Linking Extracurricular Programming to Academic Achievement: Who Benefits and Why?

Beckett A. Broh
Ohio State University

This article analyzes data from the National Educational Longitudinal Study of 1988 to test the effect of participation in extracurricular activities on high school achievement. It also explores potential mediating mechanisms that link such participation to academic success. The results show that participation in some activities improves achievement, while participation in others diminishes achievement. Participation in interscholastic sports promotes students' development and social ties among students, parents, and schools, and these benefits explain the positive effect of participation on achievement.

American schools are under increasing public pressure to improve students' achievement. Extracurricular programming, particularly school sports, is one of the most widespread and costly practices in our educational system, yet there is relatively little scientific information on the potential academic benefits of the extracurriculum. Does participating in sports or other activities promote higher achievement? Longitudinal studies on school sports have suggested that such participation raises students' grades and test scores (Fejgin 1994; Hanson and Kraus 1998, 1999). However, the literature has overwhelmingly focused on sports, largely ignoring participation in other types of activities (Holland and Andre 1987; Marsh 1992). Furthermore, surprisingly little effort has been made to incorporate sociological theory into research on extracurricular activities to help explain why participation may help students achieve. Consequently, two key questions remain unanswered: (1) how participating in sports promotes achievement or (2) whether the benefits of participation are unique to sports or if participating in nonsports activities also improves achievement. In this article, I address these two questions so that we may better understand the role of the extracurriculum in students' achievement.

EXTRACURRICULAR ACTIVITIES

High School Sports

School sports have been the focal point of research on extracurricular activities. Early analyses of the effect of participation in sports on academic achievement produced inconsistent evidence. Whereas some studies supported the "dumb jock" stereotype (Coleman 1961; Landers et al. 1978), others suggested that athletes outperform nonath-

letes in school (Rehberg 1969; Schafer and Armer 1968). Regardless of their findings, none of these studies analyzed nationally representative samples, and many failed to control for background differences (e.g., race, family income, and parents' educational attainment) between athletes and nonathletes. Furthermore, as cross-sectional designs, none of them was able to provide evidence that the relationship between sports and achievement is causal, not simply a function of the selection of better students into sports participation. Indeed, more recent studies have indicated that there is a large selection bias of higher-achieving, "good" students into participation in extracurricular activities, including sports (Fejgin 1994; Quiroz, Gonzalez, and Frank 1996).

Recent research on sports and achievement has addressed this selection bias by using longitudinal data that provide outcome measures at two points in time and estimate changes in academic performance. Longitudinal studies are more powerful than cross-sectional studies for limiting the effects of selection bias and establishing a better case for causal order between independent and dependent variables.

Melnick and his associates (Melnick, Sabo, and VanFossen (1992a, 1992b; Melnick VanFossen, and Sabo 1988; Sabo, VanFossen, and Melnick 1993) completed numerous longitudinal studies on sports and education. Utilizing the High School and Beyond (HSB) study (U.S. Department of Education), their analyses tested the effect of sports participation on various educational outcomes (e.g., grades, test scores, educational aspirations, expectations and attainment, and college attendance) for racial and gender subgroups. Their results indicated that with the exception of a few subgroups and outcomes, participation in sports is generally unrelated to educational achievement. Additional findings from Marsh's (1993) longitudinal study of the HSB data supported Melnick et al.'s results. Marsh found that playing sports in high school has no significant effect on grades or standardized test scores in the general student population.

However, other studies that have drawn on more recent longitudinal data have offered evidence that participation in sports improves academic performance. Fejgin (1994) and Hanson and Kraus (1998, 1999), analyzing the National Educational Longitudinal Study of 1988 (NELS:88), both found support for the contention that participation in sports improves students' grades. Fejgin found that participation in sports in the 10th grade has a significant, positive effect on students' grades in the same year, controlling for performance in the 8th grade, and Hanson and Kraus found that for high school girls, participation in sports is related to higher achievement in science.

The disparate results of these studies are of some concern in efforts to understand the educational consequences of participation in school sports. However, there are many possible methodological explanations for the variability in the results. One is that measures of "sports participation" differ across studies, including various combinations of interscholastic sports, intramural sports, nonschool sports, and cheerleading.[1] It is possible that participation in these different types of sports does not affect students' achievement equally. To address this concern, I isolated these specific types of participation in the study presented here.

Other Extracurricular Activities

Research on other extracurricular activities has been limited by the use of small, nonrepresentative samples and cross-sectional data (Holland and Andre 1987). However, Marsh (1992) and McNeal (1995) both used nationally representative, longitudinal data to examine the effects of participating in various extracurricular activities. Marsh examined the effect of total extracurricular activity participation (TEAP) on various educational outcomes by summing dichotomous scores for 16 categories of participation (e.g., sports, drama, music) to create a TEAP score. Controlling for background variables and prior measures of outcome variables, he found that TEAP is associated with an improved grade point average, higher educational aspirations, increased college attendance, and reduced absenteeism. McNeal studied the effect of different types of participation on the risk of dropping out of high

school (see also Davalos, Chavez, and Guardiola 1999). He separated participation in extracurricular activities into four categories (i.e., sports clubs, fine arts, academic clubs, and vocational clubs) and examined the effect of each type of participation simultaneously. The results of logistic regression analyses indicated that once all forms of activity participation are controlled, only participation in sports clubs is significantly related to a reduced risk of dropping out of high school. This effect persists even after critical dropout forces, such as race, socioeconomic status, and employment, are taken into account.

These studies suggest that not all students who participate in the extracurriculum gain the same advantages from participation. Still, the literature has not yet explored how different types of participation affect academic achievement. Is mere participation enough to promote higher achievement, or do certain activities benefit students more than do others? To answer this question, I also tested how participating in music, drama, student council, yearbook, and vocational clubs affects students' achievement.

LINKING THE EXTRACURRICULUM TO STUDENTS' OUTCOMES

Why may participating in school sports or other school activities boost achievement? What do student-athletes gain through sports that help them academically? Researchers have speculated for decades about the potential benefits of participation, but little empirical evidence exists. Furthermore, the evidence that does exist is largely indirect and inconclusive. The following sections present three explanations (the developmental model, the leading-crowd hypothesis, and the social capital model) linking participation in sports to educational achievement. The developmental model and leading-crowd hypothesis represent long-held beliefs on the benefits of sports participation that have yet to be thoroughly tested. The social capital model is a newer perspective, refined in this article, which synthesizes various sources of social capital theory as it applies to school achievement. Because our knowledge, to date, has derived almost solely from research on school sports, I center my review and discussion on the effects of participation in sports and address the generalizability to participation in other forms of extracurricular activities.

Developmental Model

It has long been believed that participating in sports socializes adolescents in ways that promote educational success. Conventional wisdom holds that by teaching characteristics, such as a strong work ethic, respect for authority, and perseverance, sports participation develops skills that are consistent with educational values and thus helps students achieve (Coleman 1961; Miracle and Rees 1994). Furthermore, repeated successful experiences in sports, such as learning a new skill or winning a competition, are thought to develop self-confidence and maturity, which also carry over into educational pursuits (Fejgin 1994; Marsh 1993; Snyder and Spreitzer 1990). Therefore, playing sports develops "character" in athletes that increases their desire and ability to achieve academically (Rehberg 1969).

Miracle and Rees (1994) called these beliefs the "myth" of school sports because they arose and prospered for decades without scientific grounding. However, a few recent studies have offered some evidence that these beliefs are not without merit. Results from nationally representative, longitudinal studies have indicated that sports participation increases students' academic self-concept, locus of control, and work ethic (i.e., school attendance and time on homework) (Fejgin 1994; Marsh 1993). However, the research has not directly tested whether these developmental benefits significantly explain how participation in sports influences achievement. My study fills this void by testing the explanatory power of individual development in mediating the effect of participation on achievement.

The Leading-Crowd Hypothesis

The commonly held belief that playing sports develops "character" has dominated discussions on school sports and achievement to such an extent that there have been only

modest attempts to explore alternative explanations. The prevailing alternative explanation, the leading-crowd hypothesis, suggests that sports participation offers student-athletes higher peer status that facilitates membership in "the leading crowd." Comprised of the most popular high school students, the leading crowd disproportionately consists of college-oriented, high achievers (Rehberg 1969). Thus, it is argued that by increasing social status, sports participation provides the student-athlete with membership in an academically oriented peer group that, in turn, facilitates higher academic performance.

Although indirect, there is enough evidence in support of this argument to warrant further investigation. For example, classic works by Coleman (1961), Eitzen (1975), and Thirer and Wright (1985) all indicated that male athletes hold the highest status in American high schools.[2] Furthermore, Wells and Picou (1980) found that athletes are more likely to be associated with a college-oriented peer group than are nonathletes. This evidence, coupled with Lueptow and Kayser's (1973) finding that only high school athletes with status (e.g., "the athletic stars") have higher grade point averages relative to nonathletes, offers indirect support for the leading-crowd hypothesis. Unfortunately, these studies were unable to disentangle the causal ordering of sports participation, peer status, peer-group orientation, and academic performance. I directly tested the explanatory power of peer-group orientation in mediating the relationship between participation and achievement.

An extension of the leading-crowd hypothesis posits that sports participation is beneficial to the educational process by connecting student-athletes not only to academically oriented peers, but to adults, specifically parents and teachers (Wells and Picou 1980; Snyder and Spreitzer 1990). Building on this tenet, I argue that the academic benefits for athletes that operate through social networks are more fully conceptualized by applying social capital theory.

Social Capital Model

Social capital is generally recognized as the ability to accrue benefits through membership in social networks (Portes 1998). Coleman (1988), among others, argued that the family is a primary site of social capital. Indeed, research has indicated that both human and social capital in the family play vital roles in a child's educational success (Coleman 1990; Parcel and Dufur 1998). Specifically, children whose parents are well educated (human capital) and actively involved in their children's lives (social capital) have greater success in school (Coleman 1988; Downey 1995; Hagan, MacMillan, and Wheaton 1996; Teachman, Paasch, and Carver 1996). In this light, participation in sports and other extracurricular activities may serve to create social capital within the family by providing opportunities for increased social interaction between the parents and the child.

As powerful as familial ties may be, extrafamilial networks are thought to be an additional and important source of social capital (Portes 1998). In this respect, social capital can exist among students, parents of students, and the school. Thus, it is possible that sports or other activities, by offering opportunities for the formation and intensification of social ties among students, parents, and the school, also create social capital outside the family.

Exactly how does social capital, within or outside the family, operate to provide educational benefits? A review of the literature suggests that these familial and nonfamilial social ties affect educational success primarily by providing a source of social control and a source of the dissemination of information and resources (Bourdieu 1985; Coleman 1988; Portes 1998). Thus, whereas previous investigations of sports have merely emphasized the benefits of having access to "adult culture," social capital theory introduces a network-analytic approach, illuminating specific mechanisms through which the social ties developed in school activities may benefit educational outcomes. I briefly review these mechanisms next.

Social capital, operating through strong social ties between parents and students, students and other students, and teachers and students, can act as a social control mechanism by promoting compliance and trust

among group members (Hirschi 1969). As a means of social control, social capital is useful to parents and school personnel who seek to maintain discipline and adherence to school norms and values. It is possible that school activities, especially sports, which offer increased opportunities for familial and extrafamilial social interaction, create and strengthen social ties among students, their parents, and their teachers. These relations act as a source of social control that encourages students to comply with school norms and expectations and, in turn, have greater success in school.

Social ties are also beneficial in the cognitive and social development of adolescents by creating channels for disseminating information and resources (Coleman 1990). Social ties may act as conduits for human capital, educational resources, and/or the transmission of information that directly benefit students' achievement. For my purpose here, it is possible, for instance, that as parents congregate to observe their children participating in sports activities, they exchange information about standards of behavior, school norms, and educational resources. Furthermore, the relations among students, parents, and teachers that act as a source of social control may also provide conduits for the transmission of important educational information and resources that would otherwise be unavailable to the students.

Some caution is necessary in assuming the uninhibited flow of information and resources through social ties. There are four conditions that are essential for successful transmission to occur and for benefit to be gained. The actors involved in the interaction must (1) have human capital or an educational resource to transmit, (2) be willing to share these resources (see Portes 1998), (3) engage in an education-related interaction (e.g., parents talk to each other about educational issues at a sports event), and (4) use any resource obtained. Although I was not able to measure each of these conditions, I tested whether students who participate in extracurricular activities are more likely than nonparticipants to talk to their teachers and whether their parents are more likely to engage in education-related interactions with other parents and the school.

In sum, the literature leaves us with several unanswered questions regarding the relationship between participation in extracurricular activities and educational achievement:

* Why does sports participation boost students' achievement? Does sports participation benefit students' development and social networks, and are these the mechanisms that link participation to educational outcomes?
* Are the educational benefits of sports participation unique to sports, or do nonsports extracurricular activities also promote achievement?
* Do nonsports extracurricular activities benefit students' development and social networks?

METHODS

Sample

In my analysis, I used NELS:88, a nationally representative, longitudinal study sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education. NELS is an excellent database for studying changes in educational achievement during the high school years. It is particularly suited for this study because of its abundance of specific measures of students' participation in extracurricular activities across waves of data. Thus, it is the most recent nationally representative, longitudinal data appropriate for this study.

The base-year study of NELS:88 used a stratified, clustered national probability sample of 24,599 eighth graders from 1,052 public, private, and parochial schools in the United States. The students were asked to complete survey questionnaires about schoolwork, relationships, family, attitudes, and behaviors. Follow-ups were conducted two and four years after the base year when most respondents were in the 10th and 12th grades, respectively. Curriculum-based achievement tests in math, science, reading, and history were also administered to students in each year of the survey. All my analyses were weighted using appropriate sample weights in the data.

I used data from the first (1990) and second (1992) follow-ups, when students were in their high school years (the 10th and 12th grades, respectively). To be included in the analysis, students must have participated in the base-year (8th-grade) survey, remained in school through the 12th grade, and had valid measures on each of the four educational outcome measures (math grades, English grades, math test scores, and reading test scores) (n = 12,578).

In this sample, interscholastic sports claimed the highest portion of consistent student participation during both the 10th and 12th grades (32 percent). Whereas 42 percent of the boys participated in interscholastic sports during these two years, only half as many girls (21 percent) did so. The next most popular participation was musical groups, which claimed only half as many participants as interscholastic sports (15 percent). These types of participation were followed by vocational clubs (7 percent); drama clubs (6 percent); intramural sports (5 percent); and cheerleading, student council, and yearbook/journalism clubs (each at 4 percent). The disproportionate number of students who participated in interscholastic sports is consistent with earlier work indicating the relative importance of high school sports in adolescent culture (see Coleman 1961; Thirer and Wright 1985).

Dependent Variables

The central focus of my study was to address the relationship between participation in extracurricular activities and academic achievement. Given the evidence in support of a positive relationship between sports participation and grades and tests scores (Fejgin 1994; Hanson and Kraus 1998, 1999), I also measured academic performance with both grades and standardized test scores (in the 12th grade). NELS provided official math and English grades from students' 12th-grade (1992) transcripts. I further measured achievement with the item-response theory math and reading standardized achievement tests administered by NCES specifically for NELS. These tests are designed to guard against ceiling and floor effects that may occur in repeated testing, making them particularly suited for longitudinal analysis.

I included 10th-grade (1990) measures of each dependent variable as controls to measure changes in grades and test scores as a function of participation in activities. Because the scales of some measures differ across waves of the NELS, many measures are standardized. See Appendix Table A1 for detailed descriptions of all the variables.

Independent Variable

I created a measure of sports participation from multiple indicators in the 10th and 12th grades. Measures of sports participation differ in each wave of the NELS data. However, it is possible in each wave to distinguish interscholastic sports participation from other types of sports participation (e.g., intramural or nonschool sports). I separated interscholastic sports from intramural sports and cheerleading to test the similarity of these types of participation. Thus, my main participation measure reflects whether a student participated in interscholastic sports during both the 10th and 12th grades (1 = participated in both years, 0 = did not participate in both years). I also created and used two additional dichotomous variables as participation controls that reflect whether students participated in the 10th grade but not in the 12th grade and in the 12th grade but not in the 10th grade. In all the analyses, participation in interscholastic sports during both the 10th and 12th grades was the main independent variable, and participation in the 10th grade only and participation in the 12th grade only were included in the models as controls. Participation in neither year was omitted from the analyses. Thus, all analyses represent the effect of continued participation in high school ("athletes") compared to not having participated at all ("nonathletes").[3] Using this method, I constructed and used the same three dichotomous variables for participation in each type of extracurricular activity, including intramural sports, cheerleading, music, drama, student council, yearbook and vocational clubs, to test whether continued participation in these activities affects academic achievement.

Mediating Variables

Developmental Model Following Marsh (1993) and Fejgin (1994), I included three measures of students' development: self-esteem, locus of control, and time on homework. Self-esteem and locus of control are both composite measures in the NELS data, each comprised of multiple measures of students' global self-esteem and sense of control, respectively. Previous research has suggested that realm-specific self-esteem (e.g., feeling toward oneself as a student) is more highly correlated with academic achievement than is global self-esteem (Rosenberg et al. 1995). However, in this analysis, I used global self-esteem for two reasons. First, the "myth" of school sports, as described by Miracle and Rees (1994), argues that sports participation increases students' general self-esteem, which, in turn, has benefits for students' educational outcomes. Second, there is little evidence to suggest that sports participation has a direct effect on realm-specific (i.e., academic) self-esteem. Thus, using general self-esteem as a mediating link between participation and educational outcomes is more theoretically and empirically warranted.

Following the literature, I measured work ethic as the self-reported time that the students spent on homework each week. I used measures of self-esteem, locus of control, and time on homework from 1990 (the 10th grade) and 1992 (the 12th grade) and examined changes in each measure across this two-year period as a function of participation in an activity. Because measurement scales for these three variables differ across waves, all three measures are standardized.

Leading-Crowd Hypothesis To test the leading-crowd hypothesis, I created a composite measure representing the academic orientation of students' peer groups. This measure ranged from 0 to 8 and was created by summing scores on four variables: (1) the importance among friends to attend class, (2) the importance among friends to study, (3) the importance among friends to get good grades, and (4) the importance among friends to get an education beyond high school. Students could respond to each of these four variables with "not important," "somewhat important," or "very important."

Social Capital Model It would be ideal to have direct measures of the two forms of social capital outlined in this article. However, NELS does not provide adequate data on the content of relationships among students, parents, and the school to enable a clear distinction between social capital as a source of social control or as a source of the transmission of resources. For example, as measured in NELS, indicators of student-teacher and student-parent relations may reflect either a source of social control or a source of resource transmission since the data do not indicate the subject matter of these interactions. Thus, I measured social capital more broadly with available indicators in the NELS.

Specifically, I measured social capital between (1) students and the school, (2) students and parents, (3) parents and the school, and (4) parents and other parents. The best measures available in NELS to measure social capital between students and the school is whether students talk to their teachers outside class (teachers' report; 0 = no, 1 = yes).

Social capital between students and parents is best measured by the frequency with which students talk to their parents about school courses, activities, and studies. Again, these variables may measure social control and/or the transmission of resources as conceptualized in this study. Possible responses included "never," "sometimes," or "often." Responses on the three questions were summed to create a single measure of "student-parent talk," which ranged from 0 to 6.[4]

Social capital between parents and the school, as an indirect measure of the transmission of resources, was measured by the frequency of contact a parent has initiated with the school in the previous year regarding (1) the student's plans after leaving high school, (2) the student's selection of courses, and (3) volunteering for or at the school. Possible responses from the parent were "never," "once or twice," "three or four times," or "four or more times." Responses on the three questions were summed to create a single measure of parent-school contact (ranging from 0 to 9).

Finally, I measured how much parents networked with each other from three indicators in the data. These measures asked parents how often they talked to parents of their children's friends about (1) things that were going on at their children's school, (2) their children's educational plans after high school, and (3) their children's career plans. Possible responses from the parents were "seldom or never," "once or twice a month," "once or twice a week," or "almost daily." These scores were summed to create a single measure of parent-parent contact (ranging from 0 to 9).[5]

Background Characteristics

I included measures for known predictors of educational outcomes to control for potential omitted variable bias when estimating the effect of sports participation on outcomes. These measures included gender, race-ethnicity, family income, parents' educational attainment, parent structure, school classification, school geographic location, and school size.[6] Gender is dichotomous (1 = female). For race-ethnicity, I constructed four dichotomous categories: black, Asian American, Hispanic, and American Indian; white was the omitted category. Parent's educational attainment was taken directly from the NELS data and reflects the highest educational level achieved by either parent. Family income is total household income and was measured in $10,000s. Parent structure was taken from a single measure in the NELS and collapsed into a dichotomous variable (1 = dual, biological parents; 0 = other). School classification is a dichotomous variable reflecting the distinction between public and private institutions (1 = public). I constructed three dichotomous variables to represent the geographic location of a student's school (urban, suburban, and rural). Finally, school size was also taken from a single measure in NELS and collapsed into a categorical variable ranging from 1 to 5 (1 = 0-399, 5 = over 2,000). The 10th-grade (1990) measures of each dependent variable were also included in the analyses, when available, as baseline controls for prior achievement to create change models. I performed mean substitution for missing values on measures of parent's educational attainment and family income.

Analytic Strategy

I centered my analysis on interscholastic sports and performed additional analyses for participation in other types of activities. I performed ordinary least squares (OLS) regression analysis on three models. The first model tests whether participation in interscholastic sports affects changes in students' grades and test scores between the 10th and 12th grades. The second model tests whether sports participation affects changes in indicators of the developmental model, the leading-crowd hypothesis, and the social capital model. The final model directly tests the explanatory power of these three theories in mediating the relationship between sports participation and academic achievement. I then performed additional analyses on other extracurricular activities to test the generalizability of the interscholastic sports findings to other school activities.

RESULTS

Does playing high school interscholastic sports benefit students' academic performance? Participation in interscholastic sports during both the 10th and 12th grades has small but consistent benefits for students' grades. The zero-order relationship between sports participation and grades suggests that participation is positively associated with students' math grades ($b = .230$, $p < .001$) and English grades ($b = .219$, $p < .001$) (see Table 1, Model 1). A substantial portion of this effect is attributed to the selection of higher-performing students into sports; however, a significant, positive effect persists even after these background characteristics are taken into account (see Model 2). Net of controls, participating in interscholastic sports throughout high school is related to improved math ($b = .044$, $p < .01$) and English grades ($b = .073$, $p < .001$).

The benefit of participating in sports also generalizes to scores on math tests but not to scores on reading tests. Table 1 shows that the scores on math tests are significantly higher for students who participate in sports during the 10th and 12th grades, net of back-

Table 1. OLS Unstandardized Coefficients from the Regressions of 12th-Grade (1992) Educational Outcomes on Interscholastic Sports Participation, Controlling for 10th-Grade (1990) Measures of the Dependent Variable, Sex, Race, Family Income, Parent's Educational Attainment, Parent Composition, School Classification, Geographic Location of School, and School Size

	Math Grades		English Grades		Math Test		Reading Test	
Independent Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Participated in interscholastic sports 10th and 12th grades	.230*** (.021)	.044** (.017)	.219*** (.021)	.073*** (.016)	.326*** (.021)	.034*** (.009)	-.001 (.022)	-.042** (.014)
1990 measure of dependent xvariable	—	.608*** (.007)	—	.583*** (.007)	—	.887*** (.004)	—	.767*** (.006)
Female	—	.172*** (.014)	—	.271*** (.014)	—	-.063*** (.008)	—	.077*** (.012)
African American	—	-.373*** (.024)	—	-.380*** (.022)	—	-.018 (.014)	—	-.156*** (.020)
Asian American	—	.057 (.036)	—	.095** (.034)	—	.066*** (.020)	—	.108*** (.030)
Hispanic	—	-.138*** (.026)	—	-.195*** (.024)	—	.012 (.015)	—	-.034 (.022)
American Indian	—	-.339*** (.077)	—	-.266*** (.074)	—	-.029 (.041)	—	-.083 (.063)
Family income (in $10,000s)	—	.004* (.002)	—	.005* (.002)	—	.001 (.001)	—	-.006** (.002)
Parental education	—	.091*** (.007)	—	.116*** (.006)	—	.036*** (.004)	—	.050*** (.006)
Two-parent household	—	.074*** (.016)	—	.082*** (.015)	—	.021* (.009)	—	.003 (.013)
Public school	—	-.066* (.028)	—	-.046 (.026)	—	-.081*** (.015)	—	-.112*** (.023)
Suburban school	—	-.047* (.019)	—	-.032 (.018)	—	.011 (.011)	—	-.005 (.016)
Rural school	—	-.010 (.022)	—	.015 (.021)	—	-.006 (.012)	—	-.017 (.018)
School size	—	-.045*** (.007)	—	-.018** (.007)	—	.006 (.004)	—	.008 (.006)
Constant	.005	-.114	.030	-.367	-.022	-.026	.097	-.029
R^2	.011	.481	.012	.525	.022	.843	.002	.652
p value of *F*-test	.000	.000	.000	.000	.000	.000	.000	.000
Number of cases	10,379	10,379	10,389	10,389	10,400	10400	10,413	10,413

Note: Numbers in parentheses are standard errors. White is the omitted category for race. Urban is the omitted category for school location. Model 2 also includes control variables for sports participation in the 10th grade only and 12th grade only.

*$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed tests).

ground characteristics (b = .034, p < .001), but scores on reading tests are lower (b = -.042, p < .01).

Does participation in interscholastic sports have personal and social benefits? Participating in sports during the 10th and 12th grades significantly improves self-esteem, locus of control, and time on homework (the developmental model). Results presented in Table 2 demonstrate that even after individual background is controlled, school characteristics and the baseline measure of the dependent variable (Model 2), playing sports is associated with significant increases in self-esteem (b = .085, p < .001) and time on homework (b = .162, p < .001) and a more internalized locus of control (b = .076, p < .001) between the 10th and 12th grades. Table 2 also demonstrates that playing sports is positively associated with increasing athletes' number of academically oriented friends (b = .215, p < .001) (the leading-crowd hypothesis).[7]

Furthermore, participating in sports in the 10th and 12th grades significantly increases social ties between students and parents, students and the school, parents and the school, and parents and parents, net of individual and school controls (the social capital model). In addition, as is shown in Table 2, playing sports significantly increases how often students talk with their parents about school-related issues (b = .195, p < .001) and increases students' contact with teachers outside class (b = .070, p < .001). Participation is also positively associated with social ties between parents and the school. Specifically, playing interscholastic sports is positively related to how much parents have contact with the school (b = .644, p < .001), as well as parents' contact with other parents (b = .615, p < .001).

Contrary to previous research, this study supports "the myth" of high school sports. As Table 2 highlights, participating in interscholastic sports has multiple benefits for students, including all the measures tested in this analysis.

Do the personal and social benefits explain athletes' improvements in grades and test scores? The results in Tables 1 and 2 demonstrate that participation in sports has both educational and personal benefits for student-athletes. However, one can only speculate from these results whether the personal benefits (developmental outcomes, peer-group orientation, and social capital) actually explain how sports participation boosts students' achievement. The results presented in Table 3 allow a comparison of the explanatory power of these three theoretical models.

The Developmental Model

As is shown in Table 3, the benefits of sports participation on students' self-esteem, locus of control, and time on homework explain, on average, one-third of the effect of sports on grades and test scores. Comparing Models 1 and 2 for each educational outcome, one sees that measures of the developmental model modestly reduce the effect of sports participation on achievement. Of note, however, the developmental model reduces the effect of sports participation on math grades to insignificance (Model 2). These results offer empirical evidence that sports participation does help "build character," which, in turn, directly aids students' academic achievement.[8]

The Leading-Crowd Hypothesis

It is clear from this analysis that playing sports offers students membership in an academically oriented peer group (see Table 2).[9] But, does membership in an academically oriented peer group promote improved academic performance? The data in Table 4 suggest that only a small part of the positive effect of sports participation on grades and test scores is attributed to the academic orientation of athletes' peer groups. Peer group orientation mediates less than 10 percent of the effect of sports participation on grades and 23 percent of the effect on math test scores. Having more academically oriented peers does not explain away the significant effect of sports participation on any of these educational outcome measures. In all, while peer group orientation seems to provide some academic benefit for student-athletes, this link is weak relative to other mechanisms.

Table 2. OLS Unstandardized Coefficients from the Regression of 12th-Grade (1992) Measures of the Developmental Model, the Leading-Crowd Hypothesis, and the Social Capital Model on Interscholastic Sports Participation, Controlling for 10th-Grade (1990) Measures of the Dependent Variable[a] and Other Control Variables

	Developmental Model			Leading Crowd	Social Capital			
Independent Variables	Self-esteem	Locus of Control	Homework	Academically Oriented Peer Group	Talk with Parents	Talk with Teacher	Parent with School[b] Contact	Parents Talk with Friends' Parents[b]
Participated in interscholastic sports in 10th and 12th grades	.085***	.076***	.162***	.215***	.195***	.070***	.644***	.615***
	(.020)	(.021)	(.022)	(.047)	(.036)	(.015)	(.049)	(.051)
1990 measure of dependent variable	.529***	.454***	.316***	.339***	.421***	.132***	—	—
	(.008)	(.009)	(.010)	(.011)	(.010)	(.013)	—	—
Female	-.067***	.155***	.107***	.693***	.449***	.097***	.020	.128**
	(.017)	(.018)	(.019)	(.041)	(.031)	(.013)	(.043)	(.044)
African American	.159***	-.047	.019	.181*	-.191***	-.047*	.324***	.214**
	(.030)	(.031)	(.033)	(.071)	(.055)	(.022)	(.070)	(.073)
Asian American	-.079	-.096*	-.018	.245*	-.454***	-.031	-.624***	-.606***
	(.043)	(.045)	(.049)	(.101)	(.077)	(.032)	(.109)	(.112)
Hispanic	.112***	.038	.156***	.150*	-.008	.013	-.056	-.053
	(.032)	(.033)	(.036)	(.076)	(.060)	(.025)	(.083)	(.086)
American Indian	-.036	-.056	.321**	.113	-.195	-.232**	.243	.544*
	(.089)	(.094)	(.107)	(.219)	(.172)	(.081)	(.243)	(.259)
Family income (in $10,000s)	.008***	.012***	.004	.006	.024***	.001	.034***	.009
	(.002)	(.002)	(.003)	(.006)	(.004)	(.002)	(.006)	(.006)
Parental education	.021**	.004	.053***	.114***	.124***	.033***	.236***	.132***
	(.008)	(.008)	(.009)	(.019)	(.014)	(.006)	(.020)	(.020)
Two-parent household	-.009	.055**	-.000	.065	.128***	-.008	-.009	.316***
	(.019)	(.020)	(.021)	(.045)	(.034)	(.015)	(.048)	(.050)
Public school	.002	-.039	-.001	-.143	-.144*	-.010	-.424***	.151
	(.033)	(.035)	(.038)	(.079)	(.061)	(.026)	(.081)	(.085)
Suburban school	-.010	-.115***	-.006	-.092	.189***	-.033	.023	.085
	(.023)	(.024)	(.026)	(.055)	(.042)	(.017)	(.057)	(.059)
Rural school	.023	-.051	.040	.051	.241***	-.026	.136*	.506***
	(.026)	(.027)	(.030)	(.062)	(.048)	(.020)	(.065)	(.068)
School size	.012	-.003	-.008	.016	.051***	-.024***	-.074***	-.131***
	(.008)	(.009)	(.009)	(.020)	(.015)	(.006)	(.021)	(.022)
Constant	-.162	-.088	-.305	2.900	.507	.308	1.284	1.458
R^2	.310	.229	.124	.160	.245	.044	.075	.061
p value of *F*-test	.000	.000	.000	.000	.000	.000	.000	.000
Number of cases	10,188	10,177	9,985	9,638	8,938	6,110	9,160	8,906

Note: Numbers in parentheses are standard errors. White is the omitted category for race. Urban is the omitted category for school location. Model 2 also includes control variables for sports participation in the 10th grade only and 12th grade only.

[a] When the 10th-grade (1990) measure is available.

[b] When the 10th-grade (1990) measure is not available.

*$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed tests).

Table 3. OLS Unstandardized Coefficients from the Regressions of 1992 Educational Outcomes on Interscholastic Sports Participation, Net of All Control Variables[a] and Measures of the Developmental Model

	Math Grades		English Grades		Math Test Score	
Independent Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Participated in sports, 10th and 12th grades	.049** (.017)	.031 (.017)	.072*** (.016)	.052*** (.016)	.034*** (.009)	.022* (.009)
Self-esteem	—	-.009 (.009)	—	-.012 (.008)	—	-.003 (.005)
Locus of control	—	.091*** (.009)	—	.107*** (.008)	—	.035*** (.005)
Homework	—	.032*** (.007)	—	.048*** (.007)	—	.041*** (.004)
Constant	-.142	-.117	-.359	-.336	-.021	-.007
R^2	.485	.493	.534	.548	.837	.840
p value of *F*-test	.000	.000	.000	.000	.000	.000
Number of cases	9,777	9,777	9,781	9,781	9,794	9,794

Note: Numbers in parentheses are standard errors.

[a]All models include control variables for the 10th-grade (1990) measure of the dependent variable, sex, race, income, parents' educational level, school classification, school location, school size, and sports participation in the 10th grade only and 12th grade only.

*$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed tests).

Table 4. OLS Unstandardized Coefficients from the Regressions of 1992 Educational Outcomes on Interscholastic Sports Participation, Net of All Control Variables[a] and Measures of the Leading-Crowd Model

	Math Grades		English Grades		Math Test Score	
Independent Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Participated in sports, 10th and 12th grades	.051** (.017)	.047** (.017)	.071*** (.016)	.066*** (.016)	.031** (.009)	.024* (.009)
Academically oriented peer group	—	.010** (.004)	—	.016*** (.003)	—	.017*** (.002)
Constant	-.143	-.190	-.356	-.431	-.021	-.098
R^2	.486	.487	.529	.531	.841	.842
p value of *F*-test	.000	.003	.000	.000	.000	.000
Number of cases	9,790	9,790	9,793	9,793	9,817	9,817

Note: Numbers in parentheses are standard errors.

[a]All models include control variables for the 10th-grade (1990) measure of the dependent variable, sex, race, income, parents' educational level, school classification, school location, school size, and sports participation in the 10th grade only and 12th grade only.

*$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed tests).

Social Capital Model

Increases in social capital attributed to sports participation help students improve their grades more than their test scores. The data in Table 5 indicate that measures of social capital explain almost half the effect of sports participation on math grades and over a third of the effect on English grades, but only about one-fifth of the effect on scores on math tests. Like the developmental model, measures of social capital reduce the size of the effect of sports on math grades to insignificance and only slightly reduce the magnitude of the effect on English grades and scores on math tests. Thus, social capital appears similarly effective to developmental characteristics in explaining the academic benefits of participation in sports.

It appears that participation in interscholastic sports in high school has developmental and social benefits that at least partially explain the educational advantages of participating. None of the three explanations though, as measured here, is independently able to link sports participation to all educational outcomes. Collectively, however, measures of the developmental model, the leading-crowd hypothesis, and the social capital model significantly reduce the effect of sports participation on all the educational outcomes in this analysis, particularly in math (see Table 6).

Do the academic benefits of interscholastic sports participation generalize to other extracurricular activities? Interscholastic sports differ from intramural sports and other athletic activities, such as cheerleading, in many ways. For instance, compared to intramural sports, interscholastic sports are more selective, typically require a greater commitment by the participants, have more formalized

Table 5. OLS Unstandardized Coefficients from the Regressions of 1992 Educational Outcomes on Interscholastic Sports Participation, Net of All Control Variables[a] and Measures of Social Capital

	Math Grades		English Grades		Math Test Score	
Independent Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Participated in sports, 10th and 12th grades	.044** (.017)	.024 (.017)	.073*** (.016)	.047** (.016)	.035*** (.009)	.028** (.009)
Talk with parents	—	.018*** (.005)	—	.032*** (.004)	—	.010*** (.003)
Talk with teacher	—	.221*** (.017)	—	.204*** (.016)	—	.054*** (.009)
Parent contact with school	—	.004 (.004)	—	.006 (.004)	—	.003 (.002)
Parents talk with friends' parents	—	.002 (.004)	—	.008* (.004)	—	-.005* (.002)
Constant	-.114	-.240	-.367	-.380	-.026	-.061
R^2	.481	.490	.525	.528	.843	.844
p value of *F*-test	.000	.000	.000	.000	.000	.000
Number of cases	10,377	10,377	10,389	10,389	10,400	10,400

Note: Numbers in parentheses are standard errors.

[a]All models include control variables for the 10th-grade (1990) measure of the dependent variable, sex, race, income, parents' educational level, school classification, school location, school size, and sports participation in the 10th grade only and 12th grade only.

*$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed tests).

Table 6. OLS Unstandardized Coefficients from the Regressions of 1992 Educational Outcomes on Interscholastic Sports Participation, Net of All Control Variables[a] and Measures of All Mediating Mechanisms

	Math Grades		English Grades		Math Test Score	
Independent Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Participated in sports, 10th and 12th grades	.047** (.017)	.019 (.017)	.072*** (.016)	.037* (.016)	.032*** (.010)	.014 (.010)
Self-esteem	—	-.013 (.009)	—	-.015 (.008)	—	-.001 (.005)
Locus of control	—	.086*** (.009)	—	.100*** (.009)	—	.028*** (.005)
Homework	—	.025** (.007)	—	.040*** (.007)	—	.038*** (.004)
Academically oriented peer group	—	-.001 (.004)	—	.004 (.003)	—	.012*** (.002)
Talk with parents	—	.009 (.005)	—	.019*** (.005)	—	.002 (.003)
Talk with teacher	—	.204*** (.018)	—	.174*** (.016)	—	.044*** (.010)
Parent contact with school	—	.001 (.004)	—	.001 (.004)	—	.003 (.002)
Parents talk with friends' parents	—	.003 (.004)	—	.008* (.004)	—	-.005* (.002)
Constant	-.144	-.231	-.347	-.468	-.017	-.076
R^2	.484	.500	.533	.554	.837	.841
p value of F-test	.000	.000	.000	.000	.000	.000
Number of cases	9,522	9,522	9,523	9,523	9,548	9,548

Note: Numbers in parentheses are standard errors.

[a]All models include control variables for the 10th-grade (1990) measure of the dependent variable, sex, race, income, parents' educational level, school classification, school location, school size, and sports participation in the 10th grade only and 12th grade only.

*$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed tests).

rules for participation and behavior, and offer competition between schools. As a result, interscholastic sports typically offer greater structure and routinization, much larger and more intense social networks, higher social status for student-athletes, and a stronger identity with one's school (Coleman 1965; Cusick 1973; Eder and Parker 1987; Finn 1989; Morgan and Alwin 1980; Quiroz et al. 1996). But do the differences between these two types of sports activities alter the effects of participation on students' lives? Do intramural athletes gain the same benefits from participation as do interscholastic athletes? Moreover, are the benefits accrued by interscholastic athletes specific to sports participation, or are they generalizable to participation in any type of school activity?

Analyses presented in Table 7 address these questions. When all types of activities are included in the model simultaneously, the results suggest that not all forms of participation are equally beneficial for students' achievement. Most notably, intramural ath-

letes do not reap the same benefits from participation as do interscholastic athletes. In fact, as Table 7 shows, students who participate in intramural sports actually lose academic ground relative to their nonparticipating peers. Their math grades (b = -.194, p < .001), English grades (b = -.193, p < .001), scores on math tests (b = -.067, p < .001), and scores on reading tests (b = -.096, p < .001) all significantly decline over the two-year period. Notably, these effects are almost three times as large as the positive effects of participating in interscholastic sports. The only other type of participation to have a consistently negative effect on achievement is vocational clubs, which, in fact, is not as harmful for grades and test scores as is playing intramural sports.

The educational benefit of participating in interscholastic sports, once multiple forms of participation are controlled, becomes more convincing. All positive coefficients increase in magnitude, and particularly notable is the disappearance of the negative effect on scores on reading tests. Once all forms of participation are controlled, sports participation is no longer associated with a decline in students' performance on reading tests.

Participation in music groups is the only other activity to yield such consistent benefits

Table 7. The Effect of Participating in Various Extracurricular Activities in the 10th and 12th Grades on 12th-Grade (1992) Educational Outcomes,[a] Controlling for (not shown) 10th-Grade (1990) Measures of the Dependent Variable and Other Control Variables[b]

Independent Variables	Math Grades	English Grades	Math Test	Reading Test
Interscholastic sports	.111***	.141***	.055***	.005
	(.021)	(.020)	(.012)	(.017)
Intramural sports	-.194***	-.193***	-.067***	-.096***
	(.036)	(.033)	(.019)	(.029)
Cheerleading	.045	.036	.026	-.031
	(.036)	(.033)	(.020)	(.029)
School music groups	.087***	.056**	.044***	.001
	(.022)	(.020)	(.012)	(.018)
School drama	.013	.069*	-.027	.064*
	(.032)	(.030)	(.018)	(.024)
Student council	.189***	.221***	-.002	.033
	(.036)	(.034)	(.020)	(.030)
Yearbook/journalism	.039	.133***	.028	.038
	(.036)	(.034)	(.020)	(.030)
Vocational clubs	-.065*	-.075**	-.023	-.050*
	(.030)	(.028)	(.016)	(.025)
Constant	-.085	-.374	-.020	-.017
R^2	.491	.538	.845	.659
p value of F-test	.000	.000	.000	.000
Number of cases	9,278	9,298	9,312	9,321

Note: Numbers in parentheses are standard errors. Models also includes control variables for participation in 10th grade only and 12th grade only.

[a] All outcome variables (grades and test scores) are in standard units.

[b] Control variables include sex, race, income, parents' educational level, school classification, school location, and school size.

*p < .05, **p < .01, ***p < .001 (two-tailed tests).

for achievement. Similar to interscholastic sports, music participation improves math and English grades and scores on math tests but not on reading tests. Participating in the student council does help students improve their grades but not their test scores. Besides interscholastic sports and music, no other form of participation renders consistent benefits for grades and test scores. Also of note, scores on reading tests seem to be fairly insensitive to participation in activities. The only participation that generates improved scores on reading tests is participation in a drama club ($b = .064$, $p < .05$).

Overall, interscholastic sports appear to be the most beneficial form of participation for students' achievement. Participation in music groups has a similar, but less impressive, impact on achievement, whereas participation in the student council, the drama club, and the yearbook/journalism club have limited academic benefits. Finally, cheerleading is unremarkable, and intramural sports and vocational clubs consistently impair achievement.

Do the personal and social benefits of participation in interscholastic sports generalize to other extracurricular activities? Ranking the different types of activities in terms of their effects on achievement places the two different types of sports participation on polar ends of the hierarchy. Interscholastic athletes gain the most from participation, while intramural athletes lose the most. What may explain why these two seemingly similar forms of activity have such vastly different effects on students' achievement? Table 8 offers some insights into this important question.

The analyses presented in Table 8 show that when prior achievement and participation in all types of activities are controlled simultaneously, intramural athletes do not gain any of the developmental or social capital benefits enjoyed by interscholastic athletes. Their self-esteem, time on homework, friendship groups, and relationships with parents and teachers are no different from those of their nonparticipating peers. Moreover, intramural athletes' sense of personal control significantly diminishes over the two-year period. Thus, intramural athletes do not gain any of the tested individual or social benefits that mediate the positive relationship between interscholastic participation and achievement, and what is more important, they lose ground on a critical link to academic achievement: locus of control.

Table 8 also shows that students who participate in music groups have similar gains in development and social networks as interscholastic athletes. With the exception of self-esteem and locus of control, music participants gain on all the tested mediators. And while participation in cheerleading, school drama, student council, and the yearbook seem to be beneficial for some developmental characteristics and social relationships, none proves as consistently beneficial as music participation or, more so, interscholastic sport participation. All these results are consistent with the findings presented earlier (Tables 3–5) demonstrating the relative explanatory power of the developmental and social capital models.

DISCUSSION

Consistent with conventional wisdom, participating in school sports does seem to have real benefits for students. In line with the findings of Fejgin (1994) and Hanson and Kraus (1998, 1999), the results of my study further support the tenet that playing school sports boosts students' achievement in the classroom and on standardized math tests. However, this study has demonstrated that not all sports activities are equal in consequence. Participation in interscholastic sports has different consequences for students' achievement than has participation in intramural sports or cheerleading. In the same light, although I focused the analysis on sports participation, another contribution of the study is the inclusion of participation in other types of extracurricular activities. Nonsports activities have been largely overlooked in the literature, and according to Quiroz et al. (1996), students become "hyper-networked" in the extracurriculum, meaning that many students participate in multiple activities during the school year. Thus, it is imperative to test participation in different types of activities simultaneously to isolate the effects of participation in specific activities. Doing so identifies interscholastic sports, intramural sports, and music as unique forms of participation, all having consequences for students' achievement. Hence,

Table 8. The Effect of Participating in Various Extracurricular Activities in the 10th and 12th Grades on 12th-Grade (1992) Measures of the Developmental Model, the Leading-Crowd Hypothesis, and the Social Capital Model, Controlling for (not shown) 10th-Grade (1990) Measures of the Dependent Variable, Sex, Race, Family Income, Parent's Educational Attainment, Parent Composition, School Classification, Geographic Location of School, and School Size

	Developmental Model			Leading Crowd	Social Capital			
Independent Variables	Self-esteem	Locus of Control	Homework	Academically Oriented Peer Group	Talk with Parents	Talk with Teacher	Parent Contact with School[a]	Parents Talk with Friends' Parents[a]
Interscholastic sports	.080**	.106***	.157***	.152**	.138**	.075***	.607***	.603***
	(.025)	(.026)	(.028)	(.059)	(.045)	(.018)	(.062)	(.064)
Intramural sports	-.062	-.117**	.008	.116	.102	-.005	-.054	.144
	(.042)	(.044)	(.048)	(.100)	(.076)	(.031)	(.103)	(.107)
Cheerleading	.086*	.107*	-.008	.128	.026	.042	.395***	.516***
	(.043)	(.045)	(.048)	(.100)	(.075)	(.031)	(.105)	(.109)
Music groups	-.009	.037	.058*	.339***	.145**	.056**	.396***	.321***
	(.026)	(.027)	(.029)	(.062)	(.046)	(.019)	(.064)	(.066)
School drama	.024	.079*	.114**	.018	.088	-.011	.372***	-.074
	(.039)	(.040)	(.043)	(.092)	(.067)	(.027)	(.094)	(.098)
Student council	.116**	.198***	.032	.151	.376***	.147***	.301**	.272*
	(.044)	(.045)	(.049)	(.102)	(.076)	(.030)	(.107)	(.110)
Yearbook	-.085*	-.013	.140**	.050	.135	.106***	.124	.014
	(.043)	(.045)	(.049)	(.100)	(.075)	(.031)	(.105)	(.109)
Vocational clubs	.073*	-.047	-.067	-.049	.070	.045	.059	.177
	(.036)	(.037)	(.041)	(.085)	(.064)	(.029)	(.089)	(.093)
Constant	-.130	-.101	-.357	2.839	.406	.286	1.272	1.435
R^2	.316	.242	.136	.173	.264	.061	.083	.069
p value of F-test	.000	.000	.000	.000	.000	.000	.000	.000
Number of cases	9,122	9,133	8,959	8,644	8,026	5,454	8,192	7,959

Note: Numbers in parentheses are standard errors.
[a] When the 10th-grade (1990) measure is not available.
*$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed tests).

not all forms of participation in extracurricular activities are similar in consequence, which strongly implicates the need to distinguish the types of activities in subsequent research as well as in policy and funding decisions regarding extracurricular programming in schools.[10]

The distinctive contribution of this study is the incorporation of sociological theory to explain how participating in nonacademic activities translates into improved achievement. The results primarily support the developmental and social capital explanations linking sports to achievement. Indeed, students who participate in interscholastic sports have a stronger sense of control over their lives and a value system that is concordant with the American educational system. I also found that participation in interscholastic sports creates and intensifies students' social ties, which can be advantageous to students' educational pursuits. The results further suggest that the link that participation in extracurricular activities can forge between parents and schools is equally important.

Although social capital theory conceptually delineates the multiple ways that these social networks may enhance students' achievement (i.e., social control, the dissemination of resources, and attachment to the school), limitations in the NELS data prevented me from making such empirical distinctions in the present study. Measures of social capital in this analysis do not render a clear understanding of this link between sports and achievement. For example, the results indicate that student-athletes are more likely to talk with their teachers outside class than are nonathletes, but given that the contents of these discussions are not known, relations between students and teachers may act as sources of social control; the dissemination of resources; or other, unmeasured advantages, such as teachers' bias. The more students talk to their teachers, the more opportunities they have to gain information that could be used to improve their grades or test scores. Yet, these interactions may also act to (1) encourage behavior that conforms to school expectations and norms, which, in turn, helps students succeed in school, and (2) create social bonds that motivate students to perform better for teachers with whom they have personal relationships. Furthermore, others have suggested that athletes' visibility and popularity with teachers may lead to leniency in grading and result in inflated grades (see Hanks and Eckland 1976).

Relationships with teachers, or simply increased visibility within the school, may lead to bias in grade assignments. There is some evidence of bias toward particular students in the classroom (see Farkas 1996). Unfortunately, no one has tested the possibility of teachers' bias toward athletes or students participating in other particular extracurricular activities. Given that my findings suggest that participation in extracurricular activities boosts grades more than test scores for athletes and participants in other high-status activities (e.g., the student council), there is reason to investigate this possibility in explaining the added benefit of participation for grades. Further research on participation in extracurricular activities should empirically distinguish different forms of social capital and the possibility of leniency in grading for particular students.

While my study offers an understanding of the consequences of participation in different types of activities, it did not address some other important considerations. For example, does the effect of sports participation on academic performance differ by type of sports? Or do the benefits of sports participation vary by students' characteristics? The findings provide room for some speculation.

Participation in different types of sports may differentially affect academic performance. For example, while team sports may lead to stronger social ties with peers (social capital), individual sports may build a stronger individual work ethic and locus of control. Moreover, higher-status sports (e.g., basketball and football) may make students more well known in the school and thus create more opportunities for relations with school personnel relative to athletes in lower-status sports. Analyses of different sports may help to illuminate other processes that are important in linking involvement in extracurricular activities to academic success.

The literature on sports has also overwhelmingly failed to consider whether the

consequences of participating in sports vary by students' characteristics. There is great theoretical debate over whether sports participation improves the upward mobility of disadvantaged groups. A small body of literature has explored the differential effects of sports participation by socioeconomic status. It has found that participation in sports provides a greater boost to educational aspirations and expectations for students from low-income families than those from high-income families (Rehberg and Schafer 1968; Schafer and Armer 1968; Snyder 1969; Spreitzer and Pugh 1973). Unfortunately, analyses of the interaction between sports participation and socioeconomic status have not examined the effects on academic performance. However, my finding that participation in specific types of extracurricular activities forges relationships among students, parents, and schools suggests the possibility that participating in these programs may significantly boost disadvantaged students' achievement relative to their more advantaged peers.

Because human capital and other educational resources are highly circumscribed in low-income families, creating social capital through social ties with school personnel is vital for these students. Yet, research has indicated that social capital between students and the school is lacking for the majority of disadvantaged, inner-city students (Heath and McLaughlin 1993; Natriello, McDill, and Pallas 1986). Disadvantaged students are less attached to school, and their parents are less apt to take an active role in their schooling (Lareau 1987; MacLeod 1987). The results of this study suggest that specific extracurricular programming could be a vehicle for generating social capital among disadvantaged students, their parents, and schools that may, in turn, help improve their achievement. In light of this finding, the fact that extracurricular programming is largely restricted in inner-city schools may work to reproduce the disadvantage of inner-city students relative to their suburban peers by further limiting opportunities to build social capital.

Unlike socioeconomic status, the roles of race and gender in moderating the relationship between sports participation and educational outcomes has received some attention. For example, Melnick et al.'s (1992a, 1992b) and Sabo et al.'s (1993) series of longitudinal studies on African American and Hispanic high school students found no evidence that sports participation improved the grades or test scores of these students. And the results of Hanson and Kraus's (1999) study suggest that while girls seem to benefit in math and science from their participation in sports, boys do not. Overall, however, there have been few strong theoretical and empirical examinations of participation and its educational consequences for students from different economic, racial, and gender groups, thus warranting further examination of how students' characteristics moderate the experiences of participating in sports and other high school activities.

Finally, the results suggest that indicators of the three theoretical perspectives (or something highly correlated with them) capture the key mechanisms linking participation in extracurricular activities to grades and test scores. Although there may be other benefits of participation, the developmental and social capital benefits represent the central means by which particular extracurricular activities enhance students' achievement. It appears that structure, adult supervision, and parental involvement are all characteristic of the activities that promote development and social capital. The lack of these attributes in activities that are negatively related to achievement, such as intramural sports and vocational clubs, may explain their relationship to achievement. Thus, increasing these attributes in other school activities may serve to enhance the educational effectiveness of extracurricular programming.

The findings in this study generate the need for future research on the long-term educational effects of participation in extracurricular activities. While participating in some activities helps students improve their high school grades and test scores, does the experience of participating continue to benefit students beyond high school? Past research has not provided a clear understanding of the effect of high school sports or other extracurricular activities on long-term educational attainment, such as college graduation (see Braddock 1981; Hanks and Eckland 1976; Landers et al. 1978;

Otto 1975; Purdy 1980; Spady 1970). The results of these studies have been inconsistent, yet seem to suggest that participating in high school sports is beneficial for long-term attainment only if it is coupled with participating in other, service-related (e.g., student council) activities. Still, by illuminating some of the processes by which participation in activities is beneficial to achievement, my findings suggest that sports participation alone (or other activities that promote individual development or social ties related to educational pursuits) may promote achievement beyond the high school years, a question that begs further attention.

NOTES

1. The age of the data may also explain the contradictory findings between these studies. The HSB data represent a cohort of students who began the 8th grade in 1980, while the NELS data represent a cohort of students who began the 8th grade in 1988. However, McNeal (1995), using the older HSB data, did find that participating in school athletics or athletics-related groups (e.g., cheerleading and pep clubs) significantly reduces a student's likelihood of dropping out of school prior to the 12th grade.

2. Female athletes do not gain the same status as male athletes (see Thirer and Wright 1985).

3. Preliminary analyses indicated that dividing the sports-participation category to differentiate "participants" and "leaders" did not significantly change the results.

4. These three measures do not specify the nature of the discussions between students and parents. Thus, it is possible that these conversations may derive from positive or negative sources and create some ambiguity in interpreting the results. However, the 12th- grade composite variable does correlate positively with math grades ($r = .175$), English grades ($r = .276$), scores on the math test ($r = .167$), and scores on the reading test ($r = .172$).

5. Although some other measures of social capital are available in NELS, I used only those measures that were available in the 1992 (12th-grade) data.

6. Preliminary analyses indicated that the type of curriculum (e.g., college preparatory and advanced placement) did not significantly differ between athletes and nonathletes. Thus, this variable was not included as a control measure.

7. However, it does not appear that popularity is a significant link to membership in a more academically oriented peer group, as the leading-crowd hypothesis suggests. In a supplemental analysis (not shown), I found that popularity explains less than 10 percent of the effect of sports participation on academic orientation of the peer group. Thus, although sports participation is significantly associated with a higher academic orientation of students' peer groups, little of this effect can be attributed to increased popularity. In light of this finding, future research should consider other potential avenues of gaining access to the leading crowd.

8. Although sports participation does significantly improve general self-esteem (see Table 2), self-esteem does not significantly affect grades or test scores (see Table 3; see also Ross and Broh 2000). Thus, although I found evidence that interscholastic sports is beneficial for participants' general self-esteem, the results suggest that this is not a significant link between participation and academic achievement.

9. The mechanisms through which sports operate to offer athletes membership in the leading crowd is an issue that should be addressed in future research.

10. Although this study presented evidence that playing interscholastic sports is beneficial for students, there is some evidence that participation in sports may promote undesirable outcomes as well. Studies of athletes have found that participation may be associated with higher levels of aggressiveness, irritability, dishonesty, eating disorders, drug use, and violence (Benedict 1997; Crosset, Benedict, and McDonald 1995; Messner 1992; Messner and Sabo 1994; Rees, Howell, and Miracle 1990). And while many of these studies have been plagued by the same methodological problems that are common in other research on extracurricular activities, the potential for negative consequences from participation must also be examined and acknowledged in comprehensive evaluations of the extracurriculum.

APPENDIX

Table A1. Descriptions, Means, and Standard Deviations for All Variables

Variable Name	Description	Metric	Mean	*SD*	Source and Year[a]
Extracurricular Participation					
Interscholastic sport	Participated in any interscholastic sport in the 10th and 12th grades.	0 = did not participate both years	.32	.47	Student
Intramural sport	Participated in any intramural sport in the 10th and 12th grades.	0 = did not participate both years	.05	.22	Student
Cheerleading	Participated in cheerleading in the 10th and 12th grades.	0 = did not participate both years 1 = participated both years	.04	.20	Student
Music groups	Participated in any school music group in the 10th and 12th grades.	0 = did not participate both years 1 = participated both years	.15	.35	Student
School drama	Participated in school drama in the 10th and 12th grades.	0 = did not participate both years 1 = participated both years	.06	.23	Student
Student council	Participated in student council/government in the 10th and 12th grades	0 = did not participate both years 1 = participated both years	.04	.20	Student
Yearbook	Participated in yearbook or journalism club in the 10th and 12th grades.	0 = did not participate both years 1 = participated both years	.04	.20	Student
Vocational clubs	Participated in any vocational club in the 10th and 12th grades.	0 = did not participate both years 1 = participated both years	.07	.25	Student
The Developmental Model					
Self-esteem	Standardized scale of self-esteem scores. Lower scores represent lower self-esteem.	Standard units	.00	1.00	Student
Locus of control	Standardized scale of locus of control. Lower scores represent less internal control.	Standard units	.00	1.00	Student

(continued)

Table A1. Continued

Variable Name	Description	Metric	Mean	*SD*	Source and Year[a]
Homework	Number of hours student spends on homework per week.	Standard units	.00	1.00	Student
Leading-Crowd Hypothesis					
Academic orientation of peer group	Importance among friends to attend class, study, get good grades, and attend college.	0 = less academically oriented 8 = more academically oriented	5.60	2.09	Student
Social Capital					
Student to school	Student talks to teacher outside of class.	0 = no, 1 = yes	.44	.50	Student
Student to parent	Frequency student talks with parents about school studies, programs, and classes.	0 = never talks with parents 6 = frequently talks with parents	2.88	1.64	Student
Parent to school	Frequency parents contact school about (1) student's plans after high school,(2) student's course work, and (3) volunteering for school.	0 = never 9 = often	1.87	2.04	Student
Parent to parent	Frequency parents talk to parents of child's friends about (1) things that are going on at their children's school, (2) her or his child's educational plans after high school, and (3) her or his child's career plans.	0 = never 9 = almost daily	2.38	2.07	Student
Educational Outcomes					
Math grades	Standardized scale of math grades in 12th grade.	Standard units	.00	1.00	Student

(continued)

Table A1. Continued

Variable Name	Description	Metric	Mean	*SD*	Source and Year[a]
English grades	Standardized scale of English grades in 12th grade.	Standard units	.00	1.00	Student
Math test score	12th-grade cognitive test of math ability.	Standard units	.00	1.00	School
Reading test score	12th-grade cognitive test of reading ability.	Standard units	.00	1.00	School
Controls					
Sex	Sex of student.	0 = male, 1= female	.49	.50	Student 1988
Black	Respondent identifies his or her race as black.	0- = no, 1 = yes	.11	.31	Student 1988
Hispanic	Respondent identifies his or her race as Hispanic.	0 = no, 1 = yes	.09	.29	Student 1988
Asian American	Respondent identifies his or her race as Asian American.	0 = no, 1 = yes	.04	.19	Student 1988
American Indian	Respondent identifies his or her race as American Indian.	0 = no, 1 = yes	.01	.09	Student 1988
White	Respondent identifies his or her race as white.	0 = no. 1 = yes	.75	.43	Student 1988
Family income	Total annual family income in $10,000s.	Range 0-29.6285	4.24	4.07	Parent 1988

(continued)

Table A1. Continued

Variable Name	Description	Metric	Mean	*SD*	Source and Year[a]
Parents' education	Highest educational level attained by either parent.	1 = didn't finish high school 6 = Ph.D., MD, or other	3.11	1.22	Parent 1988
Parent structure	Student lives in a dual, biological parent household.	0- = no, 1 = yes	.69	.46	Student 1988
School classification	Student's school is public.	0 = no, 1 = yes	.91	.29	Student 1990
Urban	School is located in an urban area.	0 = no, 1 = yes	.25	.44	School 1990
Suburban	School is located in a suburban area.	0 = no, 1 = yes	.41	.49	School 1990
Rural	School is located in a rural area.	0 = no, 1 = yes	.34	.47	School 1990
School size	Number of students in respondent's school.	1= under 400 students 5 = over 2,000 students	3.02	1.21	School 1990

Source is for both years (1990 and 1992) unless otherwise indicated.

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***Beckett A. Broh**, MA, is a doctoral student, Department of Sociology, Ohio State University, Columbus. Her main fields of interest are education, adolescent health, and family. She is currently conducting a project in which she is examining season changes (i.e., school year versus summer) in education-related outcomes for kindergartners and first graders from advantaged and disadvantages backgrounds, using data from the Early Childhood Longitudinal Study—Kindergarten Cohort.*

The author thanks Doug Downey for his invaluable assistance on revisions of this article and Vincent Roscigno, Tim Curry, Shana Pribesh, Stacy Vogt-Yuan, and Cynthia Pelak for their helpful feedback on earlier versions. *Address all correspondence to Beckett Broh, Department of Sociology, 300 Bricker Hall, 190 North Oval Mall, Columbus, OH 43210; email: broh.1@osu.edu.*