663	7.4
Non-Participant	8,328	92.6
<i>High School Cheer/Dance Participation</i>		
Participant	943	10.5
Non-Participant	8,048	89.5

Performing Arts Participation

Within NELs:88, two areas related to performing arts participation were identified: participated in school band or orchestra and participated in school play or musical. In the first follow-up in 1990 and the second follow-up in 1992, both were identified as two separate single variables for each activity. For the purpose of this study, these variables were merged together to form an overall performing arts participation variable for both follow-ups. Students with missing information were coded as a non-participant for the purpose of this study. A single variable was created using merged school band or orchestra and school

play or musical data from both the first and second-follow ups to create an overall high school performing arts participation variable. As seen in Table 10, over 30% of the sample population participated in the performing arts while in high school.

Table 10
High School Performing Arts Participation Data

Variable	Frequency (N=8,991)	%
<i>High School Performing Arts Participation – 1990</i>		
Participant	2,402	26.7
Non-Participant	6,589	73.3
<i>High School Performing Arts Participation – 1992</i>		
Participant	2,453	27.3
Non-Participant	6,538	72.7
<i>High School Performing Arts Participation</i>		
Participant	2,733	30.4
Non-Participant	6,258	69.6

High School Activities Participation

A single variable was created using sports participation and performing arts participation data from both the first and second-follow ups to create an overall high school activities participation variable. Table 11 highlights that nearly 70% of the students included in this sample population participation in one or more activities during their high school experience.

Table 11
High School Activities Participation Data

Variable	Frequency (N=8,991)	%
<i>High School Activities Participation – 1990</i>		
Participant	4,179	46.5
Non-Participant	4,812	53.5
<i>High School Activities Participation – 1992</i>		
Participant	5,044	56.1
Non-Participant	3,947	43.9
<i>High School Activities Participation</i>		
Participant	6,223	69.2
Non-Participant	2,768	30.8

Using that single variable focusing on high school activities participation, additional information is provided in Table 12 regarding the participants to include gender and race.

Table 12
High School Activities Participation Data with Demographic Information

Variable	Participant		Non-Participant	
	<i>N</i>	%	<i>N</i>	%
<i>Gender</i>				
Males (<i>N</i> =4,150)	2,955	71.2	1,195	28.8
Females (<i>N</i> =4,841)	3,268	67.5	1,573	32.5
<i>Race</i>				
American Indian or Alaska Native (<i>N</i> =71)	46	64.8	25	35.2
Asian or Pacific Islander (<i>N</i> =556)	344	61.9	212	38.1
Black, not Hispanic (<i>N</i> =747)	491	65.7	256	34.3
White, not Hispanic (<i>N</i> =6,063)	4,378	72.2	1,685	27.8
Hispanic or Latino (<i>N</i> =1,161)	707	60.9	454	39.1
More than one race (<i>N</i> =247)	162	65.6	85	34.4
Missing race information (<i>N</i> =146)	95	65.1	51	34.9

Findings from the Models of Association

For this statistical analysis, the student data related to participation in high school and educational attainment and earnings data from beyond high school were imported into SPSS for Windows. This model was used to study the relationship between participation, measured in different degrees by different variables, and future earnings and educational attainment.

Somer's d was selected as the calculation to measure the association between these two ordinal variables. In the first set of calculations, the dependent variable, future earnings, was an ordinal variable, while the independent variable indicating participation was also ordinal. In the second instance, the dependent variable, educational attainment, was ordinal. The independent variable was ordinal, indicating participation.

Future Earnings

A calculation of the association between a series of independent variables measuring participation and future earning was completed. This calculation demonstrated that there is some relationship between participation in activities and future earnings, though not robust by any means. It is important to note that there are higher correlations between participation in athletic activities and future earnings when compared to participation in cheer/dance and performing arts and a higher correlation between activities participation in grade 12 compared to grade 10, as is demonstrated in Table 13.

Table 13
Correlation between Participation in High School Activities and Future Earnings
(N=8,991 respondents)

	Somer's d Value	Significance
Team Sports Participation – Grade 10	.162	≤.001*
Individual Sports Participation – Grade 10	.136	≤.001*
Total Sports Participation – Grade 10	.144	≤.001*
Cheer / Dance Participation – Grade 10	.086	≤.001*
Performing Arts Participation – Grade 10	.094	≤.001*
Total Activities Participation – Grade 10	.124	≤.001*
Team Sports Participation – Grade 12	.133	≤.001*
Individual Sports Participation – Grade 12	.201	≤.001*
Total Sports Participation – Grade 12	.190	≤.001*
Cheer / Dance Participation – Grade 12	.122	≤.001*
Performing Arts Participation – Grade 12	.118	≤.001*
Total Activities Participation – Grade 12	.212	≤.001*
Team Sports Participation - HS	.134	≤.001*
Individual Sports Participation – HS	.185	≤.001*
Total Sports Participation – HS	.150	≤.001*
Cheer / Dance Participation – HS	.080	≤.001*
Performing Arts Participation – HS	.080	≤.001*
Total Activities Participation – HS	.208	≤.001*

* $p \leq .001$

Educational Attainment

A calculation of the association between a series of independent variables measuring participation and educational attainment was completed. This calculation demonstrated that there is some relationship between participation in activities and educational attainment, though not robust by any means. It is important to note that there are more robust correlations between participation in athletic activities and educational attainment when compared to participation in cheer/dance and performing arts in all levels of participation as is demonstrated in Table 14.

Table 14
Correlation between Participation in High School Activities and Educational Attainment
(N=8,991 respondents)

Variable	Somer's d Value	Significance
Team Sports Participation – Grade 10	.162	≤.001*
Individual Sports Participation – Grade 10	.181	≤.001*
Total Sports Participation – Grade 10	.160	≤.001*
Cheer / Dance Participation – Grade 10	-.029	.525
Performing Arts Participation – Grade 10	-.026	.057
Total Activities Participation – Grade 10	.074	≤.001*
Team Sports Participation – Grade 12	.175	≤.001*
Individual Sports Participation – Grade 12	.193	≤.001*
Total Sports Participation – Grade 12	.204	≤.001*
Cheer / Dance Participation – Grade 12	-.014	≤.001*
Performing Arts Participation – Grade 12	-.022	.110
Total Activities Participation – Grade 12	.137	≤.001*
Team Sports Participation - HS	.166	≤.001*
Individual Sports Participation – HS	.180	≤.001*
Total Sports Participation – HS	.164	≤.001*
Cheer / Dance Participation – HS	-.045	≤.001*
Performing Arts Participation – HS	-.029	≤.001*
Total Activities Participation – HS	.145	≤.001*

* $p \leq .001$

Summary

In each case, no statistical correlation was found between participation and future wage earnings or future educational attainment. This was further verified by the completion of a Gamma calculation, along with other nonparametric measures, each of which demonstrated similar results. In each case, there was no practical correlation.

Findings from the Bivariate Linear Regression Model

For this statistical analysis, the student data related to participation in high school and educational attainment and earnings data from beyond high school were imported into SPSS for Windows. This model was selected due to the fact that the only analysis desired was the direct, singular relationship between activities and future earnings and educational attainment, not accounting for additional variables.

In these linear regression problems, what is known about one variable is used to make predictions about other variables (Keppel & Zedeck, 1989). As Green and Salkind (2005) highlighted, bivariate linear regression computes the following equation that relates the predicted Y scores (\hat{Y}) to X scores. The equation includes a slope weight for the independent variable and an additive constant:

$$\hat{Y} = B_{slope}X + B_{constant}$$

\hat{Y} = the dependent variable, future earnings or educational attainment

X = the independent variable, participation, either a participant or non-participant

B_{slope} = the slope weight of the equation

$B_{constant}$ = the additive constant

This equation was estimated using participation in varying levels, the independent variable in each case, and either future earnings or educational attainment as the dependent variable. The analysis of each is highlighted in this section by dependent variable.

This section highlights the analysis of participation in activities with future earnings and educational attainment. The first level of analysis was conducted using only a direct relationship between participation and the dependent variable. Control variables were then introduced in each section to extend the analysis.

Future Earnings

Future earnings are defined by a singular variable collected in the fourth follow-up of NELS:88 in 2000. This variable represents the current earnings rate of the individual respondent in 2000, as reported by the individual. The range of income stretched from \$1.00 to over \$500,000 annually. Individuals who earned less than \$1.00 were coded as losing money during the time period and were excluded from this study. The mean income for these respondents in 2000 was \$21,431.04; the median income was \$20,000.

Grade 10 Activities Participation

A linear regression analysis was conducted to evaluate the prediction of student participation in activities during Grade 10 (1990) on future earnings, 10 years after the participation occurred (2000). Table 15 highlights the findings for six different variables used in the analysis. For the variable Total Activities Participation in grade 10, the correlation between activities participation and future earnings was .056. Less than 1% of the variance of future earnings was accounted for by its linear relationship with participation in activities in Grade 10.

Table 15
*Bivariate Linear Regression Analysis of the impact of Grade 10 Activities
 on Future Earnings*

Variable	r^2	Beta	Significance
Team Sports Participation	.016	.125	$\leq .001^*$
Individual Sports Participation	.015	.124	$\leq .001^*$
Total Sports Participation	.016	.126	$\leq .001^*$
Cheer / Dance Participation	.000	-.021	.049
Performing Arts Participation	.000	-.012	.254
Total Activities Participation	.003	.056	$\leq .001^*$

* $p \leq .001$

Grade 12 Activities Participation

A linear regression analysis was conducted to evaluate the prediction of student participation in activities during Grade 12 (1992) on future earnings, eight years after the participation occurred (2000). Table 16 highlights the findings for six different variables used in the analysis. For the variable Total Activities Participation in grade 12, the correlation between activities participation and future earnings was .102. Approximately 1% of the variance of future earnings was accounted for by its linear relationship with participation in activities in Grade 12.

Table 16
*Bivariate Linear Regression Analysis of the impact of Grade 12 Activities
 on Future Earnings*

Variable	r^2	Beta	Significance
Team Sports Participation	.014	.119	$\leq .001^*$
Individual Sports Participation	.013	.112	$\leq .001^*$
Total Sports Participation	.023	.152	$\leq .001^*$
Cheer / Dance Participation	.000	-.021	$\leq .001^*$
Performing Arts Participation	.000	-.017	.117
Total Activities Participation	.010	.102	$\leq .001^*$

* $p \leq .001$

High School Activities Participation

A linear regression analysis was conducted to evaluate the prediction of student participation in activities during high school on future earnings, eight years after graduation (2000). Table 17 highlights the findings for six different variables used in the analysis. For the variable Total Activities Participation in high school, the correlation between activities participation and future earnings was .099. Approximately 1% of the variance of future earnings was accounted for by its linear relationship with participation in activities in high school.

Table 17
*Bivariate Linear Regression Analysis of the impact of Total Activities
 on Future Earnings*

Variable	r^2	Beta	Significance
Team Sports Participation	.015	.123	$\leq .001^*$
Individual Sports Participation	.017	.130	$\leq .001^*$
Total Sports Participation	.017	.129	$\leq .001^*$
Cheer / Dance Participation	.001	-.037	$\leq .001^*$
Performing Arts Participation	.000	-.013	.201
Total Activities Participation	.010	.099	$\leq .001^*$

* $p \leq .001$

Controlling for other Variables

In this study, several variables were used as control variables to add richness to the analysis. Each of these variables had roots in the individual student or the student's family situation in high school. These control variables included gender, race, socio-economic status, parent marital status in high school (measured in the second follow-up, 1992), and parent education level (measured in the second follow-up, 1992).

Gender

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in activities during high school on future earnings when controlling for gender. In analyzing each individual variable related to participation highlighted in Table 18, there was relatively little difference between males and females with respect to the impact of participation on future earnings.

Table 18
*Bivariate Linear Regression Analysis of the impact of Participation on Future Earnings * Control Variable = Gender*

Variable	Male (N=4,149)			Female (N=4,840)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.016	.125	≤.001*	.023	.150	≤.001*
Individual Sports Participation	.024	.155	≤.001*	.031	.177	≤.001*
Total Sports Participation	.014	.118	.000	.033	.180	≤.001*
Cheer / Dance Participation	.000	-.003	.847	.002	.047	.001
Performing Arts Participation	.008	.087	≤.001*	.009	.097	≤.001*
Total Activities Participation	.031	.177	≤.001*	.036	.189	≤.001*

* $p \leq .001$

Race

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in activities during high school on future earnings when controlling for race. In analyzing each individual variable related to participation highlighted in Table 19, the impact that participation had on whites with respect to future earnings was slightly more robust than non-whites.

Table 19
*Bivariate Linear Regression Analysis of the impact of Participation on Future Earnings * Control Variable = Race*

Variable	American Indian or Alaska Native (N=70)			Asian or Pacific Islander (N=555)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.001	.034	.775	.003	.053	.209
Individual Sports Participation	.050	.223	.061	.023	.152	≤.001*
Total Sports Participation	.002	-.049	.684	.011	.104	.014
Cheer / Dance Participation	.005	-.074	.540	.000	-.002	.971
Performing Arts Participation	.013	.114	.342	.009	.092	.029
Total Activities Participation	.009	.094	.434	.014	.117	.006

* $p \leq .001$

Table 19. (continued)

Variable	Black, not Hispanic (N=746)			White, not Hispanic (N=6,062)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.001	.032	.390	.019	.137	≤.001*
Individual Sports Participation	.003	.057	.123	.026	.161	≤.001*
Total Sports Participation	.001	.037	.319	.022	.149	≤.001*
Cheer / Dance Participation	.000	-.002	.959	.004	.060	≤.001*
Performing Arts Participation	.002	.049	.182	.011	.103	≤.001*
Total Activities Participation	.006	.075	.039	.038	.195	≤.001*

* $p \leq .001$

Variable	Hispanic or Latino (N=1,160)			More than one race (N=246)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.011	.106	≤.001*	.021	.146	.022
Individual Sports Participation	.005	.072	.014	.024	.155	.015
Total Sports Participation	.007	.084	.004	.027	.165	.009
Cheer / Dance Participation	.004	.062	.035	.002	.045	.479
Performing Arts Participation	.008	.090	.002	.013	.116	.069
Total Activities Participation	.026	.162	≤.001*	.044	.211	.001

* $p \leq .001$

Variable	Not White (N=2,927)		
	r^2	Beta	Sig.
Team Sports Participation	.004	.064	.001
Individual Sports Participation	.016	.126	≤.001*
Total Sports Participation	.008	.090	≤.001*
Cheer / Dance Participation	.000	.008	.663
Performing Arts Participation	.006	.074	≤.001*
Total Activities Participation	.016	.127	≤.001*

* $p \leq .001$

Socioeconomic Status

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in activities during high school on future earnings when controlling for socioeconomic status. In analyzing each individual variable related to participation highlighted in Table 20, the impact that participation had on students above and below the mean socioeconomic status was virtually the same with respect to future earnings.

Table 20
*Bivariate Linear Regression Analysis of the impact of Participation on Future Earnings * Control Variable = Socioeconomic Status*

Variable	Below the Mean (64.42) (N=4,036)			Above/Equal to the Mean (64.42) (N=4,955)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.010	.099	≤.001*	.013	.116	≤.001*
Individual Sports Participation	.011	.106	≤.001*	.013	.112	≤.001*
Total Sports Participation	.011	.106	≤.001*	.014	.117	≤.001*
Cheer / Dance Participation	.001	-.034	.017	.002	-.045	.004
Performing Arts Participation	.000	.006	.679	.003	-.054	.001
Total Activities Participation	.007	.085	≤.001*	.005	.068	≤.001*

* $p \leq .001$

Parent Marital Status

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in activities during high school on future earnings when controlling for parental marital status while the individual was in high school. In analyzing each individual variable related to participation highlighted in Table 21, the impact that participation had on students from families where the parents are married vs. unmarried was virtually the same with respect to future earnings. This is contrary to the work of Keith and

Finlay (1988) who found a negative relationship between the future social class of individuals and their parent's marital status in high school.

Table 21

*Bivariate Linear Regression Analysis of the impact of Participation on Educational Attainment * Control Variable = Marital Status*

Variable	Single, Never Married (N=184)			Married (N=6,346)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.011	.104	.158	.016	.125	≤.001*
Individual Sports Participation	.003	.054	.465	.020	.140	≤.001*
Total Sports Participation	.013	.116	.116	.017	.131	≤.001*
Cheer / Dance Participation	.003	.053	.471	.002	-.047	≤.001*
Performing Arts Participation	.000	-.001	.956	.001	-.028	.024
Total Activities Participation	.013	.114	.121	.009	.096	≤.001*

* $p \leq .001$

Variable	Divorced / Separated (N=1,101)			Widowed (N=221)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.020	.142	≤.001*	.001	-.29	.667
Individual Sports Participation	.012	.112	≤.001*	.005	.70	.297
Total Sports Participation	.023	.150	≤.001*	.002	-.040	.549
Cheer / Dance Participation	.001	-.031	.301	.000	.017	.802
Performing Arts Participation	.000	.019	.525	.003	-.054	.424
Total Activities Participation	.011	.105	≤.001*	.003	-.054	.421

* $p \leq .001$

Table 21. (continued)

Variable	Living Like Married (N=67)			Not Married (N=2,643)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.001	-.026	.831	.010	.101	≤.001*
Individual Sports Participation	.001	.029	.812	.001	.081	≤.001*
Total Sports Participation	.029	-.171	.164	.019	.138	≤.001*
Cheer / Dance Participation	.006	.080	.517	.000	-.013	.501
Performing Arts Participation	.015	.122	.321	.000	.016	.425
Total Activities Participation	.030	.174	.156	.007	.085	≤.001*

* $p \leq .001$ *Parent Education Level*

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in activities during high school on future earnings when controlling for parent education status while the individual was in high school. In analyzing each individual variable related to participation highlighted in Table 22, the impact that participation had on students from families where the parents are not college graduates vs. college graduates was virtually the same with respect to future earnings.

Table 22
*Bivariate Linear Regression Analysis of the impact of Participation
 on Future Earnings * Control Variable = Parent Education Level*

Variable	Didn't Finish HS (N=596)			HS Grad or GED (N=1,370)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.000	.000	.999	.012	.111	≤.001*
Individual Sports Participation	.001	.028	.493	.011	.104	≤.001*
Total Sports Participation	.002	.048	.240	.008	.088	≤.001*
Cheer / Dance Participation	.000	-.018	.655	.000	.003	.904
Performing Arts Participation	.016	.125	.002	.004	.065	.017
Total Activities Participation	.010	.099	.016	.020	.141	≤.001*
* p ≤.001						
Variable	HS, Some College (N=3,352)			College Graduate (N=1,459)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.011	.105	≤.001*	.010	.101	≤.001*
Individual Sports Participation	.018	.134	≤.001*	.004	.063	.017
Total Sports Participation	.014	.117	≤.001*	.011	.104	≤.001*
Cheer / Dance Participation	.003	.057	.001	.007	.084	.001
Performing Arts Participation	.007	.081	≤.001*	.002	.039	.136
Total Activities Participation	.024	.156	≤.001*	.015	.122	≤.001*
* p ≤.001						
Variable	M.A. or Equal (N=903)			Ph.D., M.D., Other (N=551)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.005	.069	.037	.005	.073	.085
Individual Sports Participation	.017	.129	≤.001*	.012	.108	.011
Total Sports Participation	.008	.092	.006	.005	.072	.089
Cheer / Dance Participation	.001	.035	.293	.004	.064	.132
Performing Arts Participation	.000	.019	.577	.005	.071	.093
Total Activities Participation	.012	.108	.001	.017	.132	.002
* p ≤.001						

Table 22. (continued)

Variable	Not a College Graduate (N=5,320)			College Graduate (N=3,669)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.011	.107	≤.001*	.012	.109	≤.001*
Individual Sports Participation	.016	.125	≤.001*	.011	.105	≤.001*
Total Sports Participation	.013	.114	≤.001*	.015	.122	≤.001*
Cheer / Dance Participation	.002	.041	.003	.003	.054	.001
Performing Arts Participation	.000	.088	≤.001*	.006	.079	≤.001*
Total Activities Participation	.026	.160	≤.001*	.024	.154	≤.001*

* $p \leq .001$ *Cross Participation*

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in athletics during high school on future earnings when controlling for participation itself. In analyzing the total athletic participation variable highlighted in Table 23, the impact that participation had on future earnings when controlling for cheer/dance and performing arts participation was more profound for those individuals that participated only in athletics.

Table 23

*Bivariate Linear Regression Analysis of the impact of Athletic Participation on Future Earnings * Control Variable = Participation*

Variable	Non-Participant			Participant		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Cheer / Dance Participation (N=8,047)	.022	.149	≤.001*	.005	.069	.034
Performing Arts Participation (N=2,732)	.024	.156	≤.001*	.010	.100	≤.001*

* $p \leq .001$

Summary

As demonstrated in the three sets of linear regression analyses, there is very little relationship between total activities participation in Grade 10, Grade 12, and overall in high school and future earnings. There is however some indication that the value of participation in athletic endeavors outweighs that of participation in performing arts activities or cheer/dance activities. This can be gleaned through analysis of the correlations computed in athletic activities, where the correlation values were near .10 and in performing arts activities or cheer/dance activities where the correlation values were near .000. This is evident in all three levels of analysis when examining the correlation between participation in sports (team, individual, and total) and future earnings. When control variables were introduced, there was very little impact amongst the subgroups.

It should be noted that when analyzing participation in cheer/dance and performing arts, the correlations that are present are best described as nonexistent or negative. While those negative correlations cannot be categorized as robust and some negative correlations and correlations close to zero are not significant at the 95% confidence interval, it should be noted that these correlations are consistently weak when compared to participation in athletic endeavors as related to future earnings. In addition, the data demonstrate that the impact of cheer/dance and performing arts participation on the influence of athletic participation on future earnings is less positive than simply athletic participation alone.

Educational Attainment

Educational attainment is defined by a singular variable collected in the fourth follow-up of NELS:88 in 2000. This variable indicates the level of degree beyond high school that an individual had received. This variable represents the educational attainment of

the individual respondent in 2000, as reported by the individual. Table 24 demonstrates that over 40% of the respondents in this study had completed a bachelor's degree or higher in 2000 at the time of the fourth follow-up.

Table 24
Educational Attainment

Highest Level Completed	Frequency (N=8,991)	%
Some PSE, no degree attained	3,408	37.9
Certificate / license	908	10.1
Associate's Degree	829	9.2
Bachelor's Degree	3,399	37.8
Master's Degree / Equivalent	376	4.2
Ph.D. or Professional Degree	71	.8

* $p \leq .001$

Grade 10 Activities Participation

A linear regression analysis was conducted to evaluate the prediction of student participation in activities during Grade 10 (1990) on educational attainment, 10 years after the participation occurred (2000). Table 25 highlights the findings for six different variables used in the analysis. For the variable Total Activities Participation in grade 10, the correlation between activities participation and educational attainment was .117. Just more than 1% of the variance of educational attainment was accounted for by its linear relationship with participation in activities in Grade 10.

Table 25
*Bivariate Linear Regression Analysis of the impact of Grade 10 Activities
 on Educational Attainment*

Variable	r^2	Beta	Significance
Team Sports Participation	.015	.123	$\leq .001^*$
Individual Sports Participation	.018	.134	$\leq .001^*$
Total Sports Participation	.017	.130	$\leq .001^*$
Cheer / Dance Participation	.002	.042	$\leq .001^*$
Performing Arts Participation	.006	.077	$\leq .001^*$
Total Activities Participation	.014	.117	$\leq .001^*$

* $p \leq .001$

Grade 12 Activities Participation

A linear regression analysis was conducted to evaluate the prediction of student participation in activities during Grade 12 (1992) on educational attainment, eight years after the participation occurred (2000). Table 26 highlights the findings for six different variables used in the analysis. For the variable Total Activities Participation in grade 12, the correlation between activities participation and educational attainment was .198. Approximately 4% of the variance of educational attainment was accounted for by its linear relationship with participation in activities in Grade 12.

Table 26
*Bivariate Linear Regression Analysis of the impact of Grade 12 Activities
 on Educational Attainment*

Variable	r^2	Beta	Significance
Team Sports Participation	.013	.113	$\leq .001^*$
Individual Sports Participation	.022	.148	$\leq .001^*$
Total Sports Participation	.030	.173	$\leq .001^*$
Cheer / Dance Participation	.003	.058	$\leq .001^*$
Performing Arts Participation	.010	.098	$\leq .001^*$
Total Activities Participation	.039	.198	$\leq .001^*$

* $p \leq .001$

High School Activities Participation

A linear regression analysis was conducted to evaluate the prediction of student participation in activities during high school on educational attainment, 8 years after graduation (2000). Table 27 highlights the findings for six different variables used in the analysis. For the variable Total Activities Participation in high school, the correlation between activities participation and educational attainment was .181. Approximately 3% of the variance of educational attainment was accounted for by its linear relationship with participation in activities in high school.

Table 27
*Bivariate Linear Regression Analysis of the impact of Total Activities
 on Educational Attainment*

Variable	r^2	Beta	Significance
Team Sports Participation	.015	.124	$\leq .001^*$
Individual Sports Participation	.024	.154	$\leq .001^*$
Total Sports Participation	.019	.140	$\leq .001^*$
Cheer / Dance Participation	.002	.045	$\leq .001^*$
Performing Arts Participation	.005	.068	$\leq .001^*$
Total Activities Participation	.033	.181	$\leq .001^*$

* $p \leq .001$

Controlling for other Variables

In this study, several variables were used as control variables to add richness to the analysis. Each of these variables had roots in the individual student or the student's family situation in high school. These control variables included gender, race, socioeconomic status, parent marital status in high school, and parent education level (measured in the second follow-up, 1992).

Gender

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in activities during high school on educational attainment when controlling for gender. In analyzing each individual variable related to participation highlighted in Table 28, the impact that gender had on educational attainment slightly favored females.

Table 28
*Bivariate Linear Regression Analysis of the impact of Participation on Educational Attainment * Control Variable = Gender*

Variable	Male (N=4,149)			Female (N=4,840)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.006	.075	≤.001*	.012	.112	≤.001*
Individual Sports Participation	.009	.093	≤.001*	.014	.119	≤.001*
Total Sports Participation	.006	.076	≤.001*	.019	.140	≤.001*
Cheer / Dance Participation	.001	-.023	.140	.001	.027	.062
Performing Arts Participation	.000	.010	.512	.000	.010	.484
Total Activities Participation	.007	.083	≤.001*	.012	.110	≤.001*

* $p \leq .001$

Race

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in activities during high school on educational attainment when controlling for race. In analyzing each individual variable related to participation highlighted in Table 29, the impact that participation had on whites with respect to educational attainment was slightly more robust than non-whites.

Table 29
*Bivariate Linear Regression Analysis of the impact of Participation
 on Educational Attainment * Control Variable = Race*

Variable	American Indian or Alaska Native (N=70)			Asian or Pacific Islander (N=555)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.020	.146	.234	.008	.089	.035
Individual Sports Participation	.136	.368	.002	.014	.118	.005
Total Sports Participation	.044	.210	.079	.003	.055	.195
Cheer / Dance Participation	.021	-.146	.224	.002	-.046	.274
Performing Arts Participation	.004	.061	.614	.002	-.045	.285
Total Activities Participation	.027	.165	.168	.001	.035	.415

* $p \leq .001$

Variable	Black, not Hispanic (N=746)			White, not Hispanic (N=6,062)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.016	.127	$\leq .001^*$.017	.131	$\leq .001^*$
Individual Sports Participation	.009	.097	.008	.017	.132	$\leq .001^*$
Total Sports Participation	.021	.147	$\leq .001^*$.017	.130	$\leq .001^*$
Cheer / Dance Participation	.000	.009	.796	.001	-.036	.005
Performing Arts Participation	.002	.042	.249	.000	-.019	.146
Total Activities Participation	.014	.120	.001	.010	.099	$\leq .001^*$

* $p \leq .001$

Table 29. (continued)

Variable	Hispanic or Latino (N=1,160)			More than one race (N=246)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.008	.087	.003	.009	.092	.148
Individual Sports Participation	.007	.081	.006	.026	.161	.011
Total Sports Participation	.011	.106	.000*	.007	.086	.176
Cheer / Dance Participation	.002	-.047	.108	.000	.019	.772
Performing Arts Participation	.000	.001	.982	.002	.042	.515
Total Activities Participation	.006	.080	.006	.015	.122	.056

* $p \leq .001$

Variable	Not White Not White (N=2,927)		
	r^2	Beta	Sig.
Team Sports Participation	.007	.084	$\leq .001^*$
Individual Sports Participation	.013	.115	$\leq .001^*$
Total Sports Participation	.011	.105	$\leq .001^*$
Cheer / Dance Participation	.002	-.045	.015
Performing Arts Participation	.000	-.010	.571
Total Activities Participation	.006	.076	$\leq .001^*$

* $p \leq .001$

Socioeconomic Status

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in activities during high school on educational attainment when controlling for socioeconomic status. In analyzing each individual variable related to participation highlighted in Table 30, the impact that participation had on students in the above and below the mean socioeconomic status was virtually the same with respect to future educational attainment.

Table 30
*Bivariate Linear Regression Analysis of the impact of Participation
 on Educational Attainment * Control Variable = Socioeconomic Status*

Variable	Below the Mean (64.42) (N=4,036)			Above/Equal to the Mean (64.42) (N=4,955)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.010	.098	≤.001*	.009	.097	≤.001*
Individual Sports Participation	.013	.115	≤.001*	.016	.127	≤.001*
Total Sports Participation	.013	.114	≤.001*	.012	.108	≤.001*
Cheer / Dance Participation	.001	.030	.032	.004	.061	≤.001*
Performing Arts Participation	.005	.071	≤.001*	.001	.035	.025
Total Activities Participation	.024	.156	≤.001*	.020	.140	≤.001*

* $p \leq .001$

Parent Marital Status

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in activities during high school on educational attainment when controlling for parental marital status while the individual was in high school. In analyzing each individual variable related to participation highlighted in Table 31, the impact that participation had on students from families where the parents are married vs. unmarried was virtually the same with respect to educational attainment. This is contrary to the work of Keith and Finlay (1988) who found a negative relationship between the future educational attainment of individuals and their parent's marital status in high school.

Table 31
*Bivariate Linear Regression Analysis of the impact of Participation
 on Future Earnings * Control Variable = Marital Status*

Variable	Single, Never Married (N=184)			Married (N=6,346)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.011	.105	.156	.014	.118	≤.001*
Individual Sports Participation	.005	.068	.354	.025	.158	≤.001*
Total Sports Participation	.005	.070	.342	.019	.137	≤.001*
Cheer / Dance Participation	.002	.046	.018	.004	.061	.407
Performing Arts Participation	.000	-.017	.817	.009	.097	≤.001*
Total Activities Participation	.003	.056	.445	.034	.185	≤.001*
* $p \leq .001$						
Variable	Divorced / Separated (N=1,101)			Widowed (N=221)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.017	.128	≤.001*	.010	.099	.140
Individual Sports Participation	.010	.098	.001	.043	.208	.002
Total Sports Participation	.018	.135	≤.001*	.011	.106	.114
Cheer / Dance Participation	.001	.026	.381	.000	.011	.866
Performing Arts Participation	.012	.109	≤.001*	.001	-.025	.709
Total Activities Participation	.025	.159	≤.001*	.006	.075	.269
* $p \leq .001$						
Variable	Living Like Married (N=67)			Not Married (N=2,643)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.035	.187	.126	.012	.111	≤.001*
Individual Sports Participation	.004	.065	.599	.013	.116	≤.001*
Total Sports Participation	.004	.062	.615	.013	.113	≤.001*
Cheer / Dance Participation	.098	.313	.009	.002	.046	.018
Performing Arts Participation	.049	.221	.070	.004	.065	.001
Total Activities Participation	.061	.247	.042	.020	.143	≤.001*
* $p \leq .001$						

Parent Education Level

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in activities during high school on educational attainment when controlling for parental marital status while the individual was in high school. In analyzing each individual variable related to participation highlighted in Table 32, the impact that participation had on students from families where the parents are not college graduates vs. college graduates was virtually the same with respect to educational attainment.

Table 32
*Bivariate Linear Regression Analysis of the impact of Participation
 on Educational Attainment * Control Variable = Parent Education Level*

Variable	Didn't Finish HS (N=596)			HS Grad or GED (N=1,370)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.001	.036	.380	.017	.132	≤.001*
Individual Sports Participation	.001	.028	.490	.011	.104	≤.001*
Total Sports Participation	.003	.052	.203	.007	.084	.002
Cheer / Dance Participation	.007	-.081	.047	.001	-.034	.211
Performing Arts Participation	.001	-.023	.578	.001	-.028	.292
Total Activities Participation	.000	.021	.608	.006	.080	.003

* $p \leq .001$

Table 32. (continued)

Variable	HS, Some College (N=3,352)			College Graduate (N=1,459)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.009	.093	≤.001*	.022	.150	≤.001*
Individual Sports Participation	.018	.134	≤.001*	.004	.063	.017
Total Sports Participation	.014	.119	≤.001*	.017	.132	≤.001*
Cheer / Dance Participation	.002	-.040	.021	.002	-.044	.089
Performing Arts Participation	.000	-.010	.551	.003	-.050	.054
Total Activities Participation	.008	.092	≤.001*	.003	.052	.046
* p ≤.001						
Variable	M.A. or Equal (N=903)			Ph.D., M.D., Other (N=551)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.010	.100	.003	.014	.120	.005
Individual Sports Participation	.017	.129	≤.001*	.012	.108	.011
Total Sports Participation	.018	.133	≤.001*	.006	.075	.077
Cheer / Dance Participation	.004	-.063	.060	.000	.0069	.883
Performing Arts Participation	.007	-.082	.014	.006	-.077	.070
Total Activities Participation	.006	.076	.023	.003	.054	.206
* p ≤.001						
Variable	Not a College Graduate (N=5,320)			College Graduate (N=3,669)		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Team Sports Participation	.011	.103	≤.001*	.016	.128	≤.001*
Individual Sports Participation	.016	.125	≤.001*	.011	.105	≤.001*
Total Sports Participation	.013	.113	≤.001*	.015	.122	≤.001*
Cheer / Dance Participation	.001	-.038	.005	.001	-.038	.023
Performing Arts Participation	.000	-.010	.486	.001	-.034	.041
Total Activities Participation	.009	.092	≤.001*	.006	.076	≤.001*
* p ≤.001						

Cross Participation

A linear regression analysis was conducted to evaluate the prediction of varying degrees of student participation in athletics during high school on educational attainment when controlling for participation itself. In analyzing the total athletic participation variable highlighted in Table 33, the impact that participation had on educational attainment when controlling for cheer/dance and performing arts participation was more profound for those individuals that participated only in athletics.

Table 33

*Bivariate Linear Regression Analysis of the impact of Athletic Participation on Educational Attainment * Control Variable = Participation*

Variable	Non-Participant			Participant		
	r^2	Beta	Sig.	r^2	Beta	Sig.
Cheer / Dance Participation (N=8,047)	.019	.136	≤.001*	.001	.037	.254
Performing Arts Participation (N=2,732)	.019	.137	≤.001*	.012	.111	≤.001*

* $p \leq .001$

Summary

As demonstrated in the three sets of linear regression analyses, there is very little relationship between total activities participation in Grade 10, Grade 12, and overall in high school and educational attainment. There is however some indication that the value of participation in athletic endeavors outweighs that of participation in performing arts activities or cheer/dance activities, similar to the regression analyses of participation and educational attainment. This is evident in all three levels of analysis when examining the correlation between participation in sports (team, individual, total) and educational attainment.

It should be noted that when analyzing participation in cheer/dance and performing arts, the correlations that are present are best described as nonexistent, though somewhat stronger than the correlations that existed in the analysis of educational attainment. While some correlations were negative, neither these nor those close to zero can be categorized as robust and some are not significant at the 95% confidence interval, it should be noted that these correlations are consistently weak when compared to participation in athletic endeavors as related to educational attainment. In addition, the data demonstrates that the impact of cheer/dance and performing arts participation on the influence of athletic participation on educational attainment is less positive than simply athletic participation alone.

Findings from the Multiple Regression Model

For this statistical analysis, the student data related to participation in high school and educational attainment and earnings data from beyond high school were imported into SPSS for Windows. In addition, two other variables were added to highlight parent educational level and family income level during the second follow-up in 1992.

This model was used to study other variables beyond just participation activities, measured in different singular and combined format, in which an individual participates reported in relation to their future earnings and educational attainment. Rather, this model accounted for both participation and parents' educational attainment as it related to future earnings and educational attainment in one series of calculations. In a second series of calculations, it accounted for participation and total family income as it related to future earnings and educational attainment. In a third calculation, it accounted for participation,

parents' educational attainment, and total family income as it related to future earnings and educational attainment. One final calculation accounted for parent's educational attainment, total family income, parent marital status, race, and gender as it related to future earnings and educational attainment.

This model is different than the bivariate linear regression model in that it accounts for more than one independent variable. In this model, two or three independent variables were used in each calculation. The intent behind the use of this model was to provide further analysis on the impact of more than just the singular relationship between participation and future earnings and educational attainment.

Parents' Educational Attainment

A multiple regression analysis was conducted using the variable parents' educational attainment in addition to participation, measured on various different levels. The education level of the parents of the sample population was recorded in Table 4 and indicates that nearly 33% of all respondents in the sample population completed college. This variable represents the highest educational level of either parent in the family, as reported by the parent regarding their own educational level during the second follow-up in 1992 (when their student was in grade 12).

Future Earnings

A multiple regression analysis was conducted to evaluate how well participation and parents' educational attainment predicts future earnings. The linear combination of participation and parents' educational attainment was significantly related to future earnings. The sample multiple correlation coefficient was .099, indicating that approximately 1.0% of the variance of the future earnings index in the sample can be accounted for by the linear

combination of participation in high school activities and parents' educational attainment.

Although significantly correlated, it is important to note that the relative importance of the impact of parents' educational attainment is negligible on future earnings.

Table 34

Multiple Linear Regression Analysis of the impact of Participation and Parents' Educational Attainment on Future Earnings

R	R square	Adjusted R Square	R Square Change	F Change	Sig. F Change
.099	.010	.010	.010	44.692	≤.001*

Future Earnings (N=8,991)	Beta	Sig.
High School Activities Participation	.098	≤.001*
Parents' Educational Attainment	-.010	.328

* $p \leq .001$

Educational Attainment

A multiple regression analysis was conducted to evaluate how well participation and parents' educational attainment predicts educational attainment. The linear combination of participation and parents' educational attainment was significantly related to future educational attainment. The sample multiple correlation coefficient was .185, indicating that approximately 3.4% of the variance of the future earnings index in the sample can be accounted for by the linear combination of participation in high school activities and parents' educational attainment. Although significantly correlated, it is important to note that the relative importance of the impact of parents' educational attainment is negligible on future educational attainment.

Table 35
Multiple Linear Regression Analysis of the impact of Participation and Parents' Educational Attainment on Educational Attainment

R	R square	Adjusted R Square	R Square Change	F Change	Sig. F Change
.185	.034	.034	.034	159.819	≤.001*

Educational Attainment (N=8,991)	Beta	Sig.
High School Activities Participation	.180	≤.001*
Parents' Educational Attainment	-.039	≤.001*

* $p \leq .001$

Family Income

A multiple regression analysis was conducted using the variable total family income in addition to participation, measured on various different levels. Information highlighting total family income was collected during the second follow-up in 1992. Table 3 highlights that 22.6% of the sample population lived in a family where the total income was less than \$25,000. Nearly one half of the sample population lived in a family with a total income in 1991 between \$25,000 and \$75,000.

Future Earnings

A multiple regression analysis was conducted to evaluate how well participation and total family income predicts future earnings. The linear combination of participation and total family income was significantly related to future earnings. The sample multiple correlation coefficient was .099, indicating that approximately 1.0% of the variance of the future earnings index in the sample can be accounted for by the linear combination of participation in high school activities and total family income. Although significantly

correlated, it is important to note that the relative importance of the impact of total family income is negligible on future earnings.

Table 36

Multiple Linear Regression Analysis of the impact of Participation and Total Family Income on Future Earnings

R	R square	Adjusted R Square	R Square Change	F Change	Sig. F Change
.099	.010	.010	.010	44.257	≤.001*

Future Earnings (N=8,991)	Beta	Sig.
High School Activities Participation	.099	≤.001*
Total Family Income	-.003	.758

* $p \leq .001$

Educational Attainment

A multiple regression analysis was conducted to evaluate how well participation and total family income predicts educational attainment. The linear combination of participation and total family income was significantly related to educational attainment. The sample multiple correlation coefficient was .184, indicating that approximately 3.4% of the variance of the educational attainment in the sample can be accounted for by the linear combination of participation in high school activities and total family income. Although significantly correlated, it is important to note that the relative importance of the impact of total family income is negligible on educational attainment.

Table 37
Multiple Linear Regression Analysis of the impact of Participation and Total Family Income on Educational Attainment

R	R square	Adjusted R Square	R Square Change	F Change	Sig. F Change
.184	.034	.034	.034	158.241	≤.001*

Future Earnings (N=8,991)	Beta	Sig.
High School Activities Participation	.180	≤.001*
Total Family Income	-.034	.001

* $p \leq .001$

Parents' Educational Attainment and Family Income

A multiple regression analysis was conducted using the variables parents' educational attainment and total family income in addition to participation, measured on overall high school participation.

Future Earnings

A multiple regression analysis was conducted to evaluate how well participation, parents' educational attainment and total family income predicts future earnings. The linear combination of participation, parents' educational attainment, and total family income was significantly related to future earnings. The sample multiple correlation coefficient was .099, indicating that approximately 1.0% of the variance of the future earnings index in the sample can be accounted for by the linear combination of participation in high school activities, parents' educational attainment, and total family income. Although significantly correlated, the relative importance of the impact of parents' educational attainment and total family income is negligible on future earnings.

Table 38

Multiple Linear Regression Analysis of the impact of Participation, Total Family Income, and Parents' Educational Attainment on Future Earnings

R	R square	Adjusted R Square	R Square Change	F Change	Sig. F Change
.099	.010	.010	.010	29.889	≤.001*

Future Earnings (N=8,991)	Beta	Sig.
High School Activities Participation	.099	≤.001*
Total Family Income	.008	≤.001*
Parents' Educational Attainment	-.016	.283

* $p \leq .001$

Educational Attainment

A multiple regression analysis was conducted to evaluate how well participation, parents' educational attainment and total family income predicts educational attainment. The linear combination of participation, parents' educational attainment, and total family income was significantly related to educational attainment. The sample multiple correlation coefficient was .099, indicating that approximately 1.0% of the variance of educational attainment in the sample can be accounted for by the linear combination of participation in high school activities, parents' educational attainment, and total family income. Although significantly correlated, the relative importance of the impact of parents' educational attainment and total family income is negligible on educational attainment.

Table 39

Multiple Linear Regression Analysis of the impact of Participation, Total Family Income, and Parents' Educational Attainment on Educational Attainment

R	R square	Adjusted R Square	R Square Change	F Change	Sig. F Change
.186	.034	.034	.034	106.833	≤.001*

Future Earnings (N=8,991)	Beta	Sig.
High School Activities Participation	.180	≤.001*
Total Family Income	-.014	.352
Parents' Educational Attainment	-.029	.048

* $p \leq .001$

Multiple Variables in Relation to Future Earnings and Educational Attainment

A multiple regression analysis was conducted using high school participation and a series of descriptive variables. These variables included parents' educational attainment, total family income, parent marital status, race, and gender.

Future Earnings

A multiple regression analysis was conducted to evaluate how well participation and a series of additional variables measures future earnings. The linear combination of parents' educational attainment, total family income, parent marital status, race, and gender, along with high school activities participation. The sample multiple correlation coefficient was .043, indicating that less than half of 1.0% of the variance of the future earnings index in the sample can be accounted for by the linear combination of participation in high school activities and parents' educational attainment, total family income, parent marital status,

race, and gender. Although significantly correlated, the relative importance of the impact of these variables on future earnings was negligible.

Table 40
Multiple Linear Regression Analysis of the impact of Participation, Parents' Educational Attainment, Total Family Income, Parent Marital Status, Race, and Gender on Future Earnings

R	R square	Adjusted R Square	R Square Change	F Change	Sig. F Change
.206	.043	.042	.042	66.486	≤.001*

Future Earnings (N=8,991)	Beta	Sig.
High School Activities Participation	.089	≤.001*
Parents' Educational Attainment	.027	.124
Total Family Income	.066	.001
Parents' Marital Status	-.103	≤.001*
Race	.010	.331
Gender	-.174	≤.001*

* $p \leq .001$

Educational Attainment

A multiple regression analysis was conducted to evaluate how well participation and a series of additional variables predicts educational attainment. The linear combination of parents' educational attainment, total family income, parent marital status, race, and gender, along with high school activities participation. The sample multiple correlation coefficient was .048, indicating that less than half of 1.0% of the variance of the educational attainment index in the sample can be accounted for by the linear combination of participation in high school activities and parents' educational attainment, total family income, parent marital

status, race, and gender. Although significantly correlated, the relative importance of the impact of these variables on educational attainment was negligible.

Table 41
Multiple Linear Regression Analysis of the impact of Participation, Parents' Educational Attainment, Total Family Income, Parent Marital Status, Race, and Gender on Educational Attainment

R	R square	Adjusted R Square	R Square Change	F Change	Sig. F Change
.213	.046	.045	.046	71.482	≤.001*

Educational Attainment (N=8,991)	Beta	Sig.
High School Activities Participation	.178	≤.001*
Parents' Educational Attainment	.052	.003
Total Family Income	.101	≤.001*
Parents' Marital Status	-.201	≤.001*
Race	-.017	.098
Gender	.063	≤.001*

* $p \leq .001$

Summary

These multiple regression models all demonstrated that a modest, statistically significant relationship did exist between the independent variables when related to future earnings and educational attainment. However, in each case, the impact was negligible on both dependent variables and thus, no real, practical relationship existed.

Conclusion

Chapter 4 began with a description of the data collected for this study and the criteria used to select the participants. An analysis of three different statistical models followed.

Chapter 5 reviews the implications of the findings from the statistical analysis and outlines recommendations for future research and practice.

CHAPTER 5. DISCUSSION

The purpose of this study was to investigate the future value of interscholastic participation in extracurricular activities on the individual student level. In this study, two relationships were examined: (a) the relationship between high school student participation and postsecondary educational attainment, and (b) the relationship between high school student participation and future wage earnings. The previous chapter presented the results from the statistical models used in this study. This chapter summarizes the findings of the study and then discusses the meaning of the results. Next, this chapter highlights the implications of this research on educational policymakers, including a discussion of future research needs.

Discussion of the Findings

There were two primary research questions in this study. These questions were: (a) does a relationship exist between high school student participation in interscholastic activities and postsecondary educational attainment, and (b) does a relationship exist between high school student participation in interscholastic activities and future wage earnings? These questions are discussed below.

Postsecondary Educational Attainment

The findings from the statistical analysis conducted demonstrate that there is no practical relationship between participation in interscholastic activities and future educational attainment. In other words, participation in activities in high school makes an individual student no more or no less likely to achieve a higher or lower degree beyond high school. Even when controlling for parent educational level and family income when the student was in high school, the findings remained unchanged.

These findings represent an analysis of different levels of participation in high school. These included participation in both grades 10 and 12, along with a summary of high school participation. These levels of participation were further subdivided into categories featuring team sports, individual sports, cheer and dance participation, performing arts participation, athletic participation, and total participation. In each case, the findings were consistent: no relationship existed between participation and future educational attainment.

Compared to previous findings in literature, the findings in this study demonstrate only a slight deviation from the individual findings of different analyses as the research indicated moderate to limited correlations. Otto and Alwin (1977) first found a connection between the aspirations of educational attainment of 340 males who participated in high school athletics and noted a slight impact with respect to actual educational attainment. Eide and Ronan (2001) found a slight positive impact when examining participation and its impact on future educational attainment. The two found that those participating in interscholastic athletics were more likely to graduate from college.

Barron, Ewing, and Waddell (2000) examined two different data sets, finding in each a positive relationship between participation in interscholastic athletics and graduation from college. In their study, the three also pointed out that those in athletics in the study, also had a higher class rank.

Lleras (2008) found a similar statistical relationship between participation in interscholastic athletics and graduation from college using the NELS:88 data set. The sample in this study differed from Lleras' work in that it accounts for student participation across both the first and second follow-ups, when students were in Grade 10 and Grade 12, contrary to Lleras' work that focused only on participation in the Grade 10.

Troutman and Dufur (2007) also used NELS:88 to study educational attainment. Their work focused on a dichotomous variable, bachelor's degree attainment, as opposed to the measure of educational attainment in this study, which accounted for a educational attainment as a variable across the wide-spectrum of possibilities beyond high school (no degree, certificate, associate's degree, bachelor's degree, through a terminal degree).

In each examination of the research, there were some deviations from the research conducted in this study. First, the sample of this study was far more expansive in size and nationally representative, not just focused on a subset of a school district or section of society. Second, this study featured an analysis of different time periods in high school as well as a wide range of different activities, not just athletic activities. Finally, this study focused on participation, not a stratification of levels of participation (i.e. varsity, JV, etc.). All of these considerations led to a study that was much more representative of high schools at the time and presented a picture of reality across the board with respect to participation and future educational attainment.

Future Wage Earnings

The findings from the statistical analysis conducted demonstrate that there is no practical relationship between participation in interscholastic activities and future wage earnings. In other words, participation in activities in high school makes an individual student no more or no less likely to achieve a higher or lower wage beyond high school. Even when controlling for parent educational level and family income when the student was in high school, the findings remained unchanged.

These findings represent an analysis of different levels of participation in high school. These included participation in both grades 10 and 12, along with a summary of high

school participation. These levels of participation were further subdivided into categories featuring team sports, individual sports, cheer and dance participation, performing arts participation, athletic participation, and total participation. In each case, the findings were consistent: no relationship existed between participation and future wage earnings.

The literature surrounding the impact of participation in high school on future wage earnings was even less dramatically in support of participation as a stimulating change agent when compared to future educational attainment. Otto and Alwin (1977) and Eide and Ronan (2001) found at least some connection between participation in activities and future wage earnings, though their analysis of subgroups found some categories with positive results, others with very limited results, positive or negative. Barron, Ewing, and Waddell (2000) found virtually no connection between participation in interscholastic athletics and wage attainment. In other words, they found no connection between the two, consistent with this study.

Lleras (2008) found a similar statistical relationship between participation in interscholastic athletics and future wage attainment using the NELS:88 dataset. The sample in this study differed from Lleras' work in that it accounts for student participation across both the first and second follow-ups, when students were in Grade 10 and Grade 12 grades, contrary to Lleras' work that focused only on participation in the Grade 10. Lleras (2008) also focused solely on the wage earnings of the individual in 1999. This study utilized a variable focused on the current earnings rate of the respondent in 2000.

In all, it is important to point out the three differences in this study compared to those in literature, highlighted in a previous section. First, the sample of this study was far more expansive in size and nationally representative, not just focused on a subset of a school

district or section of society. Second, this study featured an analysis of different time periods in high school as well as a wide range of different activities, not just athletic activities. Finally, this study focused on participation, not a stratification of levels of participation (i.e., varsity, JV, etc.). All of these factors led to a study that was much more representative of high schools at the time and presented a picture of reality across the board with respect to participation and future wage earnings.

Summary

This study indicated no practical relationship between participation in interscholastic activities and future educational attainment and no practical relationship between participation in interscholastic activities and future wage earnings. In other words, the impact of participation in high school activities was negligible on future educational and wage attainment.

The answer as to why no practical relationship exists in this study can best be explained through the minimization of the value of activities. While supporters of interscholastic activities have long stated that activities are valuable, few have supported these claims with facts. This study would demonstrate that interscholastic activities are not as educational as once thought; interscholastic activities do not teach tangible skills that translate to future educational attainment and wage earnings; and the interpersonal and leadership skills professed as byproducts of participation do not translate to future success as once thought. Each of these assertions is likely true, as each statement in support of activities has long been supported only by the anecdotal claims of the successful beyond high school.

As has been stated throughout this study, very limited research exists surrounding this topic. NELS:88 contained data on a large number of students across a wide variance of populations, mixing both public and nonpublic schools along with students of a variety of demographic categories. The analysis of this dataset provided an opportunity to study this topic in yet another setting, accounting for different independent and dependent variables.

Implications for Educational Practice

The results of this study suggest, in contrast to the assertions by Lleras (2008) and others (Barron, Ewing, & Waddell, 2000; Eide & Ronan, 2001; Otto & Alwin, 1977) that no practical relationship exists between participation in interscholastic activities and future educational attainment and future wage earnings. In other words, the benefits of participation in interscholastic activities do not extend beyond high school, at least as it relates to educational attainment and future wage earnings.

In *The Case for High School Activities* (n.d.), the National Federation of High School Associations has identified three general benefits inherent to participation in high school extracurricular activities:

1. Extracurricular activities support the mission of schools.
2. Activities are inherently educational.
3. Activities have long-lasting effects.

Clearly, this research demonstrates that the “long-lasting effects” highlighted by the National Federation does not include the notion that interscholastic participation impacts future educational attainment or future wage earnings.

Impact of this Research Today

This study represents a challenge to the NFHS with respect to its third stated benefit of extracurricular activities that the organization has professed for years, that activities have long-lasting effects (NFHS, n.d.). While there may be intangible benefits that focus on interpersonal relations ranging from improved self-confidence to leadership development, this study demonstrates no tangible link between participation in interscholastic activities and future educational attainment or wage earnings.

In challenging economic times, such research might serve as a catalyst in some areas of the country to remove activities from the docket in a school district for purely financial reasons. However, in reality, there are few communities that would allow such a change to take place. Throughout America, high school activities are an integral part of the community, from the football game on Friday night to the school play on Saturday, the high school is at the center of community pride and spirit and it serves as much as a source of entertainment as an opportunity for students to learn. The simple thought of eliminating such participation in many areas would be unheard of in good times or bad.

Whether facing an economic challenge or not, schools and organizations such as the NFHS have an obligation to students and the youth of America to ensure that their educational experience is one of high quality. That education extends to interscholastic activities. In order to accomplish this, there are four distinct action items that leaders must understand and address with respect to extracurricular activities.

First, leaders must research activities. No longer can we rely upon the "rich and abundant folk-wisdom about the reasons for their [activities] existence and strength" (Schafer, 1969, p. 40). This research must focus on the future and present value of activities,

along with an update to the research in both areas with student data from today, not years past when activities were not as prevalent in our schools.

Leaders must critically examine participation to determine who is participating in school activities, when these students are participating, and why they are participating. This first hand knowledge, conducted at the local level will help local leaders determine how activities impact students in their locale.

Next, leaders must define the purpose of activities. Are activities merely a form of entertainment in a community, or is there something more to be gained by participation? No longer can the leadership in our schools and organizations that support activities accept the response of the status quo that activities are beneficial for kids. Leaders must ask the critical questions, are activities beneficial for kids and why?

Finally, using the knowledge gained through research and an understanding of the participant at the local level, leaders must take their purpose of activities and advance that knowledge to develop a mission statement for their activities program. That mission should be devised at the local level and assigned a degree of thought and importance equal to the importance of activities in a community. Measureable in its own way, this activities' mission statement must connect to the overall mission of the school district.

Research Activities

Only limited research exists on activities and most of that research has been conducted on the impact of activities' participation on what can best be referred to as present value. In attempting to answer the questions in this study, new questions were raised. In the NFHS' report, *The Case for High School Activities*, sixty reports are referenced, yet only four provide a connection to the future value of activities' participation. Many of these sixty

reports are referenced in this study and others like it not just because they are quality analyses, but also because they formulate the majority of the body of work related activities today.

Future Value

While this study references several studies that highlight future value (Barron, Ewing, & Waddell, 2000; Eide & Ronan, 2001; Lleras, 2008; Otto & Alwin, 1977), only limited research on the future value of participation in activities exists today. Much of the research that exists on future value stops at college entrance.

Such research includes that of Howard T. Everson and Roger E. Millsap (2005), who noted increased Scholastic Aptitude Test (SAT) scores for students who had participated in extracurricular activities, particularly minority students. Another study highlighted by the NFHS in *The Case for High School Activities* (n.d.), noted that the American College Testing service found that the one measure of success that proved most reliable was participation in activities, not grades or test scores. In that same report by the NFHS, the College Entrance Examinations Board's SAT scores were examined in much the same way with similar results. Students involved in activities or had jobs or hobbies outside of school were more likely to succeed at their profession (*The case for*, n.d.).

In each of these three cases, supporting participation in activities, it is hard to glean if activities were truly the only factor involved in promoting success. Even when controlling for other factors, it is possible that these students would have been the very students who scored high on these tests.

This study attempted to study the true future impact of interscholastic participation, not immediately after high school, or in high school when you consider that college aptitude

tests are administered in the final year of high school in most cases, but rather after high school and after college. Future research in this area needs to be completed not 8 years beyond high school, but 18 and 28 years beyond graduation to provide a better understanding of the long-term effects of participation on an individual. Eight years after college, many individuals may not have reached their life-calling and the impact of that participation years earlier may not yet be realized.

What is success? While this study assumes that success could be measured by future educational attainment and future wage earnings, there are a myriad of possibilities that could determine individual success. Such factors could include job satisfaction, overall life enjoyment, or the individual feeling that an individual's needs, or his or her families' needs are being met. Future research could focus on each of these less quantitative areas and their relation to interscholastic participation.

One final area related to participation includes an analysis of similar activities, not related to interscholastic participation. Research highlights that much is learned through participation to include hard work, time management, self-discipline, and teamwork, to name just a few as defined by the NFHS in *The Case for High School Activities*. However, there are other areas of life that can also promote these characteristics.

Future research in this area should include a comparative analysis of students who maintain jobs during school. It could also include analyses of students involved in school clubs or after school groups such as the Boy Scouts and Girl Scouts. It could also include analyses of students who are forced to stay home and help raise their family given their present situation in life. In each case, the results might be similar, or different when compared to interscholastic participation.

Present Value

The greatest amount of research related to participation in activities centers on present value. Schneider (2008), Sabatino (1994), McNeal (1998), Whitely (1999), Burnett (2000), and others all have touted the present value of participation in activities as it relates to school achievement and success.

There also is research that extends the present value beyond academic success measures to those of individual interpersonal and personal development. This includes the work of Hanson, Larsen, and Dworkin (2003) highlighting the growth of the individual socially and emotionally through participation. Broh (2002) found students involved in activities to be more social human beings. McNeal (1998) extended the work to include the development of values through participation in activities.

In each case, there are reports that support the notion that participation in activities improves academic achievement along with enhancing the interpersonal and personal development of those involved. However, as Jack Roberts, a former national leader in interscholastic athletics, noted in 2000, “for every positive statistic, there’s a negative one; for every positive slant, there’s a negative one; for every positive link, there’s a negative one” (Roberts, 2000). This is evident in the work of O’Reilly (1992) who found less than positive results when examining aspects of participation and academic achievement.

Additional research is needed in this area to promote greater understanding of the impact of interscholastic participation on the present value of academic and personal development. Along with additional research, we need action plans on how to use this information to promote both. For instance, if there is a true connection between in-season participation and academic achievement, schools and school administrators must find ways

to make additional offerings available to students that mirror programs already in place. This might include the development of additional sports teams or programs in the arts, or perhaps even clubs that function much the same way as traditional activities. If there is something to be gained through participation, schools and school administrators must find a way to provide more, diverse opportunities to all students.

Likewise, if research on present value uncovers negative connections between participation and academic achievement and personal development, something must be done to combat the negative results. Roberts (2000) cited reports that found males one or two years behind girls in reading and writing, yet these same males outnumbered females two to one in participation. The question “why” must be asked in this situation. School administrators may no longer take research at face value and accept that activities are positive for all students; school administrators must get inside the numbers and make individual determinations as to the impact of participation on students at their respective level.

Updating the Study

Much has changed in the world of activities in recent years. A study conducted at the conclusion of the 2006–2007 school year by the NFHS found that participation in high school athletics for that same school year rose by over 183,000 students to an all-time high of 7,342,910 students, a proportional increase of 2.49% over the previous year (“High school sports,” 2008, p. 53).

Given this changing environment in participation, the time for an update to this study is now. In such a new study, it would be best to analyze individual sports and activities independently, rather than basing information on a single variable related to participation.

This will help promote responses from participants that are more accurate, while generating information that is useful in the study of different activities in different locations.

In addition, the study should be extended well beyond the time period used in NELS:88. This will allow for life changes to take place beyond college and will provide an accurate picture of life for the individual studied. Included in this should be less tangible variable collections that include personal feelings about the current life position.

Summary

In the end, the body of work surrounding research involving participation in activities must be expanded. This study reviewed much of the literature that exists surrounding the subject of interscholastic participation as it relates to benefits for individual students involved. This research must focus on the present value, the future value, and it must be current.

Critically Examine Participation

The National Education Longitudinal Study of 1988 survey focused on a “clustered, stratified national probability sample of 1,052 public and private 8th-grade schools” (NCES, 2002, p. 6), featuring nearly 25,000 students. While this was “representative” of schools across the United States, it may not be applicable in each locale. Consider the state of Texas, where participation in high school football is much more important than other areas throughout the country. Or high school basketball in the inner-city of Chicago or New York, compared to rural areas across our country. Participation carries with it different meanings and different values in different places.

School administrators must understand participation in their locale. This includes a greater understanding of who is participating to include an understanding of the gender,

race, SES, and other demographic categories of each participant. By understanding who is participating, and who is not, combined with an understanding of other factors to include academic achievement, personal development, and behavioral issues, school administrators might be able to serve their students more effectively. This would include the expansion of activities to serve a certain subset of students or the elimination of other activities that might prove less beneficial, neither of which can be tied to the success or failure of the group in a competitive sense.

School administrators must understand why students participate. Much like it is expected that individual teachers might understand what motivates students, administrators must understand what motivates students with respect to activities. Are they participating for fun; do they feel this is their path to college; is this their parents' dream; or are they simply out to enjoy the experience and reap the benefits that others have told them participation brings? Each of these is a valid question that leads to a better understanding of the motivations of our youth with respect to activities. By understanding these motivations, school administrators can better communicate expectations, communicate realistic results, and evaluate their programs on the basis of whether or not they are meeting the needs of students.

Finally, school administrators must understand when students participate. Are students only participating at a young age? Are students simply trying out new activities in middle school or high school? Are students run off from activities by the need to be competitive as teams or individuals? Are activities taking too much time away from being a teenager? These questions all point to a greater understanding of the individual student's participation in terms of a time frame. If there is value in participation, administrators must

understand these trends related to the timing of participation to promote said positive participation and cease participation producing adverse results.

Together, an understanding of who is participating, why they are participating and when they are participating provides school administrators more of a picture of what is going on in their school with respect to interscholastic activities. If there is value in participation, there must be accountability with respect to ensuring that the positive aspects of participation are supported and the negative aspects are changed or eliminated.

Define the Purpose of Activities

The purpose of interscholastic activities is different in each setting. Mark Schneider (2008) outlined in *High School Today* that the mission of his activities program is in line with the mission of his school, “preparing today’s students for tomorrow’s world in a caring learning environment” (p. 8). In this setting, there is some value placed on participation, yet in others, budget cuts and tough decisions might make it seem like activities are less important. In San Jose, California, the school superintendent proposed a budget that eliminated athletics altogether at eleven city high schools, noting that he “did it because [he needed] to look at the academic programs we would not have if we keep sports” (Lemire, 2009, p. 18). In each case, a different value was placed on participation in interscholastic activities.

School administrators must decide what the value of interscholastic activities is to their school district and their community. As this study pointed out, the impact of participation on future wage earnings or educational attainment is not statistically correlated. However, there are other benefits that are described in literature. Most people feel that athletic activities benefit students in some capacity. These activities are fun, they are

enjoyed by many, and they generate a great sense of individual and group accomplishment. Community pride resonates much greater from a victory in a football game than from a victory in a spelling bee or math competition. These feelings of connection and pride in the local high school are present in any community and in any high school across this nation. Extracurricular activities are important, but at what cost?

Individual school administrators must make that determination on their own, using their own district and school as a guide. What is good for their students may or may not be good for all. While the NFHS highlights the benefits of interscholastic activities, citing three main benefits (extracurricular activities support the mission of schools, activities are inherently educational, and activities have long-lasting effects), these blanket statements may or may not apply in each educational setting. Administrators must take the time to analyze their own setting to determine the value of these activities for themselves.

Develop a Mission Statement

Combining the knowledge gained through the research of activities, both in terms of national data and value and local context, school leaders should move their purpose for activities into action through the development of a mission statement. Such a mission statement should be equivalent in importance and power, mirroring the importance of activities at the local level.

On the national and state level, the NFHS and its member state associations must assist in this process. First, these organizations must inform schools that the value of activities is not understood through reading anecdotal accounts highlighting the value of activities that are singular in nature, but rather through the fluent understanding of participation at the local level. Next, these organizations must provide support systems to

schools to assist them first in the collection and interpretation of such data, and next in the development of a mission statement. Such mission statements might address community needs, the value of participation by all students, the educational value of activities, and connecting participation to success beyond the school day and beyond high school graduation.

At the local level, school leaders must make the leap beyond accepting that activities are beneficial for kids because the status quo has supported that notion and move toward a better understanding of the value of participation at the local level. Weiss and Piderit (1999) studied 304 public schools and their mission statements and found that "by evading the conversation about the mission, managers take the mission as given and understood" (p.221). In many setting across America, the mission of activities programs within schools is just that, given and understood. However, the reality is that in many schools, there is no activities' mission at all or one that lacks roots in the educational needs of the students in a school and the needs of a community.

This study has revealed that there is no future value in interscholastic participation as it relates to future educational attainment and wage earnings. This serves as a wake up call to challenge the status quo at all levels that have worked under the blind assumption for years that activities are beneficial for kids.

Conclusion

The challenges facing educators today are many. From the challenges of No Child Left Behind, to the call for increased academic rigor in our high schools, coupled with an economy that can best be described as volatile, educators are forced to make tough decisions everyday.

This study outlines one area where more scrutiny may be warranted. In recent years, the National Federation of High School Associations has produced promotional materials in support of interscholastic activities. In their promotion, they have cited everything from increased academic achievement, in line with the work of Burnett (2000), to improved social and emotional skills for students involved, consistent with the work of Hanson, Larsen, and Dworkin (2003), to values beyond high school, highlighted by work such as that completed by Otto and Alwin (1977). In this study, that final benefit of an extension of value beyond high school proved nonexistent.

The message coming out of this study needs to be one of closer scrutiny and one of greater understanding. School administrators and educational policy makers must first understand that there is some value in participation in interscholastic activities. Whether that value is in the benefits gained by an individual as it relates to his or her academic achievement as was highlighted by Sabatino (1994), or the benefit of interpersonal development as highlighted by McNeal (1998). There is some value in participation, but the measure of that value is neither consistent across individuals or schools nor consistent in terms of the impact felt. Next, school administrators and educational policy makers must scrutinize their own programs. No longer should the broad benefits of participation be accepted by all. Rather, these benefits should be sought at the individual level by administrators, schools, and districts to determine the individual value of activities at the lowest level.

Jack Roberts (2000) closed his address in July of 2000 to a group of educational leaders, many of whom deal with activities on a daily basis by pointing out that “it’s the value of expectations; it’s the value of standards; it’s not merely the value of participation

that needs our attention.” If there is a higher standard for those in activities, perhaps the standard for all needs to be raised and perhaps, educational leaders need to ensure that all students, those actively participating and those not, reap the benefits of those expectations.

APPENDIX A

Definitions of Terminology

1. The Theory of Human Capital. This theory centers on the notion that an investment in human beings in terms of education, training, and other tangible and intangible items will improve cultural advancement and future earnings.
2. NELS:88. The National Education Longitudinal Study of 1988 is a 12-year longitudinal study featuring five different analysis periods of student performance, attitudes, and aspirations. The study followed a cohort of individuals from grade 8 in 1988 through the year 2000.
3. Educational Attainment. Educational attainment is the level of education that an individual achieves to and a degree received, if applicable.
4. Future Earnings. Future earnings refer to the wages an individual will earn for work at a future date.
5. Team Sport Participation. Participation in one of the following team sports: baseball, basketball, football, soccer, hockey, etc., for the individual's high school.
6. Individual Sport Participation. Participation in one of the following individual sports: cross-country, gymnastics, golf, tennis, track, wrestling, etc.
7. Cheerleading Participation. Participation in cheerleading for the individual's high school.
8. Pom-Pom/Drill Team Participation. Participation in either a dance or pom-pom squad or drill team for the individual's high school.

9. School Band/Orchestra Participation. Participation in the school band, orchestra, chorus, or other musical group for the individual's high school.
10. School Play/Musical Participation. Participation in the drama club, school play, or school musical for the individual's high school.
11. Secondary School. Refers to secondary education in the United States in grades 9–12.
12. Interscholastic. Refers to participation at the secondary school level among schools.
13. Interscholastic Performing Arts Participation. Participation in either the School Band/Orchestra and/or the School Play/Musical for the individual's high school.
14. Interscholastic Athletics Participation. Participation in a team sport, individual sport, cheerleading, and/or pom-pom/drill team for the individual's high school.
15. Participation in Interscholastic Activities. Participation in the interscholastic performing arts and/or interscholastic athletics for the individual's high school. This does not include participation in academic clubs and or groups affiliated with the curricular program of a school (e.g., a Chorus group that is part of a class offered during the school day). These activities are purely extra-curricular (occurring outside of the school day) in nature.
16. Post-secondary Education (PSE) Degree. This is the degree or certificate earned from any postsecondary institution (training beyond high school). This included the following 10 categories:
 - a. PSE experience, but no degree attained;
 - b. Attained certificate only;
 - c. Attained associate's degree only;

- d. Attained bachelor's degree only;
- e. Attained certificate and associate's degree, but not higher;
- f. Attained certificate and bachelor's degree, but not higher;
- g. Attained associate's and bachelor's degree, but not higher'
- h. Attained certificate, associate's degree, and bachelor's degree, but not higher;
- i. Attained master's degree, but not higher;
- j. Attained academic or professional doctorate.

17. Freshening. A term used in the NELS reporting describing the addition or individuals to the study population at each of the first three follow-ups.

APPENDIX B

Variables from NELS:88

F1S41AA	Played Baseball / Softball at school
F1S41AB	Played Basketball at school
F1S41AC	Played Football at school
F1S41AD	Played Soccer at school
F1S41AE	Participated on Swim Team at school
F1S41AF	Played other Team Sport
F1S41AG	Played an Individual Sport
F1S41AH	Participated in Cheerleading
F1S41AI	Participated in Pom-Pom / Drill Team
F1S41BA	Participated in School Band, Orchestra
F1S41BB	Participated in School Play, Musical
F2S30AA	Participated on a Team Sport in School
F2S30AB	Participated in an Individual Sport in School
F2S30AC	Participated in Cheerleading / Pom-Pom
F2S30BA	Participated in a School Music Group
F2S30BB	Participated in a School Play or Musical
F2SES1C	Socio-Economic Centile of the family
F2P7	Current marital status of the parent
F2P74	Total Family Income from all sources in 1991
F2PARED	Parent's highest education level
F4BRATE	Earnings rate current/recent job of the respondent
F4SEX	Gender of the respondent
F4RACEM	New definition of race-multiple choice
F4HHDG	Highest PSE degree attained as of 2000 of the respondent

Variables Created for this Study

F1TEAMSPORTS	Grade 10 Team Sports (F1S41AA, F1S41AB, F1S41AC, F1S41AD, F1S41AE, F1S41AF)
F1CHEERDANCE	Grade 10 Cheer / Dance Participation (F1S41AH, F1S41AI)
F1PERFART	Grade 10 Performing Arts (F1S41BA, F1S41BB)
F1SPORTS	Grade 10 Sports Participation (F1TEAMSPORTS, F1S41AG)
F1TOTALPART	Grade 10 Activity Participation (F1SPORTS, F1PERFART, F1CHEERDANCE)
F2SPORTSPART	Grade 12 Sports Participation (F2S30AA, F2S30AB)
F2PERFARTPART	Grade 12 Performing Arts Participation (F2S30BA, F2S30BB)
F2TOTALPART	Grade 12 Activity Participation (F2SPORTSPART, F2PERFARTPART, F2S30AC)
HSATHPART	High School Athletic Participation (F1SPORTS, F2SPORTSPART)
HSPERFARTPART	High School Performing Arts Participation (F1PERFART, F2PERFARTPART)
HSCHEERDANCEPART	High School Cheer/Dance Participation (F1CHEERDANCE, F2S30AC)
HSTEAMSPORT	High School Team Sports Participation (F1TEAMSPORTS, F2S30AA)
HSINDSPORT	High School Individual Sports Participation (F1S41AG, F2S30AB)
HSACTPART	High School Activities Participation (HSATHPART, HSPERFARTPART, HSCHEERDANCEPART)

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