WHO PLAYS AND WHO BENEFITS: GENDER, INTERSCHOLASTIC ATHLETICS, AND ACADEMIC OUTCOMES

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ABSTRACT: *Using a nationally representative sample of adolescents, this article examines how various individual and contextual characteristics are related to the likelihood of interscholastic athletic participation. Girls are significantly less likely than boys to participate. The influence of socioeconomic background, siblings, family structure, year in school, attendance at a private school, size of the school, region of the country, and urbanicity have similar effects on socializing boys and girls into athletics. However, the gender difference in participation rates are greater for blacks than whites. Results indicate that some of the association between athletic participation and academic outcomes is due to the tendency for better students to participate in athletics. Net of these effects, analyses indicate that participation in athletics has a positive influence on adolescents' academic outcomes. The positive influence of athletic participation on unexcused absences and educational expectations is significantly stronger for boys than for girls.*

Scholars, as well as popular folklore, have extolled the beneficial effects of sports participation for teaching children life lessons, increasing self-esteem, and building interpersonal and leadership skills. Beginning in the 1960s and continuing to the present, a sizable body of research demonstrates that participation in athletics is associated with an array of positive educational outcomes. Students who participate in sports have better attendance records, lower rates of discipline referrals, and higher academic self-esteem and are more likely to be in a college preparatory curriculum, earn higher grades, and aspire to, enroll in, and graduate from college (Braddock 1981; Eidsmoe 1964; Fejgin 1994; Laughlin 1978; Marsh 1993; Melnick, Sabo, and Vanfossen 1992; Otto and Alwin 1977; Rehberg and Schafer 1968; Snyder and Spreitzer 1977). Studies exploring the long-term consequences of sports participation have shown that individuals who participated in high school athletics have higher incomes and more occupational prestige than those who did not (Barron, Ewing, and Waddell 2000; Sabo, Melnick, and Vanfossen

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1993). Presumably, then, increasing girls' participation in sports would trigger a cascade effect, boosting their successes from the classroom to the boardroom (Coakley 1996; Lever 1978).

However, the vast majority of studies on the effects of sports participation on educational outcomes use cross-sectional data, making issues of causal ordering problematic (Stevenson 1975). Significant associations between athletics and educational outcomes may not indicate that participation in sports leads to increased academic achievement. The rival interpretation is that high-achieving, disciplined, determined, motivated youth are drawn to the competition, achievement, structure, and goal orientation that are inherent in athletics (Spreitzer 1994). A critical question is whether better outcomes are a consequence of participation or if athletics disproportionately draw capable youth.

Therefore, a necessary step for research is to examine which individuals participate in sports. Although the tremendous growth in the number of female athletes in the past three decades has received considerable attention, few studies explore which daughters of Title IX are taking advantage of increased opportunities to play sports or what types of environments facilitate girls' participation. The erosion of structural and cultural barriers to girls' athletic participation has likely altered which types of girls choose to participate in sports and which girls continue to participate; thus findings from earlier studies of pioneering female participants may no longer accurately reflect contemporary selection processes (Melnick, Vanfossen, and Sabo 1988). Do similar factors influence girls' and boys' participation in athletics? Lacking knowledge of which girls (and boys) play sports, it is problematic to talk about the effects of sports participation for girls' outcomes.

Using a nationally representative sample of adolescents in grades 7 through 12, I examine how various individual and contextual characteristics are associated with the likelihood of athletic participation, explicitly testing for gender differences. After determining the likelihood of participation (differential selection into sports), I explore the impact participation has on students' educational outcomes. These models include interaction terms to examine whether the benefits of participating in sports are similar in magnitude for boys and girls. A diverse range of educational indicators are used in order to examine the ways in which sports participation influences various facets of adolescent's educational life.

OVERVIEW

By prohibiting school-sponsored programs, including athletics, from discriminating on the basis of sex, Title IX reduced structural barriers to female sports participation. Girls quickly seized these expanding opportunities, as evidenced in the enormous growth in the number of girls participating in school-sponsored sports. In 1971, just one year before the enactment of Title IX,[1] 294,015 girls participated in high school sports; by 1999 this number had increased nearly tenfold, to 2,675,874 (National Federation of State High School Associations 2001). Despite the growing number of girls suiting up for sports, athletics continues to be a male dominated extracurricular activity. In 1999 the ratio of girls to boys was 2 to 3 (National

Federation of State High School Associations 2001), and gender remains the most significant predictor of adolescents' sports participation (Marsh 1993; McNeal 1998). If Title IX has led to more equal opportunities, what factors are inhibiting girls' participation in sports in numbers equal to their male counterparts?

It is frequently suggested that gender ideals are significant cultural barriers to girls' increased participation in athletics. While historically boys' participation in sports has been considered a rite of passage (Sabo and Runrola 1980), past research indicated girls experienced role conflict between the expectations for being a female and being an athlete (Bell 1980; Sage and Loudermilk 1979). Because cultural ideals are continuously contested and renegotiated, previous findings may not reflect the experiences of more recent cohorts of female athletes. Changes in cultural ideals through time are evident in media portrayals of female athletes. Although early content analyses of media coverage revealed that females' athletic accomplishments were framed negatively or ambivalently (Bryant 1980; Rintala and Birrell 1984), the past three decades have witnessed tremendous growth in the positive visibility of athletic women. For example, NBC declared the 1996 Summer Olympics "the year of the woman" and the 1999 World Cup women's soccer games drew attention from all sectors of society.

Although female athletes were likely to have their femininity questioned and were marginalized only a few decades ago, the daughters of Title IX and their parents report greater acceptance, attention, and recognition for female athletes (Atkins, Morse, and Zweigenhaft 1978; Snyder and Spreitzer 1983). Contemporary research indicates that female athletes do not experience greater gender role conflict than nonathletes (Miller and Levy 1996) and that participation in sports has increasingly become a route to prestige for adolescent girls (Suitor and Reavis 1995). However, participation in sports is almost two times more likely to be named as a source of prestige for boys than for girls (Holland and Andre 1994; Suitor and Reavis 1995). Furthermore, trends of withdrawal from organized sports during adolescence indicate that the most pronounced declines are found in girls' participation in sports that are typed "masculine" (Snyder and Spreitzer 1983). These findings underscore gender differences in socialization into and out of sports and highlight the need to model gender differences in selection into sport.

Socialization into Sport

Although a great deal of existing research examines associations between athletic participation and various outcomes, significantly less work explores patterns of participation, frequently called self-selection into the athletic stream. Why should researchers be concerned with determining demographic profiles of girls and boys who play sports? There are two crucial reasons. First, it is necessary to examine which types of individuals play sports to unbraid the effects of self-selection into sports from the effects of sports participation. Incomparability of athletes and nonathletes before participation—and not the experience of participation—could be responsible for positive associations between athletics and outcomes.[2] For example, because greater numbers of middle- and upper-class students participate in sports and academic outcomes are positively influenced by socioeconomic status,

it has been suggested that the relationship between participation and positive academic outcomes may reflect class differences and not the effects of participation (Melnick, Vanfossen, and Sabo 1988).

The issue of selection into sport is particularly important for studies exploring potential gender differences in the effects of sports participation. If different forces sort boys and girls into sports, models that do not account for these gender differences may indicate differential effects of participation, when observed gender differences actually stem from divergent forces influencing selection into sport.

Second, previous research indicates that sports participation does not benefit all groups equally (Hanson and Kraus 1999; Melnick, Sabo, and Vanfossen 1992; Rehberg and Schafer 1968; Sabo, Melnick, and Vanfossen 1993). Therefore, if the benefits of sports are magnified for individuals with certain characteristics[3] and female and male athletes vary in their composition of these characteristics, we would expect differences in the effects of sport by gender.

Unfortunately, few studies examine sports participation as a dependent variable, and those that do frequently do not explore potential gender differences. Estimating a single selection model implicitly assumes that boys and girls have similar socialization experiences. However, there is little basis for this assumption. Below I review the literature on determinants of participation in sports, focusing attention on gender differences.

As the initial agents of socialization, family members are often the first individuals to expose children to athletics. Parental encouragement increases participation (Snyder and Spreitzer 1978). Same-sex family members may be particularly important for influencing adolescent's sport participation (Wold and Anderssen 1992), with maternal athletic achievement especially salient for girls (Gregson and Colley 1986). Friends and siblings also socialize children into sports (Wold and Anderssen 1992). In particular, male siblings encourage participation by recruiting their siblings as teammates or opponents during recreational play (Kenyon and McPherson 1974). And older siblings may play more physical games with younger siblings than parents do, as evidenced by greater participation among younger siblings in sports requiring more physical contact (Casher 1977; Nisbett 1968). Despite the importance of siblings for socialization into sport, little is known about the effects of age and gender for sibling influence. Do older brothers act as role models for younger sisters and provide them with instruction, or are these benefits only available to younger brothers?

Students from more privileged socioeconomic backgrounds participate in sports at higher rates than their peers (Coleman 1961; McNeal 1998). Some research indicates that socioeconomic status may be a stronger determinant for girls' participation than boys' (Hasbrook 1987), although findings are inconsistent (Hanks and Eckland 1976). The literature also reports inconsistent evidence in participation rates by race. Some nationally representative research indicates that black youths participate in athletics at a higher rate than their white counterparts (Marsh 1993; McNeal 1998), while other studies find no significant differences (Antshel and Anderman 2000; Fejgin 1994). Few studies have examined participation rates of Hispanics, Asians, and Native Americans; however, those that do find that these groups are no less likely to participate than whites (Antshel and

Anderman 2000; Fejgin 1994; McNeal 1998).[4] However, all of these studies used the same data source—the National Educational Longitudinal Study.

Minority students report feeling discriminated against by white coaches (Simpson 1996), and some ethnic subcultures (i.e., Native Americans) may value characteristics (e.g., cooperation) that are at odds with hegemonic ideals of competitive sports. These clashes sometimes lead minority youths to find informal outlets such as intramural leagues (Grey 1996; Simpson 1996). It is unknown whether female minorities have similar opportunities to engage in non-school-sponsored athletics. Lacking options to participate in sports outside of school teams (i.e., pickup games on community courts and intramural leagues), minority girls may be more likely than minority boys to participate in school-sponsored athletics. Or, lacking informal outlets for sports, minority girls may turn their attention to other activities, leading us to expect lower rates of participation.

Furthermore, all of the results reviewed above use a single model to predict girls' and boys' participation, providing us with an average race effect. Yet we do not know if race affects girls and boys similarly (i.e., with both genders within a race exhibiting high or low rates of participation), making single equation estimations of participation problematic. We might expect gender differences to vary by race due to contrasting notions of femininity. Previous work emphasizes the contributions of black women for making inroads for females playing sports and credits black women with challenging myths of female athletes; therefore, we might expect a higher percentage of black girls to participate in athletics, creating a narrower gender gap among blacks than whites.

Macro processes within the school and community also structure patterns of participation. Consistent differences are found in participation rates in public and parochial schools (Fejgin 1994). Beginning in junior high, private schools boast a greater proportion of student athletes and as students progress through high school this gap increases (Coleman, Hoffer, and Kilgor 1981). These differences may be a function of better facilities and larger budgets and therefore greater opportunity for sports participation, or they could be a reflection of the type of children who attend private school.[5] Research also consistently demonstrates an inverse relationship between school size and participation rates; students attending smaller schools are more likely to participate in interscholastic sports (Lindsay 1982; Marsh 1993; McNeal 1999). Because the number of players selected for teams is limited, students attending smaller schools will have an increased likelihood of procuring one of these valued spots. By shaping opportunities to participate in interscholastic sports, school characteristics are frequently found to be a stronger determinant of participation in extracurricular activities than are sociodemographic characteristics (Lindsay 1984).

Community characteristics also exert a significant influence on participation rates, with individuals living in smaller, more rural communities being more likely to participate in athletics than individuals in urban settings (Barker and Gump 1964; Fejgin 1994; Marsh 1993; McNeal 1999). Higher rates of participation may be a result of a lack of alternative activities or increased emphasis by the community on school activities. Compared to urban and suburban communities, sporting events may constitute an important forum for entertainment and socializing in

rural communities. It is likely that community attention focuses on football and basketball, big revenue sports in the general culture. Thus community characteristics may be a greater influence on boys' participation rates than girls', although I found no studies exploring whether and how environmental influences varied by gender.

Sports geographers indicate that various regions produce different orientations toward participation in sports (Snyder and Spreitzer 1989). And not all regions provide a similar range of opportunities for athletic participation. Some areas are notorious for the overdevelopment of particular sports programs, while others are conspicuous for the absence of certain sports (Rooney 1986). For example, previous research indicates that the southern region emphasizes traditional notions of femininity and provides limited sports opportunities for females (Snyder and Spreitzer 1989). However, gender roles and sporting opportunities have changed greatly in recent years. Because contemporary studies have not examined potential regional differences in participation rates by gender it is unclear whether findings from over a decade ago are still accurate. Many studies use regionally specific samples, precluding an examination of how the wider environment affects participation rates. And few studies using nationally representative samples have examined the effects of context on participation.

Socialization via Sport

Various mechanisms have been proffered to explain how participation in sports benefits those individuals who play. These processes are frequently called "socialization via sport" because positive outcomes are postulated to emerge through the experience of participation. Below I outline the mechanisms that have received the most attention in the literature. Although these mechanisms often do not explicitly mention gender, research findings in related areas suggest whether or not these mechanisms may operate differently for boys and girls.

One explanation for why athletes have better outcomes than nonathletes emphasizes the positive socializing function of sports. Proponents allege that participation in sports builds character and provides an opportunity for children to develop generalized skills and personal resources that transfer to other realms of success. Athletics are said to develop numerous estimable qualities such as self-discipline, perseverance, hard work, sacrifice, teamwork, respect for rules, and interpersonal skills. Many individuals claim that sports provide a unique forum for developing these skills. For instance, while school work is largely a solitary activity in which individuals are assessed separately, most sports are a collective activity in which all individuals share wins and loses. As employers increasingly attach importance to teamwork these skills may become even more valuable. In addition, self-esteem and feelings of competence that develop as a result of sports participation "spill over" to other aspects of the student-athlete's life. Confidence derived on the field, court, or mat provide student-athletes with more self-assurance in the classroom and increase their aspirations for their future (Rehberg and Schafer 1968).

Some scholars have proposed that girls may benefit more than boys from

participation in sports because sport socialization deviates from girls' gender socialization, while it is a continuation of gender socialization for boys (e.g., Sabo 1993). Athletic participation emphasizes competition, independence, and achievement orientation, which are not traits that are encouraged in girls' socialization experiences (Kleiber and Hemmer 1981). Consistent with this explanation, previous research indicates that involvement in interscholastic sports is particularly salient for the development of leadership skills in female athletes (Dobosz and Beaty 1999). Furthermore, some studies suggest that an overemphasis on winning in male sports leads to more negative sportsmanship among male athletes (Sage 1980; Stevenson 1975), while female athletic contests may place a greater emphasis on improving one's own ability, cooperation, and feeling good, which lead to greater character development among female athletes (Nelson 1991).

Another proposed mechanism highlights school sponsorship of sports and the resulting bridge between academics and athletics. Because academic personnel (i.e., teachers and counselors) frequently coach school sports teams, athletics may develop relationships that are used to encourage academic goals and provide guidance about academics (Snyder 1972). In his seminal piece on athletics, Coleman (1961) noted the attention paid to athletes by both the school and the wider community. Greater attention, encouragement, and advice lead to an increased attachment to school in general and academic affairs in particular among athletes (Coleman 1961; Rehberg and Schafer 1968; Spreitzer and Pugh 1973). Participation in interscholastic sports therefore integrates students into school networks and through these relations creates a deeper commitment to school rules and values.

We might expect that girls would derive fewer benefits from participation in sports because supportive mentoring relationships are more likely to develop between adults who see the adolescent as a younger version of themselves and girls are more likely to have an opposite-gender coach. In fact, the percent of women's teams coached by women has been decreasing since Title IX became law. In 1972 more than 90 percent of all women's college teams were coached by women; however, by 2000 that figure dropped to 47 percent (Acosta and Carpenter 2000). As a result, we would expect the benefits girls derive from participation in sports to be less now than in the past.

In his description of the social milieu of high schools, Coleman (1961) emphasized the central role athletics play in the status hierarchy of the male adolescent subculture. Though sampling only midwestern schools, he found that athletics were highly valued regardless of school size and location, whether they were parochial or private, and the socioeconomic status of the surrounding community. Given the choice, Coleman found that most boys would want to be remembered as star athletes. Moreover, athletic achievement ranked as the most important characteristic in making a boy popular, with athletes being more likely than nonathletes to be mentioned as members of the leading crowd. Through the years, replication studies conducted in different locations and with varying ethnic and socioeconomic samples have found similar results regarding the high status of male athletes (e.g., Goldberg and Chandler 1989). Feelings of popularity have been shown to mediate the relationship between sports participation and expectations to

attend college (Otto and Alwin 1977). Athletes who do not perceive themselves as popular do not have significantly higher expectations than their nonathletic peers (Spreitzer and Pugh 1973).

At the time Coleman executed his study in the late 1950s athleticism was not given as an option for determining girls' popularity. Yet as girls' rates of participation rose, researchers explored the relationship among sports participation, popularity, and gender. Although male athletes have been consistently found to enjoy higher status than their nonathletic peers, sports participation has not historically improved girls' social status (Feltz 1978; Kane 1988). Detailed analyses of heterogeneity in sports indicate that girls who participate in more "masculine" or "sex inappropriate" sports are viewed more negatively than are females who compete in socially approved sports (Bell 1980). However, because of the rapid changes in gender norms, previous research may not reflect current effects for sports participation. Indeed, more recent studies indicate that participation in athletics increases girls' popularity in high school (Goldberg and Chandler 1989; Melnick, Vanfossen, and Sabo 1988). Although these findings suggest an increase in the status-conferring function of athletics for females, athletics remain a more salient mechanism for status enhancement among males (Suitor and Reavis 1995).

Another proposed mechanism whereby sports participation enhances academic achievement is through greater association with proeducational peers who reinforce educational goals. Research indicates that athletes are more likely to have peers who are college oriented (Hanks and Eckland 1976). And some of the positive effects of sports participation on educational aspirations have been found to be indirect, through peer plans and academic achievement, at least for white males (Picou 1978). Researchers suggest that participation can have only minimal potential effect on students who come from backgrounds where college expectations are already high (the so-called ceiling effect); students who come from backgrounds where college expectations are low have the most to gain from sports participation. Consistent with this explanation, early studies indicated that the beneficial effect of sports was greater for students who are less disposed to go to college (Picou 1978; Rehberg and Schafer 1968; Spreitzer and Pugh 1973; Spreitzer and Snyder 1976). However, many of these findings are derived from all-male samples. Lacking knowledge of the types of girls who participate in sports, it is unknown whether similar findings apply to girls.

The Relationship among Gender, Sports Participation, and Academic Outcomes

Although a great deal of research has been amassed that demonstrates a relationship between sports participation and educational outcomes for both boys and girls, the estimated effects are generally weak. Typically, participation explains between 1 and 4 percent of the variance in academic outcomes (Hanks and Eckland 1976; Spreitzer and Snyder 1976). Despite the small proportion of explained variance, the persistence of the finding in various data sets through time seemingly provides robust evidence that participation in athletics does indeed have a significant, although modest, effect on educational outcomes.[6]

Research comparing the effects of sports participation by gender is contradictory. Some studies indicate that both boys and girls benefit from participation, but the effect is stronger for boys (Hanks 1979; Sabo 1993). Conversely, other studies find that girls benefit more from athletic participation than boys do (e.g., Hanson and Kraus 1998). Still other studies indicate that participation has similar effects on boys and girls (Hanks 1979; Marsh 1993). Lack of consistency in findings is likely due to a number of reasons. First, studies vary by their inclusion of various racial-ethnic groups. Because the effects of sports participation vary by gender and race (Hanson and Kraus 1999; Melnick, Sabo, and Vanfossen 1992; Sabo, Melnick, and Vanfossen 1993), differences in sample composition will influence the magnitude and direction of gender differences. Second, examinations of the effects of sports have used a variety of outcome measures. If gender differences vary by the outcome analyzed, a lack of consistent findings for gender differences may be the result of diverse outcomes across studies. Third, contradictory results may derive from the methods (and variables) used to control for preexisting differences between male and female athletes and nonathletes. If investigations vary in their capability to isolate the independent effects of athletic participation (from selection effects), the magnitude and direction of the relationship among gender, participation, and outcomes would vary (this is discussed more fully in the analysis section).

Because the positive benefits of sports are dependent on the reward structure of the environment in which they are situated (Spreitzer and Pugh 1973), there is little reason to expect girls and boys would derive the same benefits. Yet sports opportunities for girls have expanded in recent years, and gender stereotypes have loosened, leading us to believe that the benefits of participation in sports for girls may be stronger now than they were a decade or two ago. This study seeks to address the question of differential effects of sports participation on educational outcomes by first examining factors that predict sports participation, explicitly exploring gender differences. After determining the likelihood that an adolescent participates in interscholastic sports, the effect of participation on educational outcomes is estimated net of these effects.

HYPOTHESES

1. Boys will be more likely to participate in interscholastic athletics than girls.
2. Sports participation will be associated with better academic outcomes for both boys and girls.
3. A portion of the association between sports participation and better academic outcomes will be due to selection factors, with more capable adolescents participating in sports.
4. Sports participation will have a greater positive effect on boys' academic outcomes than on girls' outcomes.

DATA

Data for these analyses come from the National Longitudinal Study of Adolescent Health (Add Health). The primary sampling frame was a database of high schools

in the United States. Schools were stratified by region, urbanicity, school type, ethnic mix, and size and selected with probability proportional to size. If a school declined to participate, a replacement school was chosen from the same stratum. Data were collected from students, parents, and school administrators. Information on participation in interscholastic sports came from students' self-administered in-school questionnaire, collected from September 1994 through April 1995. The adolescent in-home interviews, conducted from September 1994 through December 1995, provide sociodemographic data as well as information on academic outcomes. School administrators provided information on the surrounding area of the school. A more detailed description of the sampling methodology is reported elsewhere (Bearman, Jones, and Udry 2001).

Only adolescents participating in both the in-school and the in-home survey were eligible for inclusion in the current study (N = 15,356) though only respondents from the nationally representative sample are considered here (N = 14,412).[7] Next, respondents were removed if they attended schools that did not grade students or if students had dropped out of school by the in-home interview (N = 14,202). Slightly more than 1 percent of the remaining sample failed to indicate their racial-ethnic identity category or designated it as "other"; these cases were removed since the exact composition of this group was unknown. Finally, a listwise deletion of cases was performed to remove respondents who had missing information on the educational outcomes examined (N = 13,869).[8]

The Add Health data are well suited for my research objectives. First, the sample is large, heterogeneous, and nationally representative. Because the large sample size, there is enough statistical power to examine Asian and Native American adolescents, two understudied populations. Second, unlike past research based on contextually limited samples (i.e., a few schools, or a limited geographic region), I am able to examine how various contexts facilitate or inhibit participation rates. This allows for an explicit examination of macro socialization processes.

MEASURES

Outcomes

Participation in Interscholastic Sports

Respondents were provided with a list of athletic teams found in many schools.[9] Adolescents were asked to indicate any sports they were participating in or planned to participate in later in the school year. For the analyses respondents were classified as sports participants if they indicated they played or planned to play any sports.

Unexcused Absences from School

Students were asked how often in the past school year they skipped school without an excuse. Due to a strong negative skew (few respondents reported cutting school many days), this variable was transformed by taking the natural log.

Curriculum Track

The majority of analyses use a dichotomous measure of college preparatory curricula (Hanks and Eckland 1976; Lindsay 1984). However, to provide a more calibrated measure of the degree to which students are preparing to enter college, I constructed a measure of the number of core courses students were enrolled in during the most recent marking period. Core courses include English, history and social studies, science, and mathematics. This variable is also skewed, so the natural log of this measure is used in the analyses.

Academic Achievement/Grades (GPA)

Students were asked what grade they received in the most recent marking period in the four core courses. Response categories ranged from A (coded 4) to D or lower (coded 1). I created a composite GPA by taking an average of respondent's grades for each subject and dividing by the number of courses taken.

Academic Expectations

Adolescents were asked to rate on a five-point scale how likely it is they would go to college. Because, in general, students had high expectations of going to college, the natural log of this measure was used in analyses to correct for the strong skew.

Predictor Variables

Academic Aptitude

Adolescents were administered an abbreviated version of the Peabody Picture Vocabulary Test (PVT). This test of hearing vocabulary involved the interviewer reading a word and then the respondent selecting the illustration that best fit the word. Raw scores were age standardized with a mean of 100 and a standard deviation of 15 (range = 13 to 139).

Parental Encouragement for College Attendance

Respondents were asked how disappointed their residential mother/father would be if they did not graduate from college. Response categories ranged from 1 (low) to 5 (high). In cases in which residential parents had different levels of encouragement the score for the more encouraging parent was used.

Demographic Characteristics

Respondents were asked what racial/ethnic group(s) described them. Although individuals were allowed to characterize themselves as multi-racial, I created five mutually exclusive racial-ethnic categories. In this variable, coding was such that ethnic origin was used as the first classification; any students who classified themselves as Hispanic were classified as Hispanic regardless of their

racial identification. The racial-ethnic groups are the following (categorized in the following order): Hispanic, Black, Asian American, Native American, and White. Respondents reported the grade in which they were currently enrolled. Parental education was used as a measure of socioeconomic background. This measure designates the highest level of education completed by the most well educated residential parent. This variable ranges from never having gone to school (coded 1) to professional training beyond a four-year college (coded 10). Family structure was designated as intact if adolescents reported they lived with both their biological mother and their biological father and nonintact if they resided in any other familial arrangement. Sibling measures were constructed indicating if the respondent lived in the same household as older brother(s), older sister(s), younger brother(s), and younger sister(s). These are dichotomous variables that designate the presence or absence of this type of sibling.

Contextual Variables

Information on the context of the school was provided by a school administrator. Administrators indicated where the school was located (West, Midwest, South, and Northeast), whether the school was private or public, the size of the school (small, 1–400; medium, 401–1,000; or large, 1,001–4,000), and whether the school was located in an urban, suburban, or rural area.

METHODOLOGICAL CONSIDERATIONS

The most important methodological issue is determining if the relationship between athletic participation and academic outcomes is causal.[10] Difficulties in temporal ordering are considered particularly problematic in studies using cross-sectional data.[11] The most widespread method for controlling for selection effects is to include control variables in multivariate analyses. Adding controls for characteristics known to be associated with sports participation is thought to parse out the variance attributable to these variables and allow for the estimation of the independent effect of sports participation.

However, a substantial problem not addressed in the typical control variable approach is when a control variable has opposite effects on selection processes and the outcome variable. In some cases, the application of controls produces results that are actually *less* accurate than would occur without controls (Lieberson 1985). For example, we know that girls have lower participation rates in athletics than boys do but outperform boys in certain educational outcomes (Barker 1997; Kleinfeld 1998). Because being female is negatively related to participation but positively related to educational outcomes, applying a control for gender would either minimize the magnitude of the association between sports and educational outcomes or generate results in the opposite direction from the true relationship. The direction and strength of the bias will depend on the strength of the various relationships (Lieberson 1985).

Another noteworthy difficulty in the standard control variable approach is unmeasured selectivity within control variables. When researchers control for

gender they are assuming that the only factors determining which children participate in sports within each gender is either unrelated to the outcome variable(s) or due to chance. However, if there is reason to believe that nonrandom sorting operates *within* each control variable and the sorting involves factors that affect the outcomes, then the controlling procedure is incomplete (Lieberson 1985). For example, if among boys, parents with lower socioeconomic status (SES) are more likely to encourage sports participation while the opposite is true for girls, there is unmeasured and uncontrolled selectivity operating within gender. Adding a control for SES will provide an average estimate of the effect of SES (for boys and girls) and will not accurately specify the ways in which SES affects participation rates within gender. And to an unknown degree, some of the variance attributed to sports participation may actually be due to gendered processes affecting participation (selection effects).[12] Due to differences found in boys' and girls' socialization experiences, there is substantial reason to expect that gender effects might be misspecified when applying the typical control variable approach.

Because of the various difficulties discussed above, a more precise method for controlling for self-selection is to estimate the likelihood that an individual participates in sports and then use this predicted probability as a proxy for selection effects. Using predicted probabilities avoids difficulties when the control variable has opposing effects on selection processes and the outcome variable. By including gender interaction terms, I am able to estimate whether selection influences significantly vary by gender. Another strength of this approach is that it allows for the estimation of direct (socialization via sport) and indirect (socialization into sport) effects of variables—the very research question most studies seek to answer. To the degree that the predicted probability accounts for self-selection into the athletic stream, this coefficient estimates how much of the association between sports participation and positive outcomes is due to differences that precede participation; in other words, because this coefficient controls for the effects of antecedent characteristics, it represents the differences we would have expected between athletes and nonathletes had neither group participated in sports. After controlling for the predicted probability of participation, the coefficient associated with athletic participation provides an estimate of the relationship between participation and outcomes.

ANALYSIS STRATEGY

The first analyses examine the effects of sociodemographic and contextual characteristics on the likelihood of sports participation. The second model explicitly tests whether sociodemographic characteristics are similar determinants of boys' and girls' participation in sports and whether certain environments differentially facilitate boys' and girls' athletic participation. The predicted probability of participation is saved so it can be used as a control for selection processes in final models.

In addition to controlling for the predicted probability of sports participation, the final models also include controls for parental education and encouragement because previous studies have indicated these factors significantly influence children's educational outcomes (e.g., Hanks 1979). Because parental education is included in the equation predicting sports participation, the portion of parental

education that is mediated through involvement in sports is captured in the predicted probability of participation. The direct effect of parental education on adolescents' educational outcomes is captured in the main effect. Consistent with the literature, the analysis of grade point average and academic expectations also include a measure of academic aptitude (Braddock 1981; Hanks 1979; Hanks and Eckland 1976). In addition, the models predicting academic expectations include student's grade point average and curriculum track because academic achievement has been demonstrated to be a critical determinant of future expectations (Otto and Alwin 1977; Snyder and Spreitzer 1977). Potential gender differences in the effect of sports participation on academic outcomes are explored by including an interaction term for gender and sports participation (model 2).

Due to Add Health's multistage sample design, respondents are not selected independently. Students who attend the same school are more likely to have similar responses. Analyses that do not control for these clustering effects have the potential to provide inaccurate standard errors and therefore have an increased probability of Type I and Type II errors. To correct for the clustered survey design, analyses were performed in Survey Design Analysis Software (SUDAAN version 7.5.2). SUDAAN takes into account sample design parameters and therefore computes standard errors of estimates that account for the complex survey design (Shah, Barnwell, and Bieler 1996). Wald statistics provide tests of hypotheses concerning the model parameters. In addition to correcting for design effects, all descriptive statistics and multivariate analyses use nationally representative weights that allow the results to be generalized to American adolescents enrolled in school.

RESULTS

Appendix A contains a table of the descriptive statistics for the entire sample (column 1). Slightly more than half of the respondents indicated they were sports participants (54.6 percent). Columns 2 and 3 report the descriptive statistics separately for sports participants and nonparticipants respectively. Student athletes were significantly different from nonathletes for almost all of the sociodemographic characteristics explored. In addition, school characteristics differentiated participants from nonparticipants. Consistent with a large body of research, a comparison of the educational outcomes indicates that sports participants have moderately better outcomes than do their nonparticipating peers.

Characteristics of Sports Participants

Multiple regression models are used to explore the unique contribution of the various sociodemographic and contextual variables to participation status. The odds ratios in Table 1 indicate the independent influence of each of these variables on sports participation while holding constant the effect of each of the other variables. Model 1 indicates that girls are only about half as likely as boys to participate in interscholastic sports (OR = .55). And Hispanic (OR = .74) and Asian American (OR = .66) youths have lower odds of participating compared to their white counterparts. Adolescents who come from intact homes are 24 percent more likely to

participate in sports than youths in other family structures. And students with older brother(s) are 20 percent more likely to participate in sports and students with younger sister(s) are 16 percent more likely to play sports. The greater children's parents' educational attainment, the greater their likelihood of participating in sports. Youths in older grades have lower odds of participating than those in younger grades; each grade is associated with an average of 8 percent lower likelihood of participating. Examination of participation rates by grade revealed steady attrition in interscholastic sports in the older grades (frequencies not shown).

Contextual factors were found to strongly influence participation rates. Differences by region of the country are notable. Compared to adolescents living in the South, those in the West (OR = 1.33), Midwest (OR = 1.46), and especially the Northeast (OR = 1.71) are more likely to participate in sports. Private school students are almost twice as likely to participate than are students from public schools (OR = 1.90), as found in earlier research. Also consistent with previous research, the results indicate an inverse relationship between the size of the school and likelihood of participation; adolescents in schools with student bodies greater than 1,000 are 17 percent less likely to participate than adolescents in schools with a population of between 401 and 1,000 students. Last, adolescents who live in rural areas are 33 percent more likely to participate in sports than are youths from suburban areas.

Gender Differences in Predictors of Sports Participation

Model 2 includes gender interaction terms for each of the variables used to predict participation. The influence of family structure, parental education, presence of siblings, grade in school, size of school, and attendance at a private school have similar effects on socializing boys and girls into athletics, as the interactions of these variables with gender are not significant (Table 2; model 2). Results reveal significant gender differences in the influence of race on athletic participation. The gender gap in participation rates is significantly greater among black adolescents than whites. There is also a marginally significant interaction between gender and urbanicity. These findings indicate that the gender gap is smaller in urban areas compared to suburban areas. Because these findings are tentative, future studies should explore these effects further. These results suggest that models using controls for demographic and contextual variables, particularly race, may inaccurately control for gendered selection effects.

The Effects of Sports Participation on Educational Outcomes

Model 1 in Table 2 reports the results of regressions predicting educational outcomes. Girls have significantly better educational outcomes than boys do; girls have fewer unexcused absences, take more core courses, have higher GPAs, and have higher expectations to go to college. Consistent with previous literature, I find that, in general, parental encouragement and education are positively associated with educational outcomes. Academic aptitude has a significant effect on GPA and academic expectations, and GPA and curriculum track exert a positive influence on academic expectations.

TABLE 1

Estimated Odds Ratios from Logistic Regressions of Sociodemographic and Contextual Characteristics on Adolescent Interscholastic Athletic Involvement (N = 13,869) in 1994–95

	Odds Ratio Model 1	*Odds Ratio Model 2*
Sociodemographic characteristics		
Gender[a]		
Female	0.55***	0.95
Race[b]		
Hispanic	0.74**	0.70*
Black	1.08	1.34*
Asian	0.66**	0.80
Native American	1.01	0.90
Family structure[c]		
Intactw1	1.24***	1.30**
Highest level of parental education		
Parental education	1.12***	1.12***
Siblings		
Older brother	1.20**	1.10
Younger brother	1.03	1.07
Older sister	1.10	1.12
Younger sister	1.16**	1.16
Age/cohort		
Grade	0.92**	0.95
Contextual variables		
Region[d]		
West	1.33*	1.17
Midwest	1.46**	1.39**
Northeast	1.71***	1.81***
School type[e]		
Private	1.90**	1.74**
School size[f]		
Small (1–400 students)	1.36	1.39
Large (1,001–4,001 students)	0.83*	0.87
Urbanicity/population of area[g]		
Urban	1.12	1.02
Rural	1.33*	1.20
Gender Interactions		
Female × Hispanic		1.12
Female × Black		0.68*
Female × Asian		0.68
Female × Native American		1.29
Female × Intact Family		0.91
Female × Parental Education		1.00
Female × Older Brother(s)		1.18

TABLE 1 (*Continued*)

	Odds Ratio Model 1	*Odds Ratio Model 2*
Gender Interactions (*continued*)		
Female × Younger Brother(s)		0.93
Female × Older Sister(s)		0.98
Female × Younger Sister (s)		1.01
Female × Grade		0.95
Female × West		1.26
Female × Midwest		1.10
Female × Northeast		0.90
Female × Private School		1.17
Female × Small School		0.96
Female × Large School		0.93
Female × Urban		1.20^{+}
Female × Rural		1.19
Intercept	0.94	0.70
Adjusted R^2	0.08	0.09

Source: National Longitudinal Study of Adolescent Health.

Notes: All analyses performed on weighted data and correct for the complex survey design. Reference categories: [a] male, [b] white, [c] not intact, [d] South, [e] public school, [f] medium size (401–1,000 students), [g] suburban.

$^{+}p \leq .10$; $^{*}p \leq .05$; $^{**}p \leq .01$; $^{***}p \leq .001$.

Of greater interest, I find the likelihood of a respondent participating in sports is significantly associated with school attendance, curriculum track, and academic expectations. These findings indicate that some of the association between athletics and positive academic outcomes is due to the tendency for better students to pursue athletics (selection effects) and are not a consequence of participation. However, even after controlling for these selection effects and variables known to be related to academic outcomes, participation in sports exerts a significant positive effect on all of the outcomes.

Gender Differences in the Effects of Sports Participation

Model 2 in Table 2 explores whether or not the beneficial effects of sports participation are significantly different for boys and girls. Analyses of unexcused absences and academic expectations reveal significant differences by gender. The gender by participation interactions indicate that the beneficial effect of sports participation is significantly less for female athletes' unexcused absences (b = .08) and academic expectations (b = −.04) than for male athletes (the reference group). Examining the main effects of participation in sports (unexcused absences b = −.13; expectations to go to college b = .08) indicates that the effect of sports participation is nearly twice as strong for male than for female athletes. In the model predicting curriculum track the interaction term is not significant, indicating

TABLE 2

Unstandardized Regression Coefficients (Standard Errors in Parentheses) from Ordinary Least Squares Regressions of Sports Participation, Selection into Sport, and Gender on Adolescent Academic Outcomes (N = 13,869)

	Log of Unexcused Absences		*Log of Curriculum Track*		*GPA*		*Log of Academic Expectations*	
	Model 1	*Model 2*	*Model 1*	*Model 2*	*Model 1*	*Model 2*	*Model 1*	*Model 2*
Female	−0.23***	−0.28***	0.03***	0.03***	0.27***	0.30***	0.04***	0.06***
	(0.03)	(0.04)	(0.01)	(0.01)	(0.03)	(0.03)	(0.01)	(0.02)
Participation in sports	−0.09***	−0.13***	0.02***	0.01*	0.14***	0.17***	0.06***	0.08***
	(0.02)	(0.03)	(0.00)	(0.01)	(0.02)	(0.03)	(0.01)	(0.01)
Predicted probability of playing a sport	−1.05***	−1.06***	0.21***	0.21***	0.14	0.15	−0.10*	−0.09*
	(0.14)	(0.14)	(0.03)	(0.03)	(0.15)	(0.15)	(0.05)	(0.05)
Female × Sports Participation		0.08*		0.00		−0.06+		−0.04*
		(0.04)		(0.01)		(0.03)		(0.02)
Parental education	0.01	0.01	−0.01***	−0.01***	0.05***	0.05***	0.02***	0.02***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)
Parental encouragement	−0.05***	−0.05***	0.01***	0.01***	0.06***	0.06***	0.09***	0.09***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
GPA							0.12***	0.12***
							(0.01)	(0.01)
Curriculum							0.03***	0.03
							(0.02)	(0.01)
Academic aptitude					0.01***	0.01***	0.00***	0.00***
					(0.00)	(0.00)	(0.00)	(0.00)
Intercept	1.24***	1.27***	1.40***	1.40***	0.66***	0.64***	0.22*	0.20*
	(0.09)	(0.10)	(0.03)	(0.03)	(0.12)	(0.13)	(0.09)	(0.09)
Adjusted R^2	0.05	0.05	0.04	0.04	0.15	0.15	0.24	0.24

Source: National Longitudinal Study of Adolescent Health.

Note: All analyses performed on weighted data and correct for the complex survey design.

$^+ p \leq .10$; $^* p \leq .05$; $^{**} p \leq .01$; $^{***} p \leq .001$.

that sports participation does not differentially influence the number of core courses girls and boys enroll in. The interaction term in the GPA model borders on being significant (b = −0.06; p = .06), providing suggestive evidence that athletics may have a more positive impact on boys' grades than girls'.

DISCUSSION AND CONCLUSION

Presumably Title IX provided girls with equal access to sporting opportunities. Yet almost thirty years after the legislation was enacted, girls' participation rates still linger behind boys'. Furthermore, the analyses reported here reveal that even though participation in sports positively affects students' educational outcomes, for some outcomes boys gain significantly greater benefits from playing sports than girls do.

Although researchers have long acknowledged that participation in sports is not a random occurrence, the issue of selectivity has not been given ample attention. My analyses indicate that many of the factors that influence boys to participate in sports similarly affect girls. Yet the racial composition of boys' and girls' athletic rosters are significantly different. The gender gap in interscholastic athletic participation is greater among black adolescents (64 vs. 41 percent) than whites (64 vs. 51 percent). Surprisingly, the larger gap is the result of lower participation rates among black girls. This finding was unexpected because previous research highlights black women's ability to integrate the roles of female and athlete. However, these studies concentrated on college-aged women (Leonard 1984). More explicit attention to the widening and narrowing of gender differences in various racial-ethnic groups through the life course is a promising area for future research.

In general, the literature lacks formal testing of whether and how various environments differentially affect boys' and girls' participation. In attempting to fill this gap, the present analyses offer suggestive evidence that certain environments facilitate greater athletic participation among girls. The gender gap in participation rates is narrower in urban areas, where approximately four girls participate for every five boys, compared to suburban areas, where three girls participate for every four boys. While these findings suggest that the larger context in which children live significantly affect their probability of participation, the present analyses are unable to decipher whether these differences are due to structural or cultural barriers because of data limitations. Gender differences could stem from greater equality in opportunity structures in urban areas. Or larger gender differences in suburban areas could be a reflection of the greater emphasis and attention given to boys' sports in these areas. Community enthusiasm, media coverage, facilities, and funding for recreational activities likely influence participation rates.

Moving beyond the traditional control variable approach, I used predicted probabilities of participation to control for selection effects. Performing the analyses in this way allowed me to estimate how much of the global association between sports participation and positive outcomes was due to differences that precede participation and what associations were more directly attributable to participation. Results indicated that a portion of the associations between educa-

tional outcomes and athletic participation was not causal but was due to differences that preceded participation. These findings underscore the importance of controlling for initial incomparability between athletes and nonathletes prior to participation. And the presence of significant interaction terms in the model predicting participation (Table 1; model 2) suggest that using the traditional control approach to adjust for selection effects may provide biased estimates when attempting to examine differences in the effects of participation by gender.

Even after controlling for factors that select boys and girls into sports, the analyses revealed a small but significant positive association between participation and all of the academic outcomes. These findings could mean that sports participation positively influences adolescents' academic outcomes. However, it is also plausible that the relationship runs, at least partially, in the other direction, with better academic outcomes causing participation in athletics. The direction of causality cannot be definitively stated because the coefficient for sports participation only indicates that a significant association between participation and academic outcomes exists after controlling for sociodemographic characteristics that precede sports participation. It is likely that the relationship between sports participation and academic outcomes is more complicated than a unidimensional causal relationship and that a regression coefficient may be insufficient to describe these dynamics. Using longitudinal data and controlling for past participation would not resolve this difficulty. Finding that kids who participate in sports (at wave 2) have higher academic outcomes (at wave 2) after controlling for prior sports participation (wave 1) and prior academic outcomes (wave 1) only shows an association between sports participation and academic outcomes over time. It is plausible both that (1) participating in sports leads adolescents to have better academic outcomes and that (2) excelling in academics encourages continued sports participation.

Previous research indicates that attrition rates increase and sports become more selective as children progress through junior and senior high and continue to become more selective in college and beyond. Using longitudinal data to examine both selection into (and out of) sport and the association between athletic participation and outcomes would help to elucidate these relationships. However, interpretation of the results is not straightforward because differences in athletes and nonathletes through time could be due to (1) selection forces, (2) the differential impact of sports participation by exposure to sports (length of time spent in sports), and (3) the differential impact of participation at various stages in the life course. The accumulation of a body of research (using different samples) would allow researchers to estimate the influence of these mechanisms. In addition, qualitative work on sport participants would provide valuable insight into the causal attributions youths' make between their participation in sports and various outcomes. Probing for specific examples of how participation affects areas of their well-being would provide information on how they experience participation and what facets of participation are most salient for them, elucidating the mechanisms through which sports influence well-being (i.e., popularity, building relationships with school personnel, character development). Another potential avenue for future research is to examine how the expansion or reduction of athletic programs influences student outcomes. As school districts undergo budgetary

constraints changes in the number of athletic teams provides a quasi-experimental situation to examine the relationship among sporting opportunities, participation, and outcomes. In a similar vein, examining whether kids' outcomes vary by whether they are "in season" provides further insight into the processes whereby participation may influence outcomes and whether the influence of sports participation is transitory or more permanent.

A notable finding of these analyses is that sports participation had a greater positive effect on boys' unexcused absences and expectations to attend college than girls'. These gender differences could be a result of girls' less frequent absences and higher expectations, leaving less potential for sports to improve their outcomes (a "ceiling effect"). Another explanation is that, although the quantity of sporting opportunities has increased for girls, the experience of participation is qualitatively different from that of their male counterparts. Boys may receive more media attention, encouragement, and popularity from their athletic prowess than do girls. Future work in this area might investigate the social rewards boys and girls gain from participation. Closer attention to the effects of recognition from various sources (teachers, coaches, peers, and the wider community) and how these vary by gender will expand our understanding of the mechanisms whereby athletics benefit youths. And attention to the status of various sports will afford the opportunity to link the environment in which children play to their outcomes. Individuals playing on teams that receive positive attention from community and school may receive greater benefits from participation than individuals participating in more marginalized sports. The status of various sports may vary by region of the country. And girls and boys participating in the same sport may receive different rewards based on social attitudes of gender-appropriate behavior.

Although this study provides estimates for the "effects" of participating in sports, I did not explore which mechanisms produced these effects. As reviewed earlier, scholars have suggested various mechanisms whereby participation improves youths' well-being. Because research indicates that the mechanisms through which sports produce positive outcomes differ by subgroups (Picou 1978), future analyses should explore whether various mechanisms differentially operate for female and male athletes. Furthermore, because the duration of the beneficial effects of sports garnered through various mechanisms may differ, gender differences in the effects of sports may vary through the life course. Greater popularity of athletes may lead to better adolescent outcomes but cease influencing outcomes in adulthood when other characteristics become more important in determining status. On the other hand, the acquisition of estimable qualities may have sustained benefits through adulthood.

It should be noted that although college expectations were largely discussed as a positive educational outcome, unrealistic expectations may lead to disappointment if adolescents are rejected from college or if they are admitted but experience academic failure frustration in college (Fisher, Juszczak, and Friedman 1996). If boys' expectations are unrealistic, these findings indicate boys experience greater negative consequences from sports participation. A small but growing body of research explores the negative effects of participation (Eccles and Barber

1999). For example, the athletic success of men's collegiate football and basketball teams is associated with lower graduation rates (DeBrock, Hendricks, and Koenker 1996). At this point, female basketball players predicted to leave school early for this career were more likely to stay in school. However, with the inception of the WNBA and increased professional opportunities for women we might expect female athletes to withdraw from school at rates more comparable to male athletes. Researchers exploring the differential effects of sports participation by gender should not neglect examinations of the negative impact of sports; gender parity in sports is likely to also make girls' negative outcomes more comparable with boys.

The measure of participation in interscholastic athletics used in these analyses was not ideal. Because the measure queries respondents about athletics they were participating in or planned to participate in later in the school year, it may include some individuals who anticipated participating but for some reason did not; respondents could have reconsidered their decision to participate, gone to tryouts and been cut, or been unable to try out for a variety of reasons (academic ineligibility, physical limitations, or decreased athletic funds resulting in cutbacks in sporting opportunities). However, data limitations prevented construction of a cleaner measure and examination of these biases. Exploration of these issues would provide valuable insight into both selection forces and mechanisms by which athletics benefit individuals.

With interaction terms my equation predicted 9 percent of the variance in sports participation; although this is ostensibly low, it is slightly higher than previous findings (Fejgin 1994; Hanks and Eckland 1976; Marsh 1993). Low explained variance in sports participation may lead to biased estimates for the effects of sports participation; however, it is not possible to determine the existence, magnitude, or direction of these biases. Because selection processes influencing adolescent participation in interscholastic sports are in motion before children reach adolescence, the ideal data source would include longitudinal information beginning in early childhood. Information on sporting opportunities in elementary school (e.g., the number of sports offered) and the larger community (i.e., little leagues, recreation centers, community playing grounds, booster clubs that subsidize the cost of equipment) would provide valuable information on socialization into sport.[13] Structural inequalities in girls' and boys' opportunities to play sports in early childhood may produce observed gender differences in adolescence and young adulthood. Yet the most commonly used sources (e.g., the High School and Beyond and the National Longitudinal Youth Survey) begin data collection when children are adolescents or preadolescents. Greater attention to selection forces in early childhood may help to explain gender differences and hold promise for understanding gender inequalities later in the life course.

Previous research indicates that two parents may be better able to provide the financial and time investments that promote higher rates of sport participation (McNeal 1999). However, not much is known about how parental investments of time, energy, and material resources for children's involvement in sports affect long-term participation. And little is known about whether these influences have similar effects on boys and girls. The significant impact of family structure and the

presence of older brothers and younger sisters on adolescent sports participation in the present analyses indicate that greater attention to family influences is warranted.

In conclusion, future research should focus on selection into sport. These analyses are important in their own right for determining who is participating, but they are also crucial in order to distill the direct, independent influence of sports participation on outcomes. Furthermore, greater attention to contextual factors and macrolevel processes that influence sports participation is needed in order to understand the links between gender and athletics. Explicit examinations of gender differences in sporting opportunities, material and emotional support, the existence and awareness of role models, expectations for male and female athletes, and the cultural climate in which boys and girls choose to participate in athletics are all promising areas for future research. Increased knowledge of gender and sports will contribute more broadly to our understanding of gender relations among adolescents. Changing gender ideology and opportunities structures are crucial issues in sociology, and organized sport provides an excellent site for studying these issues.

APPENDIX

Comparisons of Selected Sociodemographic Characteristics, Contextual Variables, and Academic Outcomes between Athletic Participants and Nonparticipants

	Full Sample (N = *13,869*)	*Sports Participants* (N = *7,413*)	*Nonparticipants* (N = *6,456*)
Participate in sports	54.6	100	100
Sociodemographic characteristics			
Gender (%)			
Male	49.6	56.1***	41.7
Female	50.4	43.9	58.3
Race (%)			
White	67.1	70.4**	63.2
Hispanic	10.2	8.3	12.6
Black	16.6	15.6	17.8
Asian	4.2	3.7	4.7
Native American	1.9	2.0	2.0
School year			
Grade (mean)	9.4	9.2***	9.5
Academic aptitude			
Standardized PVT score (mean)	102.0	102.7***	101.2
Highest level of parental education	6.9	7.2***	6.6
Family structure			
Intact	55.5	59.7***	50.5
Non-intact	44.5	40.3***	49.5

(*Continued*)

APPENDIX (*Continued*)

	Full Sample (N = *13,869*)	*Sports Participants* (N = *7,413*)	*Nonparticipants* (N = *6,456*)
Sociodemographic characteristics (continued)			
Siblings (%)			
Older brother(s)	22.9	24.7***	20.6
Younger brother(s)	34.9	34.9	34.8
Older sister(s)	20.2	20.8	19.5
Younger sister(s)	33.0	33.9+	31.8
Log of parental encouragement (mean) [Parental encouragement to attend college]	1.3 [4.1]	1.4 [4.2]***	1.3 [4.0]
Contextual characteristics			
Type of school (%)			
Private	7.4	10.2**	4.1
Public	92.6	89.9	95.9
Size of school (%)			
Small (1–400 students)	18.4	22.0***	14.0
Medium (401–1,000 students)	47.3	47.7	46.8
Large (1,001–4,001 students)	34.4	30.4	39.2
Urbanicity (%)			
Urban	23.3	23.1	23.5
Suburb	58.4	56.9	60.2
Rural	18.3	20.0	16.2
Region (%)			
Northeast	14.6	16.9**	11.9
West	14.4	14.0	14.8
Midwest	28.6	31.1	25.6
South	41.9	38.1	47.7
Academic outcomes (mean)			
Log of skip school [skip school]	0.4 [1.6]	0.3 [1.2]***	0.5 [1.8]
Log of number of core courses [number of core courses]	1.5 [3.8]	1.6 [3.8]***	1.5 [3.7]
GPA	2.8	2.9***	2.7
Log of how likely go to college [how likely go to college]	4.2 [1.4]	4.3 [1.4]***	4.0 [1.3]

Source: National Longitudinal Study of Adolescent Health.

Notes: All statistics report percentages and means using nationally representative weights. Significance tests compare athletic participants to nonparticipants. Chi-square tests are used for categorical variables. One test is performed for each variable; one exception is tests of the sibling categories. Since these are not mutually exclusive categories, separate chi-square tests are performed for each variable. T-test are used to explore significant differences for continuous variables.

$^{+}p \leq .10$; $^{*}p \leq .05$; $^{**}p \leq .01$; $^{***}p \leq .001$.

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NOTES

1. Compliance with Title IX was not required until 1978.
2. This specification indicates a mediated effect, in which sports participation is a mechanism through which advantages are perpetuated.
3. This specification indicates a moderated effect, in which the magnitude of the effect of sports participation varies by subgroup.
4. These studies primarily use multivariate models to estimate racial-ethnic differences in participation. Researchers focus on multivariate analyses because these models estimate the independent effects of covariates (i.e., race-ethnicity) after controlling for other covariates (i.e., SES). Many researchers include a measure of prior participation in multivariate analyses (Antshel and Anderman 2000; Fejgin 1994; McNeal 1998). Depending on racial-ethnic differences in participation through time, controlling for past participation may provide inaccurate comparisons of racial-ethnic differences in participation. For example, McNeal (1998) finds that 46.9 percent of Hispanics participate in athletics in tenth grade compared to 57.0 percent of whites; it is unclear whether these rates are significantly different from one another, because no test of significance is provided. In multivariate analyses that controlled for prior participation the rate of participation among Hispanics was not significantly different from whites. If Hispanics were significantly less likely to participate in athletics in both eighth and tenth grade than their White counterparts, controlling for eighth-grade participation would reduce the effects of ethnicity on tenth-grade participation. Fejgin (1994) did test for racial-ethnic differences in raw participation rates and found the rates were not significantly different; however, she used a substantially smaller subsample than did McNeal.
5. Some states allow private schools to count participation in athletic teams toward physical education requirements, an opportunity that is unavailable to public school students.
6. In view of the fact that the vast majority of the literature uses the control variable method to statistically adjust for selection effects, the consistency of significant findings may not be an indication of the veracity of the findings but the result of using the same method (Lieberson 1985).

7. Respondents in the Add Health survey were selected for two different analytic purposes: analyses to provide nationally representative estimates and specialized genetic analyses. Because of the deviation from the sampling design to capture a greater number of genetic individuals, many of these respondents do not have an associated weight and are therefore not included in these analyses.
8. Respondents with missing data for parental education, grade in which they were currently enrolled, and Peabody vocabulary scores were retained. These cases were assigned the sample mean (parental education level of 7 [the equivalent of some education beyond high school], grade 9, and PVT = 102.03). Respondents missing on parental encouragement were assigned the median level of 4. Sensitivity analyses revealed similar results when the rounded mean of 5 was used.
9. This list included baseball or softball, basketball, field hockey, football, ice hockey, soccer, swimming, tennis, track, volleyball, wrestling, and a catchall category for other sports.
10. Issues of causality between educational outcomes and athletic participation are further complicated by the gatekeeping functions schools perform. Because schools sponsor most athletic programs for youth, they determine eligibility rules, which are frequently tied to academic performance (i.e., "no pass/no play"). When student-athletes' academic performance drops below an established minimum they are deemed ineligible to participate. In these circumstances causality is reversed with academic achievement, or lack thereof, bringing about participation status. Eligibility requirements introduce biases in analyses of grade point average since the distribution of grades for student athletes is constrained to a smaller range (of passing marks), while that for nonathletes covers the full distribution from A to F. These concerns are minimized in the present analyses, where the lowest category for grades is D or lower. Circumstances in which students are ineligible to participate highlight the limitation of representing sports participation as a single status in time. Using a static measure may bias results since it does not tap the benefits of sports participation for students who participated at one time and therefore were somehow influenced by sports, yet dropped out. However, the Add Health data do not provide measures of past athletic participation, prohibiting an exploration of these issues.
11. Many longitudinal studies also include a prior measure of the dependent variable when attempting to assess the independent impact of sports. This technique is thought to provide a more rigorous research design because it controls for prior associations in student's performance (Marsh 1993; Melnick, Sabo, and Vanfossen 1992). However, because opportunities to participate in sports begin well before adolescence, part of the "effects" of sports may already be evident in students' performance when outcome measures are first taken. Therefore, controls for prior performance may systematically bias the estimated effects of sports participation. Moreover, models that include measures of prior outcomes when predicting current outcomes estimate *changes* in performance. These analyses are more aptly interpreted as testing differences in the trajectories of academic performance in athletes compared to nonathletes.
12. Adding an interaction term for gender and SES will not provide estimates, or completely control for, differential sorting; instead the inclusion of this term will estimate the differential effects of sports participation by gender dependent on social class.
13. Tracking young children's experiences in sports participation in a single community could reveal whether significant differences exist between private and public school students prior to the start of school attendance, providing valuable information on selection processes. These analyses could also reveal whether or not all

members of a community take advantage of or have equal access to similar sporting opportunities.

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