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Understanding the Relationship between Interscholastic Sports
Participation and Labor Market Outcomes: Interscholastic
Sports as Cultural Capital

Matthew Linford

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Science

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ABSTRACT

Understanding the Relationship between Interscholastic Sports

Participation and Labor Market Outcomes: Interscholastic

Sports as Cultural Capital

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Master of Science

This research explores the effects of playing interscholastic sports on labor market income in the United States for males (n=5782) and females (n=6266) who participated in the National Education Longitudinal Study of 1988. Previous research has explored the effects of human capital and social capital on positive life outcomes for interscholastic athletes, but little research has looked into possible cultural capital advantages gained through interscholastic sports participation. Using multiple regression analysis and controlling for the effects of human and social capital, I examine whether participation in interscholastic sports operate as cultural capital. Results indicate that after net of controls the relationship between interscholastic sports participation and labor market income remains positive and significant for males who play sports and females who play the culturally popular sport of basketball. Results also indicate that those male student athletes who play culturally popular sports (football, basketball, or baseball) report more income six years after high school graduation than their counterparts who play a less culturally popular sport. This article provides evidence that cultural capital theory is a useful tool in exploring the relationship between interscholastic sports and labor market income.

Keywords: cultural capital, human capital, income, interscholastic sports, selection bias, social capital, sports participation

DISCLAIMER: The views expressed in this thesis are those of the author and do not reflect the official policy or position of the United States Air Force, Department of Defense, or the U.S. Government.

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Numerous studies in sociology and economics have shown that youth who participate in sport programs in school enjoy various positive benefits from their involvement. One area in which interscholastic athletes have been shown to benefit is in labor market positioning. Studies have shown that on average, students who participate in interscholastic athletics make more money in the labor market than those students who do not participate in interscholastic sports (Howell, Miracle, and Rees 1984; Long and Caudhill 1991; Ewing 1995). Although results of various studies have been mixed, overall, the positive link between interscholastic sport participation and labor market benefits are well established.

What has not been well established is why this association exists. Most of the studies in this area have focused on the human and social capital advantages gained by interscholastic athletes through their participation in sports. Although evidence does suggest that athletes gain advantages in human and social capital, it is unclear the role these advantages play in income differences seen between interscholastic athletes and non-interscholastic athletes. Due to the important role of sport in American society, it is vital to consider a third form of capital, cultural capital, which may be useful in helping understand why interscholastic athletes on average report more income than non-interscholastic athletes.

In order to further understand the relationship between interscholastic sport participation and labor market outcomes, I explore the relationship between labor market income and type of interscholastic sport played. Specifically, I explore whether those students who play a culturally popular sport in the United States (football, basketball, or baseball for men and basketball for women) benefit to a greater degree in the labor market six years after high school graduation than their counterparts who play other sports.

Interscholastic Sports and Labor Market Outcomes

The relationship between interscholastic sports participation and labor market income has been a topic of scholarly research for decades. Otto and Alwin (1977) found that interscholastic athletes reported significantly higher incomes 15 years after high school graduation than those who did not play interscholastic sports. Like much of the early interscholastic sport research, Otto and Alwin's sample included only male student athletes. Subsequent research strengthened the argument that for males, especially white males, participating in interscholastic sports positively affects income at various points after high school graduation (Howell, Miracle, and Rees 1984; Ewing 1995; Curtis, McTeer, and White 2005; Stempel 2006).

Although results from various studies have consistently shown a positive relationship between interscholastic sports participation and labor market income for white males, results for other races and females have been less consistent. Howell, Miracle and Reese (1984) found that only white males who participated in interscholastic sports reported a significantly higher income 11 years after high school. Long and Caudhill (1991) also found that males who participated in sports enjoyed wages four percent higher than those males who did not participate in sports, but no such wage premium existed for female athletes. Eide and Ronan (2001) concluded that this positive relationship existed for white, black, and Hispanic male athletes, but only white females reported significantly higher income over their non-sport playing counterparts. Other studies have shown that both black and white males and females who play interscholastic sports do report significantly higher income than their non-sports playing counterparts; however, the strength of this relationship is not as strong for females and black males as it is for white male athletes (Ewing 1995; Curtis, McTeer and White 2003).

To sum up the findings of previous research, it seems fair to conclude that early results attempting to show a relationship between interscholastic sport participation and labor market outcomes depended on the racial and gender breakout of the sample under exploration. However, as more advanced statistical methodology and large nationally representative datasets were used, a consistent positive relationship between interscholastic sport participation and labor market outcomes has been found. This relationship is consistently positive across race and gender; however, results indicate that not all races and genders benefit equally. White males have shown a larger on average income increase over black males and females of all races.

The fact that not all populations are benefitting equally from interscholastic sports participation may be an indicator that theoretical explanations need to look outside of the practical benefits of sports participation itself to gain a clear understanding of why interscholastic sport participation is associated with labor market benefits.

Selection Bias in Interscholastic Sports Participation

One of the biggest challenges with research into interscholastic sports participation and numerous life outcomes, including labor market positioning, has been to account for a selection bias evident in interscholastic sports participation. In terms of causal factors, there is an ongoing debate about the extent to which positive outcomes are a result of direct involvement in interscholastic sports or a product of other, related social factors.

On average, athletes tend to come from higher income families and it has been shown that students with better grades often self-select into extracurricular activities such as sports (Videon 2002; Miller, Melnick, Barnes, Farrell, & Sabo 2005; Hartman 2008). Factors, such as parental income, education, self-esteem, and locus of control are positively associated with both interscholastic sports participation and labor market income (Hartman 2008).

Parsing out whether the relationship between interscholastic sports participation and labor market outcomes is causal has been, and continues to be, a challenge to sports researchers. However, even after controlling for the effects of socio-economic status, type of school attended, race, gender, and other key variables, the relationship between interscholastic sports participation and labor market outcomes remains positive and significant, although the strength of the relationship is diminished after introducing the controls (Ewing 1995; Marsh & Kleitman 2002; Miller et al.2005).

Theoretical Interpretations

Although there has been wide agreement on the direction and in most cases the strength of the relationship between interscholastic sport participation and labor market income, there has been little consensus on why this relationship exists. “For most scholars, educators, and sports policy makers establishing the link between high school sports and life attainment is not the end of the discussion—only its beginning” (Hartman 2008: 9). Most of the current work in this area has been directed towards explaining why interscholastic athletes report higher income in the labor market. Scholars have attempted to explain this relationship from numerous theoretical perspectives.

One useful way of better understanding the relationship between interscholastic sports participation and labor market income has been to utilize the concept of capital. From an economic point of view, capital is “a stock (of wealth or property, or the value of either) existing at an instant of time” (Fischer 1904: 386). Sociologists have broadened this conceptualization beyond wealth and property to include any “accumulated labor” (Bourdieu 1997) and have developed conceptualizations of various types of accumulated labor to include human capital, social capital, and cultural capital. According to Bourdieu (1997), human capital, social capital,

and cultural capital can be accumulated throughout life and used to gain advantages in economic capital.

Using the concept of capital, it can be argued that interscholastic sports participation provides athletes with avenues to acquiring capital that are not available to their non-sport playing counterparts. These advantages are accumulated and used to gain advantages in the labor market after high school graduation. Most of the theoretical interpretations attempting to explain why the positive relationship between interscholastic sports participation and labor market outcomes exists can be categorized as either human or social capital theoretical explanations.

Human Capital

One of the main types of capital used to explain the success of interscholastic athletes in the labor market and other aspects of life has been human capital. The concept of human capital can be traced back to the writings of Adam Smith (1776), an 18th century moral philosopher and economist. In *The Wealth of Nations*, Smith argues that the reason wage rates differed among groups within a country was what he termed the equality of returns. According to Smith's theory, wage rates should be higher for trades that are more difficult to learn, because people would be unwilling to learn these trades unless they were compensated by a higher wage. This line of thought gave rise to the modern concept of human capital.

Human capital, in its simplest form, is development of human capability and productivity. The acquisition of any knowledge, skill, or experience that increases an individual's productivity or capability is an investment in human capital. Human capital can be acquired in a variety of ways, including job specific training, general and specific schooling, or through any experience that increases an individual's knowledge, skill, or ability and makes

them more productive in the work place (Becker 1994). The more human capital a person gains, the more rewards that person can demand from the labor market.

The question that many scholars have addressed, either directly or indirectly, is whether participation in interscholastic sports increases an individual's human capital. The answer appears to be a resounding yes. Human capital research has shown that education and training are the most important investments in human capital (Becker 1994). Student athletes enjoy many positive benefits in the education arena. It has been shown that after considering notable controls, on average, student athletes have higher grades, spend more time on homework, and are less likely to drop out of high school than their non-sport playing counterparts (Fejgin 1994; McNeal 1995; Eccles and Barber 1999; Videon 2002).

Student athletes are also more likely to continue and complete education beyond high school, increasing their opportunity to acquire human capital. Students who participated in interscholastic athletics are more likely to aspire to attend college, attend college, and graduate college than their peers who did not play high school sports (Barnes, Farrell, Melnick, Miller, and Sabo 1999; Troutman and Dufur 2007). From these findings, it appears as though participation in interscholastic athletics provides numerous benefits in education that increase the human capital potential of interscholastic athletes.

In addition to benefitting educationally, interscholastic athletes have also been shown to benefit physically and mentally from their participation in sports. Becker (1994) has argued that any investment or benefit in personal health is necessarily a form of human capital because health is essential for a productive worker. On average, interscholastic sports participants have higher self-esteem, a higher internal locus of control, and better physical health than those

students who do not play interscholastic sports (Kleiber and Hemmer 1981; Bobosz and Lee 1999; Marsh and Kleitman 2002).

Through sports participation, athletes are given the opportunity to learn how to work in a team environment, work under stressful conditions, develop and practice leadership skills, and many other opportunities which increase individual knowledge and skill leading to more human capital potential. According to Carlson and Scott (2005) sports participation enhances self-control, perseverance, and discipline that lead to positive outcomes in the labor market. These advantages can help interscholastic athletes become smarter, more capable, and better able to handle the academic, labor, and social demands of their environment (Kaufman and Gabler 2004). Armed with this human capital advantage, athletes have the potential to become more productive and thus more valuable in the labor market (Otto and Alwin 1977; Howell, Miracle, and Rees 1984; Long and Caudill 1991; Carlson and Scott 2005). From past research, it seems likely that at least a portion of the variance in labor market outcomes between interscholastic athletes and non-athletes can be attributed to advantages in human capital that interscholastic athletes gain through sports participation.

Social Capital

In addition to advantages in human capital acquisition, past research has also shown that interscholastic athletes gain advantages in social capital. Many sports researchers theorize that these advantages help explain a portion of the variance in labor market income between interscholastic athletes and non athletes. Bourdieu (1997) conceptualized social capital as, “actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (p. 246). Coleman (1988) focused less on membership within a group and more on the social relations, wherever

they may occur, as a means to developing social capital. According to Coleman (1988), social capital is productive, “making possible the achievement of certain ends that in its absence would not be possible” (p. S98). One way in which social capital has shown to be productive is in labor market outcomes. Social capital positively affects success within firms, leads to a higher rate of entrepreneurial success, and is associated with higher earnings (Siebert, Kraimer, and Liden 2001; Parks-Yancy 2008; Valdez 2008).

Interscholastic sports are an ideal place to acquire social capital in both group and non group settings. Interscholastic sports participation provides group membership, which promotes interpersonal relationships and extends peer networks (Hansen, Larson, and Dworkin 2003). These relationships and peer networks provide interscholastic athletes the opportunity to develop social connections and an environment to practice the skills necessary to cultivate these connections. In the sports arena, student athletes learn how to work together to achieve goals, foster social competencies, and develop leadership skills (Hansen et al. 2003) and then use these skills to foster social relationships. In a sense, the athletic arena becomes a laboratory for learning how to develop and utilize social capital in a setting similar to what is required in many labor market settings.

In addition to the expanded peer network provided by interscholastic sport participation, participation also provides athletes with special access to adult relationships, through coaches, athletic directors, trainers, and other community members (e.g. fans, broadcasters, reporters) (Coleman 1961; Otto and Alwin 1977; Coleman 1988; Broh 2002). These social connections provide athletes with access to assistance and knowledge that can be leveraged into benefits. As Coleman (1988) has shown, knowledge and assistance can flow across social connections allowing the transfer of human capital between nodes. This is especially useful in an adult-

adolescent relationship. For example, if a student athlete is struggling in math, multiple social connections with adults provide multiple access points from which special help and support can be accessed to improve math skills. A student with limited adult connections may be forced to rely on the human capital possessed by their parent(s). If the needed capital does not reside in the family, that student may be limited in how to obtain help in math.

Not only does the flow of knowledge and assistance across nodes help create human capital, it can also provide access to gatekeepers within society. A gatekeeper facilitates access to valuable resources. Increasing the number of social connections available to a student, especially connections with adults, provides increased access to gatekeepers who provide valuable access to resources, such as college or jobs (Stempel 2006).

Sports theorists utilizing social capital argue that these social capital advantages, gained through interscholastic sports participation, provide interscholastic athletes with human capital advantages, social capital advantages, and improved access to the labor market. These advantages help create the advantages in the labor market that lead to higher average income for interscholastic athletes (Otto and Alwin 1977; Carlson and Scott 2005). Literature provides strong support for human and social capital interpretations into why the positive relationship exists between interscholastic sports participation and labor market income. However, the combination of human and social capital, combined with selection effects does not fully account for the variance in reported income between interscholastic athletes and non-athletes. What is not accounted for in these theoretical interpretations is how interscholastic sports operate as cultural capital. Because of the importance of sport in American culture, interscholastic athletes may be receiving benefits for knowledge and skill in a culturally important area rather than for the practical advantages gained in human and social capital. Cultural capital may be a useful

theoretical perspective in conceptualizing the relationship between interscholastic sports participation and labor market benefits.

Interscholastic Sports as Cultural Capital

Cultural capital is another concept attributed to Bourdieu. From his earliest conceptualization of cultural capital, Bourdieu (1978) posited that sport functions as a form of cultural capital. In his work on sport, Bourdieu demonstrated how different classes and class fractions use sports, done in rarified ways and at exclusive venues, in order to distance themselves from others (1977). According to Bourdieu, cultural capital is “the appropriation of symbolic wealth socially designated as worthy of being sought and possessed” (Bourdieu 1977:488). In operationalizing this concept, Bourdieu highlighted a number of measures that could be used to measure cultural capital. These examples included museum visits, reading habits, theatre attendance, classical music interpretation, and other “high brow” cultural activities (Bourdieu 1977). Using the “high brow” conceptualization of cultural capital, sports researchers have focused on how “high brow” sports, such as golf, are used for social or cultural exclusion (Scheerden, Vanreusel, and Taks 2005).

In a seminal work, Lamont and Lareau (1988) expanded this conceptualization and offered a definition important to the study of sports as cultural capital. They defined cultural capital as “institutionalized (i.e. widely shared) cultural signals, attitudes, preferences, formal knowledge, behaviors, goods, and credentials used for social or cultural exclusion” (p. 153). In this way, cultural capital is used as a resource that provides access to scarce rewards. Lamont and Lareau’s definition, which will be used as a working definition in this paper, subtly broadens the focus that has dominated cultural capital research (see Lamont and Weininger 2003) from purely “high brow” activities to include “high status” activities. This is important because it

allows markers of cultural capital to be defined more by the value that the society or culture places upon the marker rather than the place of that marker within the social structure. This slight shift broadens the focus of cultural capital and allows the inclusion of “high status” cultural markers in addition to the more common “high brow” cultural markers.

The first evidence that points towards interscholastic sports operating as cultural capital comes from James Coleman’s (1961) classic book, *The Adolescent Society: The Social Life of the Teenager and its Impact on Education*, which many consider the foundation of interscholastic sports research. In his study of high school social systems, Coleman found that status within the school social system can be determined by several factors including athletic achievement, good looks and dressing well, doing well in school, maintaining a good reputation, having a car, and having knowledge about popular songs. Of these factors, involvement in interscholastic athletics was the strongest predictor of position within the school social system.

Coleman’s research was one of the first to address the cultural aspect of sports in American youth society and the possible cultural advantages to being involved in interscholastic sports. Of particular significance for this study, Colman found that it was not necessarily the best athletes that rose to elite positions within the school social system, but it was those students who were viewed as the most athletic by their peers that rose to positions of high status. This finding alludes to the possibility that individuals gain benefits for something the culture finds important (cultural capital), not necessarily from the knowledge, skills, or experiences (human capital) gained through participation in the activity itself.

Curtis, McTeer, and White (2003) were the first to link the concept of cultural capital to the relationship between participation in interscholastic sport and labor market income. They found that for males, participating on a “team sport” in high school was positively associated

with higher adult earnings. The relationship between adult earnings and “team sport” participation for females was considerably weaker and not statistically significant, except for a small portion of females who pursued their education past high school but did not complete college. They theorized that success in high school sport is carried into adulthood as symbolic power of reputation; or the embodied cultural capital of an athletic physical body, and through the displays of sporting knowledge, language, and sensibility which are recognized as “self assured” or “team player” by gatekeepers which provide benefits in the labor market (Stempel 2006).

In a series of papers, Stempel (2005; 2006; 2008) expanded this area of research by more fully exploring the gender differences in sport participation and labor market income. In his research, Stempel concluded that the dominant classes use strenuous aerobic sports, moderate levels of weight-training, and competitive sports in order to draw boundaries between themselves and the middle and lower classes. In much of Stempel’s research, and in other studies linking sports and cultural capital, the field of exploration has been adult sport participation and viewership. Currently there appears to be no research directly linking interscholastic sports participation and cultural capital.

Although there are no direct links between interscholastic sports as cultural capital and labor market outcomes, there are several good reasons to suggest this relationship may exist. Multiple studies have shown that adult participatory sport operates as a form of cultural capital and that this cultural capital is used to provide access in the labor market (White and McTeer 1990; Thrane 2001; Stempel 2006). There is also a direct link between adolescent sport participation and adult sport participation. Engstrom (2008) argued that adolescent sport participation creates a sport habitus that is directly associated with sport participation and

exercise habits in adulthood. Habitus, as defined by Bourdeiu (1977) is a system of lasting, transposable acquired schemes of perception, thought and action. Interscholastic sport operates as cultural capital in cultivating the development of a sporting habitus that is recognized as valuable in the labor market. Participation in interscholastic sports also provides important credentials, verifying knowledge or skill in a given sport. As has been argued by Lamont and Weininger (2003) these credentials can be important markers of cultural capital.

Like human and social capital, cultural capital has also been shown to be a predictor of income (Konrad and Szelenyi 1996; Throsby 1999). Konrad and Szelenyi (1996) argued that cultural capital is transformed into advantages in income by marking competence in “high status” culture. Advantages in prestige associated with a habitus and marked with education credentials in “high status” markers were rewarded with entry and promotion in the labor market. If interscholastic sports participation operates as a form of cultural capital, I would expect interscholastic athletes to have developed a sporting habitus which is marked with the specific credential of having played interscholastic athletics, and that this cultural capital is rewarded in the labor market.

One of the biggest challenges in attempting to show whether interscholastic sport operates as cultural capital is developing a measure for cultural capital. The first step in determining whether sports operate as cultural capital is to determine if there is a positive relationship between interscholastic sports participation and labor market income after we have controlled for the selection bias evident in interscholastic athletic participation, human capital advantages, and social capital advantages, which have already been shown to be an important predictor of labor market income for interscholastic athletes.

***Hypothesis 1:** Students who participate in interscholastic sports will report significantly higher income six years after high school graduation than those students who do not participate in interscholastic athletics after controlling for the effects human capital, social capital, and the selection bias of interscholastic sports participation.*

Defining Culturally Popular Sports in the United States

Determining whether a positive relationship exists between interscholastic sports participation and labor market income after controlling for human capital, social capital and selection effects is an important indication that interscholastic sports may be operating as cultural capital; however, we still must determine whether this association is best understood through cultural capital. Although it is impossible to control for all of the human and social capital advantages, one way to explore the utility of cultural capital theory is in the exploration of the type of sport played. If we assume that any social or cultural capital advantages or other mediators not captured in our model are relatively equal across sports, exploring income differences across sports should help us understand whether interscholastic sports are operating as cultural capital.

Although all sports enjoy a relatively “high status” position within American society, some sports enjoy higher status than others. If interscholastic sport participation is operating as cultural capital I would expect to find that those student athletes who play a “higher status” or more culturally popular sport in American society benefit to a greater extent in the labor market than their peers who play other sports. Going back to Lamont and Lareau’s (1988) discussion of cultural capital, the status of the sport in a given culture should affect the amount of cultural capital provided by credentials in that sport. Those sports with a “high status” within a society

should carry more importance in that society and provide access to larger amounts of cultural capital than “lower status” sports.

The importance and status of certain sports in American culture is largely evident in the amount of time and money spent in sports participation and viewership. The largest, most popular sports in America boast numerous globally recognized star athletes making millions of dollars. These sports also draw fan bases in the millions and enjoy billions of dollars in revenue. For example, in 2007, the Super Bowl, the championship game of the National Football League, America’s premier professional football league, was watched by over 97 million people worldwide. On average, a 30 second television commercial aired during the Super Bowl cost advertisers \$3 million (Smith 2009). Evidence such as this highlights the importance of football in American culture.

Although sports are popular throughout the world, the types of sports that are viewed as culturally important differ across countries and cultures. Soccer holds cultural importance throughout much of the world, yet has little cultural importance in the United States. Rugby is very important in Australia and yet finds little fan support in the United States. In addressing possible differences in cultural capital across sports, it is necessary to define the culturally popular sports in the United States. In order to define culturally popular sports in the United States, I use three indicators of “high status”: youth participation, fan base, and revenue.

According to the National Federation of State High Schools, the four most popular sports in 2008, by number of participants, were football, basketball, outdoor track and field, and baseball (NFHS 2009). Football is by far the most popular boasting well over 1 million participants. Basketball, track and field, and baseball all averaged close to 500,000 participants.

Based on revenue numbers, the three largest revenue producing sports in the United States are the National Football League, Major League Baseball, and the National Basketball Association respectively (Badenhausen, Ozanian, and Setteni 2007; Badenhausen and Ozanian 2008). According to Nielsen Ratings, a television audience measurement system developed by Nielsen Media Research, the four most watched sports in the United States are football, NASCAR, basketball, and baseball respectively (2009). Because NASCAR is not a sport available in an interscholastic setting, it was dropped from consideration as a culturally popular sport for this analysis.

With evidence gathered in each of the three main areas, the three most culturally popular sports in the United States are football, basketball and baseball. Although track and field was ranked high in youth participation, it failed to score high in either revenue or fan base and was thus not considered a “high status” sport. If Lamont and Lareau's (1988) conceptualization of cultural capital as “high status” is correct, I would expect that athletes who participate in football, basketball, or baseball to benefit to a greater extent in the labor market than those athletes who participate in other sports.

***Hypothesis 2:** Interscholastic athletes who participate in culturally popular sports (football, basketball, and baseball) will report significantly higher income six years after high school graduation than those interscholastic athletes who participate in less culturally popular sports.*

Unlike the previous hypothesis, introduction of Hypothesis 2 creates significant issues across gender. Females are excluded from participation in two out of three of the culturally popular sports as defined in this paper, with females accounting for less than .001 percent of high school football players and .01 percent of high school baseball players (NFHS 2009). Also, it has been argued that sports operate as cultural capital differently for males and females. Stempel

(2006) argued that fitness sports such as running, swimming, and biking are utilized as cultural capital more often for women, while competitive participatory sports, such as golf, tennis, and basketball, operate as cultural capital more often for men, especially upper middle class men. Unfortunately, the current data does not allow me to measure fitness sport participation at the high school level.

Although the data contains limitations to exploring how interscholastic sports operate as cultural capital for females, females do enjoy relatively equal access to the popular sport of basketball. Because basketball holds a “higher status” in American culture than other interscholastic sport opportunities available to female athletes I would expect to be able to show differences in income between female athletes who play interscholastic basketball and those who play other sports. In order to take into account gender differences in access to popular sports and possible cultural capital differences, Hypothesis 2 will be separated into two hypotheses to test whether culturally popular sports provide additional cultural capital to interscholastic sports participants.

***Hypothesis 2a:** Male interscholastic athletes who participate in culturally popular sports (football, basketball, and baseball) will report higher income six years after high school graduation than those male interscholastic athletes who participate in less culturally popular sports.*

***Hypothesis 2b:** Female Interscholastic athletes who participate in the culturally popular sport of basketball will report significantly higher income six years after high school graduation than those female interscholastic athletes who participate in less culturally popular sports.*

Methods

Data

To examine these hypotheses, I use the National Educational Longitudinal Study of 1988 (NELS: 88). The NELS: 88 is a nationally representative, longitudinal study sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education. The base year study, conducted in 1988, used a stratified, clustered, national probability sample, of 1052 private and public schools and 24,599 eighth graders. A sample of these respondents was resurveyed during four follow ups conducted in 1990, 1992, 1994, and 2000. The fourth wave, conducted in 2000, included responses from 12,144 respondents, representing a population of 2,494,866 individuals who were in eighth grade in 1988 (Carlson and Scott 2005).

There are several advantages to using the NELS: 88 data to explore these hypotheses. The largest advantage comes from the multiple variables that the NELS: 88 uses to measure high school athletic participation. Unlike other national data sets commonly used in educational research, such as the National Longitudinal Survey of Youth or the High School and Beyond series, the NELS: 88 contain data on what type of sport the respondent played. This added level of depth in measuring interscholastic sports participation allows for a more in-depth exploration into the relationship between interscholastic sports and labor market income.

In addition to added depth in interscholastic sport measurement, the longitudinal nature of the NELS: 88 allows labor market income, the main dependent variable in this study, to be measured six years after high school graduation, giving most participants time to complete an initial level of post secondary education and to have been participating in the labor market for several years. Finally, the NELS: 88 contain a wide array of individual and school level variables. These variables can be used to construct control variables to help control for the selection effects of interscholastic sports participation mentioned above, and for the effects of human and social capital that have also been shown to affect labor market income.

Although there are several advantages to the NELS: 88 dataset, there are also disadvantages that must be addressed. One disadvantage with this dataset is it does not include multiple measures of my dependent variable, labor market outcomes. Although data was collected on labor market earnings in the fourth follow up, some literature has shown that labor market outcomes are better measured by including other measures such as how many employees the respondent supervises (Ewing 1995). Because the NELS: 88 does not contain additional measures for labor market outcome, I will be limited to using income as the main determinant for labor market outcomes.

Second, the NELS: 88 dataset does not allow for development of social capital controls outside of those developed in school and only provides limited development of human capital in the years following high school. Capital development is not limited to the school years or to the school setting (Dufur, Parcel, and McKune 2008). Capital developed outside of school could have a large impact on labor market income. However, because there are not measures or variables in the NELS: 88 that could be used to construct measures of capital developed outside of school, I will not be able to control for this aspect of both human and social capital.

Finally, as has been discussed above, the NELS: 88 does not adequately differentiate type of sport involvement to the level to be able to differentiate participation in fitness sports, such as track and field and swimming, without grouping them together with other individual and team sports such as soccer and wrestling. Therefore, I will only be able to address cultural capital gained through participatory competitive sports which have been shown to be more important for males.

Measures

Dependent Variable

Log Income, the dependent variable for all models in this study is a continuous variable created from the respondent's report of income, measured in dollars, in 1999. Because the actual reported income was not normally distributed and violated an assumption of multiple regression analysis, the dependent variable was created by taking the natural log of the actual reported income to better approximate the assumed distribution. Because the natural log of 0 is undefined, I added 1 to all respondent's income prior to taking the natural log. This approach is supported by numerous past studies which have also used income as the dependent variable (e.g. Long and Caudill 1991; Ewing 1995; Carlson and Scott 2005).

Cultural Capital Variables (males)

Three main independent variables were used to as markers of cultural capital to test my hypotheses for males. The first independent variable, *Played Sports*, is a dichotomous variable that measures whether a respondent participated in interscholastic athletics. This variable is a holistic measure of sports participation. Any participant who reported participation in a sport in 10th grade was coded as 1. All other participants were coded as 0.

In order to further explore how interscholastic sports operate as cultural capital; this independent variable was broken into two mutually exclusive independent variables for further analysis. *Popular Sport*, is a dichotomous variable that measures whether the respondent participated in football, basketball, or baseball in 10th grade. The data set limited this variable to data collected in 10th grade, which was obtained during the second follow up because variables measuring type of sport played were dropped from the third follow up conducted during the participants 12th grade year. Participation in any of the three sports at either the junior varsity or varsity level was coded as 1. Although keeping junior varsity and varsity separate during analysis may have added further insight into the relationship between the amount of knowledge

or skill in a culturally popular sport and income, they were kept together because the large majority of athletes in my sample participated in interscholastic athletics on the junior varsity level during 10th grade. Many of these athletes may have gone on to participate at the varsity level in 11th or 12th grade, however because these variables were dropped during the third follow up, it would be impossible to parse out who had varsity experience prior to high school graduation.

Participation at the intramural or other level outside of school was viewed as non-participation, as research suggests that intramural or other outside of school athletic involvement does not carry the same level of benefits of interscholastic sports participation (Carlson and Scott 2005) and because intramural athletics do not provide the same credentials of interscholastic sports participation. Non-participation in any of the three sports was coded as 0.

In my original analysis I attempted to keep football, basketball, and baseball separate to see if there were also differences among the most popular sports in regards to labor market outcomes; however, due to high levels of multicollinearity among these three variables, which violates an assumption in multiple linear regression, they were combined into one variable which alleviated the multicollinearity. The multicollinearity issue makes sense, because numerous athletes play football in the fall, basketball in the winter, and baseball in the spring¹.

The second independent variable, *Other Sport*, is a dichotomous variable that measures whether the respondent participated in any other sport besides the three culturally popular sports in 10th grade. These sports included, soccer, swimming, other team sport (volleyball, lacrosse, hockey etc), and individual sport (tennis, golf, wrestling, etc.). Participation in any of these

¹ Multiple sport participation was very common during the time period in which these data were obtained (1992). Anecdotal evidence suggests that many interscholastic athletes today are specializing more often in one particular sport. Multiple sport athletes might be less common if the data were taken from today's youth, making the collinearity issue less of a problem.

sports at either the junior varsity or varsity level was coded 1. Participation at the intramural or other level outside of school was viewed as non-participation. Non-participation in any of these sports was coded as 0². In order to ensure that these two independent variables were mutually exclusive, respondents who participated in both a culturally popular sport and another sport, were coded as participating in *Popular Sport* and were coded as non-participants in *Other Sport*.

Cultural Capital Variables (females)

As explained above, females do not have access to the majority of culturally popular sports in the United States. Because females are not given access to football and baseball and because evidence suggests that there are different processes going on for men and women in the operation of interscholastic sports as cultural capital; the variable *Popular Sport* was replaced by the variable *Basketball* in the female models. *Basketball* is a dichotomous variable that measures whether the respondent participated in *Basketball* in 10th grade and was coded the same way as male *Popular Sport* with participation in basketball at either the junior varsity or varsity level being coded a 1 and non-participation being coded a 0. As in the male models, *Other Sport* for females is a dichotomous variable that measures whether the respondent participated in any other sport besides the culturally popular sport in high school.

Human Capital Variables

Evidence suggests that human capital advantages strengthen the relationship between interscholastic sports participation and labor market income. In order to determine whether the concept of cultural capital is a useful concept in understanding this relationship, human capital advantages gained through sport participation or other means are controlled for. Researchers

² In a separate analysis not reported here I used three independent variables: *Popular Sport*, *Other Sport*, and *Both*. These variables were used to measure any additive affect from playing both a popular sport and another sport. However, there was no statistical difference between *Both* and *Popular Sport* in the analysis so the variable *Both* was dropped from the final analysis.

attempting to measure human capital have often looked to measures of individual skill and ability such as aptitude tests and grades, as well as time spent on homework or other activities. These activities have been recognized as improving human capital potential (Leeds, Miller, and Stoll 2003). Previous research also indicated that income in the labor market was dependent upon school performance (e.g. Otto and Alwin 1977; Howell, Miracle and Rees 1984; Long and Caudill 1991; Carlson and Scott 2005), locus of control, and postsecondary education (Ewing 1995).

In order to control for human capital gained through education, I use three variables: *Standardized Test Scores*, *Post-Secondary Grades*, and *Education Level*. *Standardized Test Scores* is a continuous variable created from a combination of student's scores on standardized tests in reading, math, and science in the 10th grade. Because the distribution of *Standardized Test Scores* was not normally distributed, I took the natural log of the reported score which helped normalize the distribution. The log of Standardized Test Scores ranged from a low of 3.44 to a high of 4.51.

Post-secondary Grades is a categorical variable designed to measure how the participant performed academically in college. This variable included seven categories ranging from 1 (mostly D's) to 7 (mostly A's). To control for those respondent's who did not attend college, the variable *Education Level* was developed. *Education Level* is a dichotomous variable measuring post-secondary education attainment. Respondents who had completed a bachelor's degree or higher education were coded as 1. All other respondents were coded as 0.

In addition to controlling for human capital developed through educational experiences, I also attempted to control for other possible forms of human capital. Two main variables that have been shown to be positively associated with both interscholastic sports participation and

labor market outcomes were used as controls: *Locus of Control* and *Self-Concept*. *Locus of Control* is a continuous variable created from a composite of NELS survey responses. This variable is designed to measure the level to which the participant felt that personal outcomes were contingent upon personal actions (internal locus of control) or events outside of personal control (external locus of control). This variable is a continuous variable which ranged from a low of -3.1 to a high of 2.7, with a more positive number denoting a more internal locus of control. *Self-Concept* is a continuous variable created from a composite of NELS survey responses. This variable is designed to measure how a participant felt about self worth, self esteem, and ability. This variable ranged from a low of -3.6 to a high of 1.23 with a more positive number denoting a higher self concept.

Social Capital Variables

In addition to human capital being used to gain advantages in the labor market, there is also evidence to suggest that social capital is used to gain advantages in the labor market. Ideally, it would be beneficial to control for social capital developed during the schools years and in the years after high school as social capital development is not limited to the school years or the school setting (Dufur, Parcel, and McKune 2008). Unfortunately, the data set only contains sufficient data to develop measures of social capital developed during the school years. In order to attempt to control for social capital I will use four variables developed by Broh (2002) designed to measure social capital between the respondent and their teacher, between the respondent and their parents, between the respondent's parents and the school, and between the respondent's parents and the respondent's friends parents.

Talk with Teacher is a dichotomous variable that is designed to measure whether or not the respondent talks with their teachers outside of class. This variable was developed from two

respondent's teachers' reports of whether the respondent talked with them outside of class. If the respondent's teachers responded yes, the respondent was coded as a 1. If the respondent's teacher responded no, the respondent was coded as a 0. *Talk with Parents* is a continuous variable which measures how often the respondents talk with their parents about school courses, activities, and studies. This variable ranged from 0 to 9 with a larger number denoting a higher frequency of talking. *Parent Contact with School* is a continuous variable designed to measure the frequency of contact between the parent and school during the previous school year. This variable also ranged from 0 to 9 with higher numbers denoting a higher frequency of contact. *Parents Talk with Friends' Parents* is a parent report of how often they talked to their children's friends' parents about things going on at school, their children's educational plans, and their children's career plans. This variable ranged from 0-11 with higher numbers denoting more contact.

Individual Control Variables

According to previous research, there is a selection bias in who plays high school athletics. Race, gender, and socio-economic status play a significant role in who participates (Hartman 2008). In order to control for this selection bias, a number of control variables were included in the model. *Financial Capital* is a continuous variable created using a NELS: 88 composite of report of education, parent's occupation, and total household income. This variable ranged from -3.1 to 2.7 with a more positive number denoting more financial capital. A set of dummy variables was created for race which separated the respondents according to their self-reported race. Possible racial categories included *Asian or Pacific Islander*, *Hispanic*, *Black*, *White*, and *Native American*. *White* was used as the control group. The sample was separated

according to gender and analyzed separately for males and females in order to explore differences across gender.

School Level Control Variables

In addition to individual control variables, previous research also indicated that labor market income could vary based on a variety of school level variables. In this analysis I control for school location and school type. In order to control for school location, I developed a set of dummy variables based upon the regional location of the school. The dummy variables included *Midwest*, *South*, and *West*, with *Northeast* being used as the control group. To control for school type, I created a dichotomous variable, *Private*, that defined the type of school attended in 10th grade. Respondents who attended a private school were coded as 1 and respondents that attended a public school were coded as 0.

Table 1 about here

Analysis

In order to test my hypotheses, I first determined whether a significant relationship existed between interscholastic sports participation and labor market incomes after including the net of controls. In order to do this, I developed four models which added groups of control variables to determine the effect of each group of controls on the relationship between interscholastic sports and labor market income. I ran a multiple linear regression using Ordinary Least Squares (OLS) regression on each model. Multiple linear regression is a technique that allows for an estimation of an association between one or more independent variables and a single dependent variable (Hoffmann 2005). Because respondents were nested within schools, I ran regression analyses using school ID as a cluster variable, which allowed me to compute robust standard errors.

In Model 1, I regressed interscholastic sports participation on labor market income with no control variables. In Model 2, I added control variables attempting to control for the selection bias evident in interscholastic sports participation. In Model 3, I added human capital control variables to the other control variables. In Model 4, I added social capital control variables to the control variables added in Model 2 and 3.

After exploring the relationship between interscholastic sports participation and labor market income for interscholastic sports, I separated the independent variable *Played Sports* into two mutually exclusive independent variables, *Popular Sport* and *Other Sport*, measuring whether the athlete participated in a culturally popular interscholastic sport. Type of sport played was used as a marker of cultural capital. I re-ran the four models developed above using the two new independent variables. Finally, in order to explore the differences across types of interscholastic sports participation in more depth, I used *Other Sport* as the excluded category to explore whether differences across sports were statistically significant. Each of these analyses was performed separately for males and females. This was done because of the differences in participation access across gender and to explore cultural capital differences across gender.

Sample

The response rate on survey questions used to construct variables for this analysis differed, resulting in varying amounts of missing data across my variables of interest. The presence of missing data has been cited as a frequent source of difficulty in statistical practice (Carlin, Li, Greenwood, and Coffey 2003). In order to address missing data, I use multiple imputation, a technique introduced by Rubin (1987). In this method, instead of replacing missing values with a single value or deleting cases that have missing data in any of the variables of interest, multiple imputation replaces missing values with plausible values that represent the

uncertainty of the right value to impute (Carlin et al. 2003). These plausible values are imputed into multiple data sets. For my analysis, a total of five data sets were created. The multiple datasets were then combined and analyzed. After applying multiple imputation techniques, the remaining sample was separated into male (n=5782) and female (n=6266) participants and analyzed separately according to gender.

Whites account for the majority of the sample, making up 70.3 percent of the male sample and 68.2 percent of the female sample. The remaining racial breakdown for male respondents included 13.8 percent Hispanic, 8.8 percent African American, 6.1 percent Asian or Pacific Islander, and 1.21 percent Native American. The female racial breakout of the sample is similar with Hispanics accounting for 14.8 percent of the sample, African Americans 10.1 percent, Asians or Pacific Islanders 5.83 percent, and Native Americans 1.01percent.

Overall, 57.3 percent of the male sample participated in interscholastic sports, with 39.2 percent playing at least one culturally popular sport and 18.1 percent playing only another sport. 36.1 percent of the female sample participated in sports, with 17.8 percent playing basketball and 18.3 percent playing another sport. Participation rates differed slightly across race for both the males and females. The largest difference for males was seen in the number of Asian and Pacific Islanders participating in a culturally popular sport with only 28 percent participation compared with at least 39 percent participation among the other races. Female popular sport participation was significantly less for Asian and Pacific Islanders and Hispanics with only about 11 percent of those samples participating in basketball compared to at least 17 percent participation among the other races.

Table 2 about here

Results

Males

Model 1 explored whether male interscholastic athletes in general report higher income six years after high school graduation than their non-sport playing counterparts. This model included no control variables. In the absence of controls *Played Sport* had a β of .221. Because the dependent variable in this and other models was logged, I was able to use a percent change formula $((\exp \beta - 1) * 100)$ to interpret β as a percent change. On average respondents who played interscholastic sports reported an income 24.7 percent higher than those respondents who did not play interscholastic sports. These results were significant at the .001 level. However, this model accounted for less than 1 percent of the variability in labor market income with an Adjusted R^2 of .005³.

Model 2 added control variables specifically controlling for the selection bias evident in interscholastic sports participation. After adding the control variables for economic capital, race, school type, and school region, *Played Sport* had a β of .111. On average, after controlling for the selection bias in interscholastic sports participation, male athletes reported an annual income 11.7 percent higher than those respondents who did not play interscholastic sports. These results were significant at the .001 level. Using nine variables, Model 2 accounted for 2.2 percent of the variability in labor market income with an Adjusted R^2 of .022. These results support previous studies that showed a positive relationship between interscholastic sports participation and labor market income.

Model 3 added control variables specifically controlling for human capital advantages. After adding control variables *Standardized Scores*, *Locus of Control*, *Self Concept*, and *Post-*

³ Given that the analysis was run on a multiple imputed data set that did not allow for a combined R^2 , Adjusted R^2 , or F-value, the values reported here were derived from an average of each of the values taken from the 5 datasets individually.

Secondary Grades to Model 3, *Played Sports* had a β of .095. Controlling for selection bias and human capital advantages, on average male interscholastic athletes reported an income 9.9 percent higher than those male respondents who did not play interscholastic sports. These results were significant at the .001 level. Model 3 accounted for 3.3 percent of the variability in labor market income with an Adjusted R^2 of .032.

Model 4 added control variables controlling for social capital advantages gained through interscholastic sports participation. Adding control variables *Parents Network*, *Talk with Teacher*, *Parent Contact with School*, and *Talk with Parents*, *Played Sports* had a β of .097. Controlling for the effects of selection bias, human capital, and social capital, on average, respondents who played interscholastic sports reported an income 10.0 percent higher than those respondents who did not play sports. These results were significant at the .001 level. Model 4 accounted for 3.1 percent of the variability in labor market income with an Adjusted R^2 of .031.

Overall, these results indicate that even after controlling for selection bias, human capital, and social capital, the relationship between interscholastic sports participation and labor market income remains positive and significant, although inclusion of these control variables lower the percent advantage athletes gain from 24.7 percent to 9.9 percent. These results support Hypothesis 1.

Table 3 about here

Although these results are an indication that cultural capital may be a useful concept in understanding the relationship between interscholastic sports participation and labor market income we must be very careful in making that claim with this information alone. One significant limitation in this study is the measurement of social and human capital controls variables outside of school. For example, control variables for social capital did not add

anything significant to the model. This may be an indication that Model 4 did not control for the type of social capital important in labor market income as it was intended to do. It appears as though social capital developed during the school years does not have as significant of an impact on labor market income as it was shown to have on education. Social capital developed outside of school may have a larger impact upon labor market income, which was not controlled for in these models. The positive relationship between interscholastic sports and labor market income could diminish if better social capital controls are developed.

Control variables also help explain the relationship between interscholastic sport participation and labor market income. *Bachelor* and *Post-Secondary Grades*, two human capital control variables, significantly affected reported income for males. Males who completed at least a bachelor's degree reported more income six years after high school than those with less education. Those who received higher grades in college also reported a significantly higher income.

Race had the largest effect upon reported income for males with blacks, Hispanics, and Native Americans all reporting substantially less income than their white counterparts. On average, blacks reported 19 percent lower income, Hispanics 11 percent lower income, and Native Americans 36 percent lower income than their white male counterparts six years after high school graduation. These results were statistically significant at the .001 level. Because of these large differences and reported differences in athletic participation rates, I expected an interaction affect to be present between race and sports participation. However, in a separate analysis, not reported here, there were no significant interaction affects present.

In order to further explore how interscholastic sport participation might operate as cultural capital and help us understand the relationship between interscholastic sports

participation and labor market income, I explored the differences between athletes who played a culturally popular sport and those who played another sport. Although I cannot control for all possible advantages in human and social capital, I make the assumption that any relative differences in human capital, social capital, and individual and school controls not captured in Model 4 are relatively equal across types of sports played. Exploring in the relationship with labor market income between culturally popular interscholastic sports, those sports with a “higher status” and other sports should provide evidence to determine whether interscholastic sports participation is operating as cultural capital for males.

In order to test Hypothesis 2 that males who play culturally popular interscholastic sports would report higher income than those who play other sports after controlling for human capital, social capital, and selection bias, I reran Models 1-4 replacing the independent variable *Played Sport* with two variables *Popular Sport* and *Other Sport*. Model 5 explored whether male interscholastic athletes who play a popular sport and those who play another sport in general report higher income six years after high school graduation than their counterparts who do not play sports. This model included no control variables. In the absence of controls Popular Sport had a β of .244 and Other Sport had a β of .188. On average students who played a culturally popular sport reported an income 27.6 percent higher than those who did not play sports. On average those respondents who played another sport reported an income 20.6 percent higher than those who did not play sports. Both of these results were significant at the .001 level.

Models 6, 7, and 8 iteratively added control variables in the same manner as Models 2, 3, and 4. After controlling for the effects of selection bias, human capital, and social capital on average respondents who played a culturally popular sport reported an income 11.5 percent higher than those respondents who did not play interscholastic sports. These results were

significant at the .001 level. After net of controls on average male respondents who played another sport reported an income 6.9 percent higher than those who did not play sports. These results were significant at the .05 level.

These results indicate that the relationship between interscholastic sports participation and labor market income is stronger for those students who participated in football, basketball or baseball with the relationship being significant at the .001 level compared to the .05 level for those student athletes who participated in other interscholastic sports. This supports Lamont and Lareau's (1988) conceptualization of cultural capital. "High status" cultural sports showed a stronger relationship with labor market income than other less culturally popular sports. This provided partial support for Hypothesis 2a.

Table 4 about here

Although the strength of the relationship across different types of sports and labor market income is an important indicator that sports may be operating as cultural capital, we cannot determine if differences in labor market income between interscholastic athletes who play culturally popular sports and those who play other sports is significant. Model 9 allows me to test whether a significant difference exists. Model 9 contains all of the control models that were present in Model 8; however, Model 9 places *Non-sport* into the model and uses *Other Sport* as the excluded category. Using *Other Sport* as the excluded category allows me to test whether interscholastic athletes who play a culturally popular sport report more income six years after high school than those athletes who play another sport.

The results of Model 9 show a difference in reported income between interscholastic athletes who play a culturally popular sport and those who play other sports with a β of .042. On average, when controlling for the effects of human capital, social capital, and selection bias, male

student athletes who reported playing a culturally popular interscholastic sport reported an income 4.4 percent higher than those male student athletes who reported playing another sport. Although there was a small difference shown, this difference failed to meet statistical significance. These results only partially support Hypothesis 2a that male athletes who play a culturally popular sport will report higher income in the labor market six years after high school graduation than those who play a less culturally popular sport.

Table 5 about here

Although there appears to be modest support that interscholastic athletics operate as cultural capital for males, these results do not conclusively demonstrate that the positive relationship between interscholastic sports participation and labor market income can be attributed to cultural capital received by interscholastic athletes. We can further explore this possibility by exploring differences across gender.

Females

Model 10 explored whether female interscholastic athletes in general report higher income six years after high school graduation than their non-sport playing counterparts. This model included no control variables. In the absence of controls *Played Sport* had a β of .221. On average female respondents who played interscholastic sports reported an income 24.7 percent higher than those female respondents who did not play interscholastic sports. These results were significant at the .001 level. However, this model accounted for less than 1 percent of the variability in labor market income with an Adjusted R^2 of .009.

Model 11 added control variables specifically controlling for the selection bias which is evident in interscholastic sports participation. After adding the control variables for economic capital, race, school type, and school region, *Played Sports* had a β of .091. On average, after

controlling for the selection bias in interscholastic sports participation, female athletes reported an annual income 9.5 percent higher than those respondents who did not play interscholastic sports. These results were significant at the .001 level. Using nine variables, Model 11 accounted for 7.3 percent of the variability in labor market income with an Adjusted R² of .073.

Model 12 added control variables specifically for human capital. After adding control variables *Standardized Scores*, *Locus of Control*, *Self Concept*, and *Post-Secondary Grades* to Model 3, *Played Sports* had a β of .040. Controlling for selection bias and human capital advantages, on average interscholastic athletes reported an income 4.1 percent higher than those respondents who did not play interscholastic sports. However, these results were not statistically significant. Model 12 accounted for 7.4 percent of the variability in labor market income with an Adjusted R² of .074.

Model 13 added control variables specifically controlling for social capital advantages gained through interscholastic sports participation. Adding control variables *Parents Network*, *Talk with Teacher*, *Parent Contact with School*, and *Talk with Parents*, *Played Sports* had a β of .044. After net of controls, female respondents who played interscholastic sports reported an income 4.5 percent higher than those respondents who did not play sports. These results were also not significant. Model 13 accounted for 7.4 percent of the variability in labor market income with an Adjusted R² of .074.

Unlike males, these results indicate that the relationship between interscholastic sports participation and labor market income is no longer significant after controls for human capital, social capital, and selection bias are included. These results do not support Hypothesis 1 for females. Controlling for the effects of selection bias, human capital and social capital drops the advantage in reported income from a 24.7 percent advantage to a 4.1 percent advantage. The

differences in results between the male and female samples indicate that interscholastic sports may be operating as cultural capital for males but not for females.

Table 6 about here

These results strengthen the argument that cultural capital may be a useful concept in understanding the relationship between interscholastic sports participation and labor market income. Males and females who participate in sports should both be gaining relatively equal access to human and social capital advantages that have been shown to affect labor market income. Differences shown across gender indicate that males are receiving added benefits outside of these advantages that strengthen the relationship between interscholastic sports participation and labor market income. Cultural capital theory can help explain why this difference across gender exists. Again, we must be careful in making this claim as social capital control variables did not add significance to the female model.

Control variables also help explain the relationship between interscholastic sport participation and labor market income for females. There were significant differences across gender in how the control variable affected reported income. Unlike the male model where race appeared to play the largest mediating role, human capital control variables had the largest affect for females. *Standardized Test Scores*, *Locus of Control*, and *Bachelor* were all significantly associated with labor market income for females. Females who completed at least a bachelor's degree reported an income 30 percent higher than those who did not. *Financial Capital* was also a predictor of labor market income for females and school location also showed statistical significance with students in schools in the *South* and the *West* reporting significantly lower income on average.

Differences in how control variables affect the relationship between interscholastic sports participation and labor market income across gender is indicative that interscholastic sports participation operates differently for males and females in regards to benefits in the labor market and is further evidence that interscholastic sports is operating as cultural capital, especially for male interscholastic athletes who play culturally popular sports.

In order to further explore how sports might be operating as cultural capital and test Hypothesis 2b, I explore the differences across type of sport played for females. Following the same procedure for females as I did for males, I re-ran models 11, 12, and 13 replacing the independent variable *Played Sports* with two variables *Basketball* and *Other Sport*.

Model 14 explored whether female interscholastic athletes who play a popular sport (basketball) and those who play another sport in general report higher income six years after high school graduation than their counterparts who did not play sports. This model included no control variables. In the absence of controls *Basketball* had a β of .142 and *Other Sport* had a β of .158. On average students who played a culturally popular sport reported an income 15.2 percent higher than those who did not play sports. On average those respondents who played another sport reported an income 17.11 percent higher than those who did not play sports. These results were significant at the .001 level.

Models 15,16, and 17 added control variables in the same manner as Models 6, 7, and 8. After controlling for the effects of selection bias, human capital, and social capital on average female respondents who played a culturally popular sport reported an income 7.2 percent higher than those respondents who did not play interscholastic sports. These results were significant at the .05 level. After net of controls, female athletes who played another sport reported an income

1.9 percent higher than those who did not play sports. These results did not meet statistical significance.

Table 7 about here

These results add further clarity to the results found in Model 13 which indicated that females who played interscholastic sports did not report significantly more income than those females who do not play sports. Although it appears that in general this is the case, those female athletes who play the culturally popular sport of basketball do report significantly higher income than those who do not play interscholastic sports six years after high school graduation. The fact that only those girls who play the culturally popular sport of basketball enjoy this positive benefit is another indication of interscholastic sports operating as cultural capital. These results partially support Hypothesis 2b.

I also explored the differences shown in Model 17 in more depth for female athletes by eliminating non-athletes from the sample. Model 18 eliminates all participants who did not play an interscholastic sports and uses *Basketball* as the excluded category. Eliminating non-athletes from the analysis left me with a sample of 2676 females who participated in interscholastic athletics.

The results of Model 18 show a difference in reported income between interscholastic athletes who play a culturally popular sport and those who play other sports with a β of .030. On average, when controlling for the effects of human capital, social capital, and financial capital, female student athletes who reported playing interscholastic basketball reported an income 3.1 percent higher than those student athletes who reported playing another sport. Although there was a small difference shown, this difference failed to meet statistical significance. These results only partially support Hypothesis 2b that female athletes who play a culturally popular sport will

report higher income in the labor market six years after high school graduation than those who play a less culturally popular sport.

Table 8 about here

Overall, the results provide modest support that participation in interscholastic athletics operates as a form of cultural capital. For males, all athletes, regardless of sport seem to gain access to this cultural capital, although the relationship is stronger for males who participate in culturally popular sports. Only females who participated in basketball gain access to cultural capital. However, lack of significance in differences across sport for both males and females and limitations in control variables weaken these results

Discussion

Using multiple regression analysis techniques, I examined how playing interscholastic sports affected reported income six years after high school graduation. This study broadened existing research in this area by controlling for human and social capital and examining difference in type of sport played. Specifically, this study examined whether interscholastic athletes who play a culturally popular sport benefitted to a greater degree in the labor market than those who played a less popular sport. Results from this analysis provided modest support that interscholastic sports participation operates as a form of cultural capital. Male athletes, regardless of sport played, appear to receive cultural capital advantages from their participation and report significantly higher income six years after high school graduation than their peers who do not play sport. These findings are consistent with other studies that have used the NELS data to explore the relationship between interscholastic sports participation and income (Ewing 1995, Carlson and Scott 2005). However, the strength of the relationship between interscholastic sports participation and labor market income was stronger for those

athletes who played a culturally popular sport in high school. Only female athletes who play the culturally popular sport of basketball report significantly higher income six years after high school graduation.

Overall, these results indicate that cultural capital theory, especially as conceptualized by Lamont and Lareau (1988) is a useful theoretical tool in exploring the relationship between interscholastic sports participation and labor market income; however, weaknesses in the current methodology need to be overcome in order to more fully understand how interscholastic sports operate as cultural capital and how cultural capital can help us understand the positive relationship between interscholastic sports participation and labor market income.

One of the largest weaknesses with this study is the measurement and use of human and social capital control variables. Although previous research indicated that human and social capital are important predictors of labor market income, this effort mostly included controls of capital developed during the school years. This weakness is clearly seen in the case of social capital. It is unclear whether the type of social capital measured in this study is important in predicting income. Using Broh's (2002) study as a framework I was able to develop measures for social capital obtained in school and during the school years; however, I could not measure other ways in which social capital might be obtained. This is especially important in the critical years following high school graduation. It appears as though social capital obtained in school alone may not predict labor market income six years after high school graduation. As has been shown by Dufur et al. (2008), social capital development is not limited to the school years or the school setting. Social capital developed in other settings both during and after the school years may play a larger role in predicting labor market income. Social and human capital developed in other settings not controlled for in this study may account for a portion of the positive

relationship shown between interscholastic sports participation and labor market income. If this is the case, this could weaken support that interscholastic sports operate as cultural capital.

Future research in this area needs to develop and utilize a broader range of controls for social and human capital to help limit this possible confounding effect.

Another important factor in this study was the assumption that any differences in human and social capital not captured in the models would be relatively equal across sports. Future research should focus on the validity of this assumption by examining the differences, if any, across sports in human capital, social capital, and individual control variables to determine whether any benefits from sports participation shown in previous research varies across type of sport played. If future research were to explore this assumption, I would expect any differences found across sport to be small and have little to no effect on how human and social capital advantages operate in the years following high school graduation.

Although there are limitations in this study, the results provide intriguing evidence for the utility of cultural capital theory in understanding the relationship between interscholastic sports participation and labor market income. Past research has shown that adult sporting participation and practices are an integral part to exclusive lifestyles and are one way in which sport operates as cultural capital (Curtis et al. 2004; Stempel 2006). Interscholastic sports participation may create a sport habitus which leads to higher adult sport participation. Those who participate in sports and physical activity as youths are more likely to continue these practices into adulthood and consequently receive benefits from this participation (Engstrom 2008). Interscholastic sport participation is important in developing perceptions, thoughts, and actions that create a sporting disposition that is valued in the labor market.

Differences across gender in the relationship between interscholastic sports participation and labor market income also provide compelling support for interscholastic sports operating as cultural capital. Only male participants who played less culturally popular sports in high school reported significantly higher income than those who did not participate in high school sports. The hypothesis that female athletes who participated in less culturally popular sports would report higher income than their non-sport playing counterparts was not supported. This finding is contrary to one of the guiding hypotheses in interscholastic sports participation and labor market outcomes research. Most past research has concluded that females who play interscholastic sports do enjoy benefits in the labor market (Ewing 1995; Carlson and Scott 2005). It appears that once controls for human capital and social capital are introduced, this advantage is lost for female interscholastic athletes who are playing a sport other than the culturally popular sport of basketball.

There are several factors that might be causing the differences seen between male and female interscholastic athletes in cultural capital advantages. First, American culture may value male participation in sports more than female participation in sports (Rhoads 2004). Female knowledge, understanding, and credentials in sports other than the culturally popular sport of basketball may not be valued as cultural capital because female sport does not have the same “high status” in American culture as male sport. Second, American society may value different female sport participation than what was measured in this study. Data limitations, which kept me from measuring participation in fitness sports at the interscholastic level, may have limited exploring how interscholastic sport is used as cultural capital for female athletes. It is interesting to note that all three of the culturally popular sports, as defined in this paper, can be viewed as competitive participatory sports. As previous research has shown, competitive participatory

sports are an important form of cultural capital for upper middle class males (Stempel 2005). Stempel speculates that competitive participatory sports are used by males to create cultural boundaries by working to produce disciplined, high performing, and achieving selves. Markers of cultural capital, such as credentials provided by interscholastic participation in competitive participatory sports, may provide access for males to cross cultural boundaries and receive rewards denied to those on the other side of the boundary.

Human capital was also a more important indicator of labor market income for females than males, which could have led to a weaker relationship between cultural capital and labor market income. Much like the sporting arena, the labor market has been male dominated for centuries. In order to access rewards from the labor market it appears that females must possess a higher level of human capital, or at least be able to show more indicators of human capital than their male counterparts. Results indicate that standardized test scores, locus of control, and level of education were much more important predictors of income for females than males. Future research into how interscholastic sports operate as cultural capital should focus specifically on how cultural capital operates differently for men and women and attempt to measure fitness sports at the interscholastic level to determine if participation by females in fitness sports at the interscholastic level also operates as a form of cultural capital.

Differences seen between those athletes who play a culturally popular interscholastic sport and those who play other sports is another indication that interscholastic sport might be operating as cultural capital. These differences might be attributed to gatekeepers, who provide access to and rewards in the labor market. Upper middle class men, who value the cultural capital of competitive participatory sports, also control many gatekeeper positions within the labor market. Participation at the interscholastic level in these sports may provide credentials,

knowledge, and skill which are recognized as valuable by gatekeepers in the labor market. This cultural capital is rewarded by providing these individuals with access and higher paying positions within the labor market.

There are several key implications that can be taken from this study. First, if there are differences in the type of benefits interscholastic athletes receive across sports; these differences should be taken into account in decisions regarding interscholastic sports. In light of fiscal decisions imposed upon school districts, forcing schools to decide on what extracurricular activities to keep or to cut, understanding the benefits gained through sports participation will become increasingly important. If, as has been suggested, culturally popular sports provide additional benefits to interscholastic athletes, schools should attempt to keep these sports as extracurricular opportunities and work hard to ensure that access to these sports is open to anyone who wishes to participate.

These results also have important implications into how Title IX should be interpreted and applied. One of the key measures of compliance with Title IX standards is the ratio of males and females participating in sports as compared to total school enrollment. In order to increase female participation to address the numerical advantage football provides to males, some colleges have integrated less popular sports, such as rowing, into their sports programs to increase female participation. If the benefits from sports participation are different across sports, opportunity to compete in rowing may not be equal to an opportunity to compete in football. Future interscholastic sport research needs to account for individual differences across sport instead of focusing on interscholastic sport participation holistically.

These results add another dimension to findings regarding interscholastic sports participation and positive life outcomes. Although the benefits of interscholastic sports

participation has been well documented, the question must now be raised is all participation equal? Those students who are participating in culturally popular sports may be benefitting to a higher degree than those students who are participating in sports other than football, basketball, or baseball. These findings lend support to the claim that sports in the United States can be viewed as a form of cultural capital and that knowledge, skills and experience in certain sports can be used to gain economic advantages in the labor market.

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Table 1: List of Variables and Descriptive Statistics

Variable	Description	Metric (Mean, SD)
List of Variables		
Dependent Variable		
<i>Income (logged)</i>	Natural log of respondents report of income in 1999	0-13.12 (\bar{x} =9.967, SD=.78)
Independent Variable(s)		
<i>Played Sports</i>	Student report of playing an interscholastic sport in 10 th grade.	1=participate: 0=otherwise
<i>Other Sport</i>	Combination of students report of participation in soccer, swimming, team sports other than popular, and individual sport in 10 th grade.	1=participate: 0=otherwise
<i>Popular Sport</i>	Combination of students report of participation, in football, basketball or baseball in 10 th grade.	1=participate: 0=otherwise
Human Capital Control Variables		
<i>Test Scores</i>	Combination of students scores on standardized tests in reading, math and science in 10 th grade.	30.31-90.98 (\bar{x} =51.33, SD=10.01)
<i>Locus of Control</i>	NELS composite created using respondents report on whether personal outcomes are contingent upon personal actions (internal) or events outside of personal control (external).	-3.06-1.49 (\bar{x} =.040, SD=.76)
<i>Self-Concept</i>	NELS composite created using respondents report about feelings of self worth, self esteem, and ability.	3.64-1.23 (\bar{x} =-.015, SD=.76)

<i>Education level</i>	Dichotomous variable measuring Postsecondary education attainment.	1=Bachelor: 0=other or higher
<i>Post-secondary grades</i>	Respondents report of grades at last post secondary school attended	1-7: 1=mostly D's 7=mostly A's (\bar{x} =5.31, SD=1.14)
Social Capital Control Variables		
<i>Talk with Teacher</i>	Teacher's report of whether Student talks with them outside of class	1=yes; 0=no
<i>Talk with Parents</i>	Respondents report of Frequency with which they talk with parents about school courses, activities, and studies	0-9 (\bar{x} =1.88, SD=1.96)
<i>Parent Contact with School</i>	Parents report of frequency of contact parent has initiated with school during the previous year.	0-9 (\bar{x} =4.52, SD=1.94)
<i>Parents Talk with Friends' Parents</i>	Parent's report of how often they talked to parents of their children's friends about things going on at school, children's educational plans, and children's career plans.	0-11 (\bar{x} =2.73, SD=2.54)
Individual Control Variables		
<i>Financial Capital</i>	NELS composite created using parents report of education, occupation, and total household income.	-3.091-2.753 (\bar{x} =.037, SD=.801)
<i>Gender</i>	Sex of respondent	1=male: 0=female
<i>Race/ethnicity</i>	Student report of race.	Dummy variables differentiating White, Asian and Pacific Islander, Black, Hispanic, and Native American. White is the control group.

School Level Control Variables

<i>School Region</i>	Regional location of Secondary school Attended in 10 th grade	Dummy variables differentiating northeast Midwest, south and west. northeast is the control group
<i>School type</i>	Type of school attended in 10 th grade.	1=Private; 0=Other

Table 2: Participation in High School Sports by Race

<u>Male Participation in High School Sports by Race</u>			
<u>Race</u>	<u>Popular Sport (%)</u>	<u>Other Sport (%)</u>	<u>Did Not Play(%)</u>
White	39.6	19.4	41.0
Black	50.4	43.5	6.1
Asian	28.4	42.1	29.5
Hispanic	38.0	45.4	16.6
Native Am.	48.6	41.3	10.1
Total	39.2	42.7	18.1

<u>Female Participation in High School Sports by Race</u>			
<u>Race</u>	<u>Popular Sport (%)</u>	<u>Other Sport (%)</u>	<u>Did Not Play(%)</u>
White	19.8	20.0	60.2
Black	16.7	10.4	72.9
Asian	11.1	29.9	41.0
Hispanic	11.4	12.4	76.2
Native Am.	25.0	12.5	62.5
Total	17.8	18.3	63.9

Table 3: OLS Unstandardized Coefficients from the Regressions of the Natural Log of Labor Market Income on Interscholastic Sports Participation, Controlling for Human Capital, Social Capital, Individual, and School Level Variables for Males

Variable	Model 1	Model 2	Model 3	Model 4
Independent Variable(s)				
Played Sports	.221***	.111***	.094***	.096***
Individual Level Variables				
Financial Capital (SES)		.037**	.017	.018
Asian		.034	.026	.020
Black		-.112***	-.191***	-.191***
Hispanic		-.192***	-.114***	-.116***
Native American		-.369***	-.360***	-.359***
School Level Variables				
Northcentral		.021	.028	.029
South		-.027	-.023	-.021
West		-.029	-.020	-.020
Private		-.007	-.008	-.009
Human Capital Variables				
Test Scores			-.002	-.002
Locus of Control			.033	.034
Bachelor			.096***	.098***
Self Concept			.027	.027
Post Secondary Grades			.021*	.021**
Social Capital Variables				
Parents Network				-.004
Talk with teacher				-.001
Parent contact with school				-.004
Talk with parents				.001
Constant	9.84***	10.12***	10.10***	10.12***
Adj R	.006	.022	.032	.031
P Value of F-Test	.000	.000	.000	.000

Dependent Variable: Natural Log of Income in Dollars

***Results are significant at the $p < .001$ level

**Results are significant at the $p < .01$

*Results are significant at the $p < .05$

Table 4: OLS Unstandardized Coefficients from the Regressions of the Natural Log of Labor Market Income on Type of Interscholastic Sport Played Controlling for Human Capital, Social Capital, Individual and School Level Variables for Males

Variable	Model 5	Model 6	Model 7	Model 8
Independent Variable(s)				
Popular Sport	.244***	.128***	.105***	.109***
Other Sport	.188***	.106**	.065*	.067*
Individual Level Variables				
Financial Capital (SES)		.021**	.021	.020
Number of sports		.008	.008	.006
Asian		.048	.037	.023
Black		-.205***	-.183***	-.194***
Hispanic		-.126**	-.101***	-.115***
Native American		-.342***	-.330***	-.361***
School Level Variables				
Northcentral		.013	.029	.027
South		-.036	-.028	-.024
West		-.042	-.029	-.021
Private		-.006	-.010	-.010
Human Capital Variables				
Test Scores			-.002	-.002
Locus of Control			.035	.034
Bachelor			.098***	.098***
Self Concept			.025	.027
Post Secondary Grades			.021**	.021**
Social Capital Variables				
Parents Network				-.004
Talk with teacher				-.001
Parent contact with school				-.004
Talk with parents				.001
Constant	9.84***	10.12***	10.08***	10.11***
Adj R	.006	.022	.032	.031
P Value of F-Test	.000	.000	.000	.000

Dependent Variable: Natural Log of Income in Dollars

***Results are significant at the $p < .001$ level

**Results are significant at the $p < .01$

*Results are significant at the $p < .05$

Table 5: OLS Unstandardized Coefficients and Robust Standard Error of the Natural Log of Labor Market Income on Type of Interscholastic Sports Participation, Controlling for Human Capital, Social Capital, Individual and School Level Variables for Males

Variable	Model 9 (β)	Robust se
Constant	10.11***	.084
Independent Variable(s)		
Popular Sport	.042	.031
Non-Sport	-.069*	.028
Human Capital Control Variables		
Test Scores	-.003	.001
Locus of Control	.036	.020
Bachelor	.11***	.027
Self Concept	.04	.017
Post Secondary Grades	.021**	.008
Social Capital Control Variables		
Parents Network	-.004	.005
Talk with teacher	-.001	.033
Parent contact with school	-.004	.007
Talk with parents	.003	.007
Individual Level Control Variables		
Financial Capital (SES)	.030	.021
Number of sports	.006	.015
Asian	.026	.086
Black	-.158***	.044
Hispanic	-.106***	.020
Native American	-.39*	.197
School Level Control Variables		
Northcentral	.010	.041
South	-.023	.043
West	.017	.053
Private	-.019	.055

Dependent Variable: Natural Log of Income in Dollars

***Results are significant at the $p < .001$ level

**Results are significant at the $p < .01$

*Results are significant at the $p < .05$

Table 6: OLS Unstandardized Coefficients from the Regressions of the Natural Log of Labor Market Income on Interscholastic Sports Participation, Controlling for Human Capital, Social Capital, Individual, and School Level Variables for Females

Variable	Model 10	Model 11	Model 12	Model 13
Independent Variable(s)				
Played Sports	.221***	.091***	.040	.044
Individual Level Variables				
Financial Capital (SES)		.157***	.043**	.022
Asian		.116	.036	.020
Black		-.060	-.060	-.029
Hispanic		-.038	-.038	-.054
Native American		-.363**	-.290*	-.274*
School Level Variables				
Northcentral		-.077	-.049	-.047
South		-.127***	-.106**	-.099**
West		-.144**	-.096*	-.043*
Private		-.045	-.052	-.053
Human Capital Variables				
Test Scores			.005**	.005**
Locus of Control			.046**	.043**
Bachelor			.302***	.304***
Self Concept			.013	.010
Post Secondary Grades			.013	.013
Social Capital Variables				
Parents Network				-.009
Talk with teacher				.001
Parent contact with school				-.013
Talk with parents				.001
Constant	9.84***	9.83***	9.33***	9.35***
Adj R	.009	.022	.032	.031
P Value of F-Test	.000	.000	.000	.000

Dependent Variable: Natural Log of Income in Dollars

***Results are significant at the $p < .001$ level

**Results are significant at the $p < .01$

*Results are significant at the $p < .05$

Table 7: OLS Unstandardized Coefficients from the Regressions of the Natural Log of Labor Market Income on Type of Interscholastic Sports Participation, Controlling for Human Capital, Social Capital, Individual and School Level Variables for Females

Variable	Model 14	Model 15	Model 16	Model 17
Independent Variable(s)				
Basketball	.142***	.104***	.067**	.070*
Other Sport	.158***	.076**	.031*	.019
Individual Level Variables				
Financial Capital (SES)		.158***	.045**	.047**
Number of sports		.008	.031	.025
Asian		.119**	.031	.026
Black		-.061	-.021	-.029
Hispanic		.040	.053	-.056
Native American		-.364***	-.326***	-.27*
School Level Variables				
Northcentral		-.077*	-.042	-.048
South		-.127***	-.102**	-.100**
West		-.145**	-.102**	-.097*
Private		-.045	-.034	-.053
Human Capital Variables				
Test Scores			.005***	.005**
Locus of Control			.044**	.043**
Bachelor			.282***	.304***
Self Concept			.013	.009
Post Secondary Grades			.012	.013
Social Capital Variables				
Parents Network				-.004
Talk with teacher				.001
Parent contact with school				-.013
Talk with parents				.012
Constant	9.84***	9.83***	9.34***	9.35***
Adj R	.009	.073	.074	.074
P Value of F-Test	.000	.000	.000	.000

Dependent Variable: Natural Log of Income in Dollars

***Results are significant at the $p < .001$ level

**Results are significant at the $p < .01$

*Results are significant at the $p < .05$

Table 8: OLS Unstandardized Coefficients and Robust Standard Error of the Natural Log of Labor Market Income on Type of Interscholastic Sports Participation, Controlling for Human Capital, Social Capital, Individual and School Level Variables for Females

Variable	Model 18 (β)	Robust se
Constant	9.35***	.131
Independent Variable(s)		
Popular Sport	.030	.041
Non-Sport	-.034	.034
Human Capital Control Variables		
Test Scores	.003	.002
Locus of Control	.022	.032
Bachelor	.295***	.050
Self Concept	.056	.030
Post Secondary Grades	.001	.019
Social Capital Control Variables		
Parents Network	-.003	.005
Talk with teacher	-.003	.033
Parent contact with school	-.004	.007
Talk with parents	-.021	.007
Individual Level Control Variables		
Financial Capital (SES)	.051**	.016
Number of sports	.025	.030
Asian	.026	.062
Black	-.029	.041
Hispanic	-.056	.035
Native American	-.27*	.112
School Level Control Variables		
Northcentral	-.048	.036
South	-.100**	.035
West	-.097*	.043
Private	-.053	.037

Dependent Variable: Natural Log of Income in Dollars

***Results are significant at the $p < .001$ level

**Results are significant at the $p < .01$

*Results are significant at the $p < .05$