
SPORT PARTICIPATION AND ADOLESCENT DEVIANC E: A LOGISTIC ANALYSIS

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The purpose of this research is to examine the relationship between sport participation and school defined deviance in eighth grade adolescents. Building upon the previous sport participation literature and utilizing Hirschi's social bond theory to inform variable selection procedures, analysis of the relationship is measured with mediating student, family, and school variables extracted from the National Education Longitudinal Survey. After a brief discussion of the previous sport participation literature, theoretical framework used, methodology, research design, and measures, the results reveal sport participation had a slight impact upon adolescent deviance. The analysis supports the ideas that there are statistically significant differences between athletes and non-athletes in regards to certain characteristics (informed by social bond theory) that influence deviant behavior. In addition, logistic regression shows that while sport participation does have a moderate impact upon adolescent deviance, it could be other social bond characteristics, such as family characteristics, have a greater impact upon deviant behavior. Current research limitations and future directions are discussed.

Introduction

As an institution, sport is center stage in the United States (Frey and Eitzen 1991; Washington and Karen 2000). Feldman

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and Matjasko (2005) note sports are the most popular extracurricular activities for adolescents. As a result, a popular assumption in American society is that extracurricular activities and sports in particular, keep adolescents out of trouble by occupying their time and teaching them important values, organization, and discipline (Spreitzer 1994; Fejgin 1994; Videon 2002). Other popular notions are that these activities can provide a positive contextual environment for socializing adolescents (Fejgin 1994; Chalip and Green 1998); extending peer group associations (Eccles and Barber 1999); developing higher educational aspirations (Marsh and Kleitman 2003); influencing sexual activity (Sabo, Miller, Farrell, Melnick, and Barnes 1999); and aid in psychological adjustment to their environment (Csikszentmihalyi 1990).

In contrast to the positives that sport offers, some theorists have pointed to athletes engaging in negative behavior (Leonard 1998; Eccles and Barber 1999). Langbein and Bess (2002: 437) note “detractors argue that school sports are competitive, involve conflict that is often physical, and, especially when sports teams are regarded as an exclusive high school elite, may even inspire hostility among those who are left out.” Public stereotypes of sport participants being involved in deviant or violent behavior are dangerous to society and adolescent development (Lapchick 2000). Mahoney, Cairns, and Farmer (2003) note 46% of 10th graders participate in at least one interscholastic sport. Such a high participation rate has raised concerns about sport participation and its relationship with deviant behavior. Specifically, does sport participation promote or inhibit adolescent deviance?

A large amount of research has been collected identifying sport participation and its various affects upon adolescents (Feldman and Matjasko 2005). The purpose of this study is to examine the relationship of school defined deviant behavior in adolescents and sport participation in relationship with other mediating variables. As Feldman and Matjasko (2005:161) note: “Extracurricular activities are not isolated from other developmental contexts; rather, they are embedded in schools and communities and influenced by families and peers.”

Previous research examining the relationship of sports participation and deviance is complex. A clear-cut conclusion cannot be

drawn from this extensive literature as to whether or not participation in sports promotes or reduces deviance within an educational institution. Most surveys or studies suffer from focusing on either males or females exclusively, or involve small sample sizes that do not contain highly generalizable results. Applying Hirschi's social bond theory is useful for examining how sport participation, and other developmental contexts, such as schools and families, relates to adolescent deviance. As a result, this study will include multiple mediating variables, including student, family, and school variables as a way of addressing these influential developmental contexts and illustrating sport participation's relationship to adolescent deviance.

The Traditional Debate: Sport Promoting or Inhibiting Deviant Behavior

Since the 1960s there has been a voluminous amount of research and theorizing done regarding sport's relationship with adolescent deviance (Erkut and Tracy 2002). In particular, some research identifies the "dumb jock" stereotype (Coleman 1961), while other studies suggest athletic participation is related to positive educational (Broh 2002) and socio-emotional outcomes (Donaldson and Ronan 2006). In her literature review, Fejgin (1994) identifies four theoretical positions that help to characterize the sport participation literature: 1) developmental theory, 2) zero-sum theory, 3) functionalist theory, and 4) conflict theory. The first two theories, developmental and zero-sum theories, are individual level theories. The latter two theories, functionalism and conflict theory, focus on the macrosocial positions within society. Using this typology as a template, the next section highlights both positive and negative viewpoints regarding adolescent deviance and sport participation.

Positive Effects of Sport Participation

Developmental theory and functionalist theory both have positive views of sport participation. The individualistic developmental theory focuses on "socialization via sport" (Videon 2002). From

this perspective, sport instills participants with positive social norms and values such as character building, developing social skills, teamwork, hard work, and self-discipline (Videon 2002). Additionally, Fejgin (1994) notes the functionalists “advocate the positive, integrational effects of high school sports (Waller 1961).” The view that sport participation is positive has received much empirical support over the years.

Research centering on sport participation has generally included outcomes, such as academic achievement, occupational aspirations, furthering educational aspirations, self-concept, educational attainment, and occupational attainment (Marsh 1993; Fejgin 1994). For example, Broh (2002) found that participation in interscholastic sports positively related to student achievement within the classroom and in math scores. Fejgin (1994) found sport participation to have a positive effect upon student achievement, educational aspirations, and self-concept, while showing a negative relationship with discipline problems. Sport participation is related to better attendance in school; less likely to be referred to the principle’s office; a greater likelihood of wanting, enrolling, and graduating from college; and greater occupational prestige and income (Snyder and Spreitzer 1977; Melnick, Sabo, and Vanfossen 1992; Marsh 1993; Fejgin 1994).

Other positive characteristics associated with sport participation include school safety, socio-emotional processes, and the physical well-being of participants. Langbein and Bess (2002: 436-37) note sports programs might contribute to safer school environments by fostering “teamwork and cooperative norms, thereby enhancing social capital and sociable behaviors.” They explain further that if a cooperative normative structure exists within a school and behavior improves, then sports might actually be contributing to school safety (Langbein and Bess 2002).

Sports have also been linked to increasing the self-esteem and self-concept of participants. The socio-emotional benefits involving sport participation include increasing a student’s self-concept (Fejgin 1994); a positive relationship with emotional and behavioral well-being (Donaldson and Ronan 2006); and lower rates of depression contrasted by higher rates of perceived competence

(Donaldson and Ronan 2006). In addition, Erkut and Tracy (2002) found in their study of Latino subgroups that sport participation is positively related to self-esteem for Mexican American girls and boys, Puerto Rican girls, and Cuban American boys. Indeed, they confirmed that sport participation and self-esteem is “mediated by school attachment and physical well-being” (Erkut and Tracy 2002: 422). Regarding the physical well-being of participants, sport participation, along with exercise, has been related to improving the physical health of participants, including such benefits as lowering blood pressure and decreasing obesity (Schiffman 1994). While numerous researchers have empirically demonstrated positive aspects of sport participation, there are other views about sport’s role in mediating deviant behavior.

Negative Effects of Sport Participation

Zero-sum theory and conflict theory both have negative views of sport participation. The zero-sum theory proposes that participation in sport takes up a large amount of the participant’s time, which negatively affects their academic preparation (Coleman 1961). Students have a finite amount of time available to them for activities. The more time that is spent on athletics, the less time there is available for studying, which adversely affects their academic achievement (Coleman 1961). Additionally, Fejgin (1994: 215) notes the conflict orientation argues “while participation in school teams may result in a variety of positive outcomes, school sport is often detrimental to those individuals who do not participate and to the school organization, since it has the potential of increasing tension and antagonism between groups within the school.”

Furthermore, conflict theorists identify other negative aspects of sport participation. Minority and low economic youth are devoting more time to sport, which neglects their academic work, in an attempt to increase their social mobility and economic achievement (Sage 1990; Coakley 2006). The view that sport participation is negative has received mixed empirical support, but the media’s coverage of high profile athletes engaging in deviant behavior is nothing new to American culture and certainly influences popular

perceptions of athletes, especially minority athletes, as being involved in criminal behavior (Leonard 1998; Berry and Smith 2000). Recent research into the negative aspects of sports include: school safety, the *hubris* (i.e. pride driven arrogance, feelings of superiority and invulnerability) of elite athletes, and male athletes engaging in violence against women.

Langbein and Bess (2002: 437), as previously mentioned, note “detractors argue school sports are competitive, involve conflict that is often physical, and, especially when sports teams are regarded as an exclusive high school elite, may even inspire hostility among those who are left out.” Hanks and Eckland (1976) note the exclusive nature of sports and the popularity of athletes can result in grade leniency from teachers. This unequal treatment of student athletes may help to polarize other social groups and can lead to school safety issues and tragedies, such as the Columbine tragedy (Langbein and Bess 2002).

Another negative characteristic of athletics is what Hughes and Coakley (1991) refer to as *hubris* in elite athletes. Coakley (2004: 173) uses the Greek word *hubris* to describe elite athletes’ “sense of being unique and extraordinary” and how “it may be expressed in terms of pride-driven arrogance, an inflated sense of power and importance, and a public persona that communicates superiority and even insolence.” In addition, Hughes and Coakley (1991) note elite athletes subscribe to norms and values that are embodied in sport, not in the larger societal context, which contributes to the development of *hubris*.

Hubris is an important idea for identifying how the underlying social dynamics of team sports contribute to deviant behavior. For example, Peretti-Watel, Pruvost, Mignon, and Obadia (2004) examined risk-taking behaviors of elite student athletes in South-Eastern France. They found that elite student athletes that viewed sport for personal and social achievement were “more likely to engage in risky behaviors on the road” (Peretti-Watel et al. 2004: 241). Additionally, they found that athletes that went on social outings with other athletes were more likely to drink. This conclusion is in line with Hughes and Coakley’s (1991) assertion that the close bonding on elite teams often leads to negative deviance (see

Coakley's 2006 discussion of deviant overconformity and underconformity).

While the previously mentioned negative aspects of sport are intriguing, a large amount of research illustrating the sport's negative impact upon participants involves male athletes and violence against women. Videon (2002) notes the previous sport participation literature identifies the unequal affect sport has upon participants, such as females participating less in sports. In relationship to violence, Crosset, Ptack, McDonald, and Benedict (1996) searched judicial affairs office records of ten Division I athletic institutions and found that male student athletes comprised only 3% of the student population, but accounted for 35% of battering (against women) reports on these campuses. Additionally, they found a statistically significant relationship between athletic membership and sexual assault.

Crosset, Benedict, and McDonald (1995) used a similar approach and examined the police records of twenty Division I institutions in conjunction with the judicial affairs records of ten Division I institutions. They discovered that male student athletes were disproportionately represented in both sets of records. Male football and basketball players represented 30% of the student athletes in these cases, but accounted for 67% of the reported sexual assaults. Finally, Benedict (1998) analyzed the subculture of professional athletes and noted the preferential treatment athletes receive is an important factor for developing their view of women. Women were seen as sport "groupies" and the sexual entitlement athletes feel contributes to athletes' involvement in acquaintance or date rape.

Empirical support can be found to illustrate both the positive and negative aspects of sport participation. As a result, an explicit theoretical orientation is needed to understand how sport relates to deviant behavior, in particular adolescent deviant behavior. The theoretical perspective should take into account other mediating factors, such as individual, family, and school characteristics, which affect not only sport participation, but also adolescent deviant behavior. The next section outlines the theoretical framework used to guide the analysis.

Theoretical Framework

Before a discussion of methodology and research design can be entertained, a brief review of the theoretical framework is useful. Hirschi's social bond theory is the framework used for informing this research. It is used to examine sport participation's relationship with different variables from institutionalized structures, such as school or family characteristics. In addition, a brief discussion of these factors will provide the rationale for the variables chosen for examining sport participation's relationship to adolescent deviance.

The Social Bond

Huebner and Betts (2002) note Hirschi's social bond theory is one of the most widely used theories to investigate adolescent deviance. Its usefulness in linking adolescent deviance and conventional activities is illustrated by Eccles and Barber (1999) that note participating in organized leisure activities is related to lower rates of adolescent delinquency. Weber, Miracles, Rosicky, and Crow (2001: 321) state: "It has been suggested that sport teams and other programmatic activities might reduce delinquency by providing the delinquent prone youth with an opportunity for social bonding." They further explain that Hirschi's social bond theory is one of the most influential explanatory models regarding adolescent deviance over the past three decades (Weber et al. 2001).

Hirschi's social bond theory is a form of social control theory stating adolescents are capable of both deviant and conformist behavior (Weber et al. 2001). Conformity, however, is achieved by adolescents controlling their delinquent desires (Shoemaker 2000). As a result, Hirschi believed adolescents develop social bonds with conventional institutionalized structures, such as schools, via participation in conventional activities. Sport programs are often cited as "conventional activities" that are time consuming, can potentially affect rates of adolescent deviance (Landers and Landers 1978; Weber et al. 2001), and "reflect the interplay between multiple developmental contexts (e.g. family, school, peers, and com-

munity values and norms)" (Huebner and Betts 2002: 126). Indeed, Weber et al. (2001: 322) note Hirschi's social bond theory is still useful and "continues to generate research questions that need to be more fully explained."

Hirschi (1969) notes student attachment to institutions is correlated with adolescent deviance. Hirschi's social bond theory attempts to understand how conformity is achieved in social control organizations (Shoemaker 2000). A student's bond to conventional institutional arrangements is based on attachment, commitment, involvement, and belief. Hirschi believed that social bonds are stronger barriers to adolescent deviance compared to personality characteristics, and the social bond "refers to the connection between the individual and the society, usually through social institutions" (Shoemaker 2000: 167).

Hirschi (1969) notes *attachment* involves the emotional connection between an adolescent and other groups and the extent the adolescent cares about the feelings of others. For example, Seagrave, Hasted, and Moreau (1985) found, in their study of ice hockey players, the less attached the adolescent was the more delinquency the adolescent exhibited. *Commitment*, conversely, is a cost-benefit analysis that analyzes the investment versus the cost of conformity. It has been hypothesized that maintaining athletic membership on a sports team not only reflects commitment (Schafer 1969), but also results in greater educational performance (Fejgin 1994). Feldman and Matjasko (2005) note students involved in organized extracurricular activities become more attached to other students, family members, and school authorities by developing mutual trust and commitment with others. Additionally, Coakley (2006) notes the potentially important role sport participation can play in developing a student's commitment to education.

According to Hirschi's social bond theory, *involvement* involves adherence to "conventional rules" (Shoemaker 2000: 168). Traditionally, *involvement* has been measured by the number of hours involved in a sport or organized activity (Weber et al. 2001). For this research, however, involvement constitutes participation in organized, officially school sanctioned sport programs. Indeed, as Feldman and Matjasko (2005) note, sports are the most popular

extracurricular activity for adolescents. The last component of the social bond is *belief*, which is the acceptance of the current, prevailing system of norms and values (Hirschi 1969). Weber et al. (2001: 324) note sport programs have “rules that allow for or exclude participation; these rules reinforce the social order.” As a result, adolescents that maintain their participation on sports teams believe in the current institutionalized norms and values and develop traits, e.g. cooperation, teamwork, and sportsmanship, which are socially valued (Landers and Landers 1978). For example, Coakley (2006) notes students will maintain minimum grade point averages, thereby illustrating their belief in the current institutional arrangements of schools, as a way to stay on the team.

Weber et al. (2001: 322) note Hirschi’s social bond theory has received a “fair degree of empirical support,” and has been heavily tested, both empirically and theoretically, over the past thirty years. In particular, three major institutions have been focused on by social bond research: the family, religion, and education. Wright and Wright (1994) review the usefulness of social bond research in explaining adolescent delinquency. They note Hirschi’s theory provides a sound theoretical rationale for the explanation of adolescent deviance. Additionally, it has been noted that participation within organized extracurricular activities, such as sports, can be explained by social bond theory (Huebner and Betts 2002).

In particular, Hirschi’s social bond theory can be applied to student-athletes in relationship to individual, family, and school-related variables. Shoemaker (2000: 181) notes [a]chievement, participation, and overall involvement in school-related activities have been connected with delinquency for a long time.” One example of this classic line of research is Empey and Lubeck (1971), which showed in their research of delinquents and non-delinquents in Utah and California, both family and school variables (as directed by the four components of the social bond) positively associate with adolescent delinquency (Shoemaker 2000). Regarding sport participation, most research has agreed that being involved in sports is associated with lower levels of deviant behavior (Weber et al. 2001) and therefore illustrates a stronger social bond (Shoemaker 2000).

Since the conclusions between social bond theory, sport par-

ticipation, and adolescent deviance have received mixed support, this research attempts to reexamine how social bond theory and adolescent deviance relate to sport participation. As Jessor, Turbin, and Costa (1998: 195) note the power of social bond theory in reducing deviant acts by “providing social controls against problem behavior, by promoting activities that are alternatives to or incompatible with problem behavior, and by strengthening orientations toward and commitments to conventional institutions, such as church, school or family or to the larger adult society.”

The previous literature has utilized social bond theory primarily to explain adolescent deviance (Shoemaker 2000). While some research has applied this theory to examining sport participation and adolescent deviance, the conclusions are still ambiguous. The focus of this research, however, is to use Hirschi’s social bond theory to inform an examination of a school population and whether sport participation positively or negatively relates to adolescent deviance.

Research Questions

According to the previous sport participation literature, the effect sports has on mitigating or preventing deviant behavior is ambiguous. In order to better understand what Feldman and Matjasko (2005) label as “other development contexts”, which influence deviant behavior, Hirschi’s social bond theory is reviewed in order to locate the individual, family, and school influences upon adolescents in not only engaging in deviant behavior, but also participating in sports. Social bond theory is used to examine the relationship of adolescents and deviant behavior. In addition, it is used to identify whether sport participation, individual, family, or school characteristics affect deviant behavior in adolescents.

Sport participation is viewed as a “conventional activity” that is officially recognized and sanctioned by important institutionalized arrangements in society, including personal, familial, and school-related contexts. As a result of Hirschi’s social bond theory, it can be hypothesized that students engaging in conventional activities, such as sports, have higher degrees of attachment, commitment,

involvement, and belief in educationally approved normative structures. The higher the degree of recognition to the four components of the social bond theory, the less likely the adolescents will engage in school-defined deviant behavior. While the database used in this research does not provide questions based upon social bond theorizing, many of the questions serve as indicators of a student's attachment, commitment, and belief to family or school bonds, while involvement is measured as relating to sport participation. Based upon the previous scholarship, and in conjunction with the identified theoretical framework, the following research questions are presented. Specifically:

1. Do significant differences exist between athletes and non-athletes regarding incidences of deviance, student, family, and school characteristics?
2. What is the relationship between school defined deviance and student, family, and school characteristics when controlling for sport participation?

Methodology and Research Design

The following section provides information about the methods and research design used to examine sport participation's relationship to adolescent deviance. It discusses: 1) the sample; 2) measures (and related justification) used for dependent, independent, and mediating variables; and 3) the rationale for the statistical analysis.

Sample

The data for the project are drawn from the National Education Longitudinal Survey Base Year 1988 (NELS: 88) provided by the United States Department of Education and the National Center for Educational Statistics. The sample is a clustered, stratified national probability sample of 1,052 public/private schools containing 8th graders. Approximately 25,000 students across the nation participated in the base year of 1988.

The population of interest was all US 8th graders in the spring of 1988. A series of sample restrictions were placed upon the

samples that were used. These sample restrictions were employed to make sure only those individuals that had complete base year student, student test and parent, and school administrators' questionnaires were selected. The final sample size for this research project was 21,414 individuals.

The NELS: 88 is a logical database to use to address what Feldman and Matjasko (2005) identify as "developmental contexts." They argue that sport participation should be studied in relationship to a student's peer, family, and school context (Feldman and Matjasko 2005). The individual, family, and school variables provided by the NELS: 88 provide useful indicators of Hirschi's social bond, which is used for examining adolescent deviance.

In addition, Broh (2002: 73) notes the database used in this research (NELS: 88) is extremely well-suited for adolescent and educational research involving extracurricular activities, such as sports "because of its abundance of specific measures of students' participation in extra curricular activities across waves of data." Only the base year in 1988 (when students were 8th graders) was used in the research. This age group was explicitly targeted in order to be close to high school age groups, while not being considered in high school. This consideration is important based on Coakley's (2006) recommendation that high school-aged adolescents develop in many ways, which may not be related to sport participation. Additionally, the "selection-in" and "filtering-out" processes of high school athletics helps to render previous empirical studies:

not very helpful because they don't allow researchers to say whether playing varsity sports really changes young people in systematic ways or whether students who try out for [high school] teams, are selected by coaches, and choose to remain on teams are simply different from other students *before* [italics in original] they ever become varsity athletes (Coakley 2006: 486).

Eighth grade students are used in order to identify possible sport participation effects upon deviance, while taking into account Coakley's ideas regarding the limitations of some studies dealing with high school athletes. In addition, Hirschi's social bond theory

is extremely useful for interpreting results dealing with early teenage youth and adolescents (Shoemaker 2000).

Dependent Variable

The purpose of this research is to examine whether or not sport participation affects adolescent deviance in school. The dependent variable, school-defined deviance, is an index of NELS: 88 deviant behavior variables that includes: 1) student being sent to the principal's office for school work problems; 2) student got into a fight with another student; 3) student has a behavior problem; and 4) parental notification for students' behavior, grades, or attendance. These variables are original NELS: 88 variables and were chosen to illustrate the deviant behavior that can potentially occur in school settings. Additionally, these variables are based on self-reports within student questionnaires.

In accordance with Hirschi's (1969) social bond theory, student deviance within the school setting is not only defined by the school, but also a reflection of a student's belief, attachment, involvement, and commitment to current rules and activities in the school. Students involved in organized sport programs are attached and committed to their participation in conventional activities (Huebner and Betts 2002). According to the social bond theory, students involved in these activities could have a stronger belief in current institutionalized arrangements by maintaining their current attachment to school, family, and other authority figures, which results in fewer incidences of deviance (Weber et al. 2001).

The resulting binary variable measures the presence of school-defined deviance within the student sample. A binary format is used because the NELS: 88 variables that were indexed to form the present dependent variable were coded originally in the binary format. Additionally, the distribution of these variables was heavily skewed dictating that a binary dependent variable be constructed (Wright 2001). The cronbach alpha measure for the dependent variable was .7610, which is an acceptable level for social science research.

Independent Variable

The main independent variable in this research is sport participation. Much research has been devoted to analyzing whether sport participation is related to delinquency or outcomes (e.g. Snyder and Spreitzer 1977; Melnick et al. 1992; Marsh 1993; Fejgin 1994; Eccles and Barber 1999; Broh 2002; Mahoney et al. 2003). As previously noted, social bond theory states that adolescents involved in conventional activities, such as sports should have a negative relationship with deviance, especially within schools.

Sport participation was coded as a binary variable (0= no participation/non-athletes, and 1= sport participation/athletes) that measures whether a student participates or does not participate in school sanctioned sports. In the NELS: 88 other sport related variables are available and include intramural, non-school sports, and cheerleading. While these variables have been combined in previous research projects (e.g. Broh 2002), the purpose of this research is to explicitly measure school sanctioned sports (i.e. scholastic sports). Additionally, as Coakley (2006) notes, many of the benefits associated with high school athletes come from being easily identifiable as athletes. Students that engage in out-of-school athletic competitions, leagues, events, or sports are not, generally speaking, as widely known within the high school subculture (Coakley 2006).

Mediating Variables

Other independent variables include the mediating student, family, and school variables were dictated by Hirschi's social bond theory. For example, student variables are individual characteristics that potentially affect both sport participation and deviant behavior. After data selection procedures identified usable NELS: 88 variables, the variables include: the student's gender (common mediating variable dictated by the previous literature); race (common mediating variable dictated by the previous literature); attendance in the last four weeks (representing belief in current school policies); how prepared for class a student is (showing commit-

ment to conventional activities); and hours spent on homework each week (showing commitment and involvement in currently accepted school practices).

Individual characteristics affect sport participation and deviant behavior. Gender greatly affects student performance (Thom 2002), and sport participation rates (Huebner and Betts 2002). Differences in student performance and sport participation based on race and ethnicity include: differences in core academic areas (Dozier and Barnes 1997); unequal access to academic resources (Darling-Hammond 1998); and likelihood of participation in organized school sanctioned sports (Coakley 2006).

Family variables relate to the family unit. The closer an adolescent is to their family, the stronger that social bond is and the less likely they are to engage in deviance (Hirschi 1969). The family variables included within the NELS: 88 that act as indicators of the social bond include the following: whether a student comes from an urban or rural school (smaller communities might mean greater attachment to local institutions); size of the student's family (smaller families could lead to greater levels of attachment); whether a student has only one authoritarian figure at home (one parent or guardian could mean that less time is spent with the student, resulting in a weaker bond); whether or not the student has discussed school programs with guardians (shows attachment and belief in current institutionalized arrangements); whether guardians have spoken to school teachers or counselors (parents with stronger bonds to school arrangements can influence a student's view of school arrangements); and if the family has a rule concerning grades (shows the student is committed to both his family, and school arrangements).

Family factors have been shown to affect adolescent deviant behavior (Shoemaker 2000). Additionally, many family characteristics have been strongly related to previous social bond research (Shoemaker 2000). Family factors affecting an adolescent's social bond (and therefore their deviant behavior) include income and social class (Washington and Karen 2000; Sabo et al., 1999), family structure (Cookston 1999), and urban/rural settings (Williams 2001). According to Hirschi (1969) students that are more likely to

engage in conventional activities are less likely to be deviant. Participating in school sanctioned sports is often seen as a conventional activity, which has the potential to reduce adolescent deviance.

Erkut and Tracy (2002) identify that sport participation is influenced by how attached the adolescent is to the school's institutionalized arrangements. Examples of these institutionalized school arrangements affecting the development of social bonds include the following variables: the student/teacher ratio (the higher the ratio in class situations, the weaker the student's bond can be towards teachers and other school authorities); whether students feel discipline procedures at the school are fair (illustrate a student's belief in current school arrangements); and whether students see school rules for behavior as strict (reflecting the a student's belief that the school is correct in discipline related procedures). Now that the variables have been discussed in explicit relationship to the social bond theory, the next section will address how the variables are analyzed.

Analysis

Logistic regression is the multivariate statistical procedure used to examine the relationship between the dichotomous dependent variable, school-defined deviance, and the differing mediating variables across categories of those that participated (i.e. athletes) or did not participate (i.e. non-athletes) in school sanctioned sports. Logistic regression is used in order to predict group membership within a dichotomous dependent variable (Sack, Singh, and Thiel 2005). Additionally, this type of regression is used because it does not necessitate normally distributed independent variables (Wright 2001), which as previously mentioned, were heavily skewed.

Logistic regression is concerned with producing coefficients that indicate the logged odds of being in the 0 ('not deviant') or 1 ('deviant') category. Logistic regression, therefore, is used to determine the probability that those that participate or do not participate in sports are deviant or not deviant in relationship to other mediating individual, family, and school variables. While multi-level

modeling procedures have been extremely common in the social sciences for examining precipitating and embedded factors of a phenomenon, the purpose of this analysis is to locate group membership as deviant or not deviant in relationship to specific variables while controlling for sport participation. While variables for this analysis were extracted from individual, family, and school level questions in the NELS: 88, the purpose was not to analyze all the possible “super levels” in this database affecting adolescent deviance in a time ordered sequence. Rather, logistic regression is the preferred method of analysis for: 1) deciding the likelihood of group membership (i.e. odds of being deviant, or not being deviant), and 2) for examining indicators of the social bond theory from individual, family, and school related questions in the NELS: 88, and how they impact deviance, while controlling for sport participation.

Results

Univariate and bivariate results help to identify and describe not only the sample, but also rudimentary differences within the sample between non-athletes and athletes. To review, the research questions guiding this examination were:

1. Do significant differences exist between athletes and non-athletes regarding incidences of deviance, student, family, and school characteristics?
2. What is the relationship between school defined deviance and student, family, and school characteristics when controlling for sport participation?

In reference to the first research question, non-athletes are more likely to engage in deviant behavior (59% vs. 56%). Moreover, non-athletes are more likely to be female (54% vs. 44%); be non-white minority group members (34% vs. 28%); and come to class prepared with books, pencil/pen, and homework (68% vs. 67%). Additionally, non-athletes are more likely to have recent school attendance problems (70% vs. 64%); be from an urban school environment (73% vs. 69%); come from a single authority figure household (23% vs. 18%); and come from a school with a higher student teacher ratio (17.83 vs. 17.63). (*See Table 1.*)

**Table 1: Univariate & Bivariate Results: Mean Percentages (%)
Deviance, Sports Participation, and Social Bond Indicators (N= 21,
414 Students)**

| Variables | Full sample | Non-Athletes | Sig | Athletes |
|-------------------------------|-------------|--------------|------|----------|
| <i>Deviance</i> (mean) | 59% | 59% | *** | 56% |
| (standard deviation) | 0.49 | 0.49 | 0.49 | |
| <i>Sports participation</i> | 45% | | | |
| | 0.49 | | | |
| <i>Social Bond Indicators</i> | | | | |
| female | 50% | 54% | *** | 44% |
| | 0.50 | 0.49 | | 0.49 |
| minority | 31% | 34% | *** | 28% |
| | 0.44 | 0.47 | | 0.45 |
| attendance problems | | | | |
| last month | 67% | 70% | *** | 64% |
| | 0.46 | 0.45 | | 0.48 |
| class preparedness | 68% | 68% | *** | 67% |
| | 0.47 | 0.46 | | 0.47 |
| time spent on homework | | | | |
| per week (in hours) | 1.16 | 1.08 | *** | 1.24 |
| | 1.12 | 1.05 | | 1.20 |
| urban | 71% | 73% | *** | 69% |
| | 0.01 | 0.44 | | 0.46 |
| family size | 4.58 | 4.52 | * | 4.58 |
| | 1.37 | 1.44 | | 1.33 |
| single authoritarian figure | 21% | 23% | *** | 18% |
| | 0.41 | 0.42 | | 0.38 |
| discusses programs | | | | |
| w/guardians | 86% | 84% | *** | 87% |
| | 0.34 | 0.37 | | 0.33 |
| family spoke to teachers | 29% | 68% | *** | 70% |
| | 0.45 | 0.46 | | 0.45 |
| family has grades rule | 70% | 66% | *** | 72% |
| | 0.46 | 0.47 | | 0.45 |
| student/teacher ratio | 17.65 | 17.83 | *** | 17.63 |
| | 4.48 | 4.6 | | 4.42 |
| discipline at school is fair | 71% | 71% | | 71% |
| | 0.45 | 0.45 | | 0.45 |
| rules for behavior are | | | | |
| strict | 70% | 68% | *** | 70% |
| | 0.46 | 0.45 | | 0.45 |

Significance= *** p< 0.001, ** p<0.01, * p<0.05

Athletes, however, are more likely to spend more time per week on homework (1.24 hours vs. 1.08 hours); come from a slightly larger family (4.58 members vs. 4.52 members); discuss school programs with parents (87% vs. 84%); and come from a family that had recently spoken to school teachers or counselors (70% vs. 68%). In addition, athletes are more likely to see current school rules as very strict (70% vs. 68%). Overall, the bivariate analysis appears to reveal that sport participation is related to slight reductions in deviant behavior. Additionally, athletes appear to have higher scores on questions relating to social bond indicators and this could be cautiously interpreted as athletes having stronger indications of social bonds. However, since there are significant differences between athletes and non-athletes regarding deviance and the social bond indicators, further multivariate analyses are needed to illustrate the role of sport participation in relationship to deviance while examining mediating variables

Multivariate Analysis

Logistic regression is used to identify the likelihood of being associated with a category from a binary dependent variable. Stepwise regression involves testing the model after each coefficient is added or deleted and is primarily used in exploratory research (Menard 1995). This technique, however, is not suitable to this research's analysis, which uses an explicit theoretical orientation to inform and test a particular model. As a result, simply the full or saturated model is tested logically. The social bond indicators from the NELS: 88 (previously discussed in the methodology and research design section) were identified by the research, *a priori*, and based off of Hirschi's social bond theory. The resulting logistic analysis is based off of the following logit equation:

$$\text{logit}[,(x)] = \log [,(x)/ 1- ,(x)] = \neg + ^2_1 x_1 + ^2_2 x_2 + ^2_3 x_3 + \dots + ^2_i x_i$$

(Or)

$$\text{Deviant Behavior} = \neg + ^2_1 \text{ Sport Participation} + ^2_2 \text{ Gender} + ^2_3 \text{ Race} + ^2_4 \text{ Attendance Problems} + ^2_5 \text{ Class Preparedness} + ^2_6$$

Time spent on homework per week +

²₁₅ Strictness of rules + Error.

To interpret the results of the logistic regression analysis, the Exp(B) column represents the odds ratio; that is, it is the predicted change in odds for a unit increase across the corresponding independent variables. Odds ratios greater than one (1) have a greater likelihood of being in the deviant category on the dependent variable, while odds ratios less than one (1) have a greater likelihood of being associated with the non-deviant category on the dependent variable. Odds ratios close to or exactly at one (1) indicate little to no relationship to the deviant category on the dependent variable. The logistic regression analysis is used to address the second research question: What is the relationship between school defined deviance and student, family, and school characteristics when controlling for sport participation?

The saturated (of full) model includes all social bond indicators (mediating independent variables), across the sport participation variable, in reference to the deviant behavior dependent variable. Adolescent deviant behavior is associated with being a non-white minority group member (1.17); having school attendance problems in the last month (1.82); coming from a single authority figure household (1.58); family having a rule concerning grade point average (1.29); and belief that current school rules are strict (1.10). (*See Table 2 on page 248*).

Conversely, a greater likelihood of being associated with non-deviant behavior is associated with playing school sanctioned sports (0.90); being female (0.40); coming to class prepared (0.40); spending more time on homework (0.87); discussing school programs with parents (0.65); having a family that recently spoke to school teachers or counselors (0.47); and a belief that current school discipline procedures are fair (0.63).

Being in an urban school (1.02), coming from a large family (1.06), and having a larger student/teacher ratio (0.99) were all very close to one (1) indicating an equal probability of being in either category. This research has identified that school sanctioned

Table 2: Logistic Regression Result: Adolescent Deviance, Sport Participation, and Social Bond Indicators

| Variables | B | S.E. | Sig ¹ | Exp(B) ² |
|---|------|------|------------------|---------------------|
| Sport Participation | -.09 | .03 | * | .90 |
| female | -.94 | .03 | *** | .39 |
| minority | .16 | .04 | *** | 1.17 |
| attendance problems last month | .60 | .03 | *** | 1.82 |
| class preparedness | -.91 | .04 | *** | .40 |
| time spent on homework per week (in hours) | -.12 | .01 | *** | .88 |
| urban | .02 | .03 | | 1.02 |
| family size | .06 | .01 | *** | 1.06 |
| single authoritarian figure | .46 | .04 | *** | 1.58 |
| discusses programs w/ guardians | -.43 | .05 | *** | .65 |
| family spoke to teachers | -.76 | .03 | *** | .47 |
| family has grades rule | .26 | .03 | *** | 1.29 |
| student/teacher ratio | -.01 | .00 | *** | .99 |
| discipline at school is fair | -.46 | .04 | *** | .63 |
| rules for behavior are strict | .10 | 0.3 | * | 1.10 |

¹Significance= *** p< 0.001, ** p<0.01, * p<0.05

²Exp (B) = Logged Odds

sports, in accordance with other social bond related variables, has a moderately inverse relationship with adolescent deviance for 8th grade students; that is, being an athlete has a fair inhibitory effect upon student deviance.

Discussion and Conclusion

Previous research examining the relationship of sport participation and deviance is a complex. A clear-cut conclusion cannot be drawn from this extensive literature as to whether or not participation in sports promotes or inhibits deviance within an educational institution. Most surveys or studies suffer from focusing on either males or females exclusively, or involve small sample sizes that do not contain highly generalizable results.

This study attempts to combat these two issues by using a large, nationally representative database (sample n= 21,414) that is composed of 50% females and 50% males. In addition, this study focused on sport participation and its relationship to deviance with mediating variables from individual, school, and family questions within the NELS: 88. Variables chosen for the mediating variables were informed by the previous literature, and Hirschi's social bond theory, which states adolescents more involved, attached, committed, and having a stronger belief in institutionalized arrangements will engage in less deviant behavior.

Consistent with some of the previous literature regarding sport participation, athletic participation, in this sample, is male dominated (Videon 2002). As Sage (1990) and Coakley (2006) note athletics tends to be racially homogeneous, which is evidenced by the fact less than one third of athletes (28%) self-reporting they were non-white minorities. Additionally, since more time spent on homework positively correlates with educational attainment; athletes spending more time doing homework (1.24 hours vs. 1.08 hours) could point to better educational outcomes (e.g. Fejgin 1994; Broh 2002), which contradicts some previously mentioned negative aspects of sport such as not having enough time for studies (Coleman 1961). Moreover, athletes had significantly higher mean percentages on social bond indicators such as having fewer attendance problems and deviant behavior (Synder and Spreitzer 1977; Melnick et al 1992); family involvement by mandating a grade point average, discussing programs with parents, and speaking with school teachers (Shoemaker 2000). All of these differences between athletes and non-athletes were

common to both the sport participation literature and social bond literature.

The multivariate results of deviance, sport participation, and other mediating variables was also consistent with much of the sport participation previous literature that had a positive view of sport programs (Snyder and Spreitzer 1977; Melnick et al. 1992; Marsh 1993; Fejgin 1994; Broh 2002; Mahoney et al., 2003). Initially, however, we see that 59% of the full sample is labeled as deviant with 45% of the sample as participating in sports. The figure of 59%, while seemingly high, is a reflection of how deviance is defined within an educational institution. The educational institution is a powerful agent of social control; students defined as deviant in school are done so by virtue of their acceptance of school expectations, such as class preparedness and compulsory attendance, tenants of Hirschi's social bond theory (Shoemaker 2000). After the multivariate analysis, however, we are better able to identify how sport participation relates to deviance.

Results indicate that several social bond indicators relate to a greater likelihood of being in the non-deviant category. Some of these indicators include: belief that discipline is fair (.63); family that spoke to teachers or counselors (.47); discussing programs with guardians (.65); coming to class prepared (.40); and spending more time on homework (.88). Participating in sport, while having a greater chance of being categorized in the non-deviant category, demonstrates only moderate strength (.90).

To better understand why sport participation could have a moderate effect upon deviance, Feldman and Matjasko (2005) note different sports may affect adolescent deviance in different ways. Highly popular sports, such as football or basketball, could have differential effects upon deviant behavior. Indeed, Coakley (2006) notes the increasing competitive nature of youth sports as an influential factor in the development of adolescents' perceptions toward sport and their identity.

To combat this phenomenon, Feldman and Matjasko (2005) call for more research to examine specific sports in relationship to deviant behavior. More research into separate sports can help to explicate the relationship between deviance and sport; that is, more

research should be done on specific sports such as power/performance vs. aesthetic (Coakley 2006) and certain violent sports (i.e. football) vs. non-violent sports (i.e. gymnastics). For example, Muir and Seitz (2004) used qualitative fieldwork to observe the types of deviant behavior within a U.S. university, all-male rugby subculture. Similarly, Young (1988) studied a Canadian university rugby team using qualitative methods and identified not only ritualistic deviance within the subculture, but also how the group informally policed certain behaviors. Examining specific sports and identifying the underlying dynamics unique to each sporting context could allow researchers to locate how specific sports promote or inhibit certain types of deviant behavior.

Next, sport participation's effect upon deviance could actually be slightly spurious, with other more salient variables having a greater impact upon adolescent deviance. For example, social bond theory states an individual's social bond is based upon attachment, involvement, belief, and commitment. All four facets of Hirschi's theory work together to positively impact adolescents and prevent them from engaging in deviant behavior (Shoemaker 2000). Sport participation, or involvement in conventional activities, is simply one aspect of developing a social bond. In fact, it would appear that family related variables, such as number of authority figures in a household, discussing school programs with guardians, and being from a family that spoke to teachers or counselors has a potentially greater impact on adolescent deviance. Since stepwise regression could not be used (because it is for exploratory research), the family unit's affect upon adolescent deviance is only inferred. Shoemaker (2000), however, has noted the importance of the family in relationship to adolescent deviance. Additionally, with the population being comprised of 8th graders, it can be surmised that family characteristics still have an important mediating impact upon the student's deviant behavior.

Finally, the dichotomy of sport positively or negatively affecting adolescent behavior may be overtly simplistic. While deviant behavior may not be greatly affected by sport participation, it would appear that sport participation does have some positive effects. Erkut and Tracy (2002) noted how sport participation related to

higher self-esteem in Latino subcultures. In addition, McHale, Vinden, Bush, Richer, Shaw, and Smith (2005) illustrate the complex link between sport involvement and well-being in their study of middle school students. They noted students involved in sports have higher self-esteem and were more sociable, while at the same time engaging in slightly more delinquent activities (but less likely to experiment with marijuana).

As a result, sport participation appears to be related to increased self-esteem and educationally related outcomes (such as educational attainment or performance on standardized tests), which positively affects student relationships with their family and school teachers, counselors, and administrators. Additionally, the “leading crowd” hypothesis states that being involved in sports also develops peer groups that are heavily involved with other conventional activities. According to Broh (2002: 72) this crowd is usually:

[c]omprised of the most popular high school students, the leading crowd disproportionately consists of college-oriented, high achievers (Renberg 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.

Sport participation could simply be one more mechanism by which students develop a stronger bond with current institutionalized arrangements. Participating in sport is one aspect of involvement in conventional activities, while believing in school and family rules; being attached to your family, school, and peers; and demonstrating high levels of commitment to societal, school, and family value systems also impacts adolescent deviance. While this research is useful for examining sport participation’s relationship with adolescent deviance, it is not free of limitations.

Limitations

The research does have some limitations. A major point of contention could be the limited definition of the dependent variable. Since the school defines deviance, it is a definition that is biased

towards institutionalized discipline procedures and does not completely address all forms of social deviant behavior often associated with adolescents. The limited definition greatly narrows the scope of this study's discussion. Another limitation involves use of the sport participation variable. More information is needed about what types of sports are offered, what sports are offered at what kinds of schools (public/private, high economic neighborhood/low economic neighborhood), how time and labor intensive each sport is, and whether the sport is a large funded team sport or an individual sport. Also, factors such as quality of facilities, location of the school (urban/rural), and adequate funding definitely affect the availability of and participation in sport programs. Overall, as with many quantitative research projects involving secondary data, the validity of the indicators can be debated (Babbie 1999). While every attempt was made to locate viable NELS: 88 variables that truly represented social bond indicators, these measures can always be improved upon.

Concluding Remarks

There are many strong proponents and detractors of sports programs. Popular images of athletes behaving inappropriately can socialize deviant behavior in easily influenced adolescents (Leonard 1998). Other theorists posit that sport programs provide a safe, fun-learning environment for teaching children how to cooperate and coexist in a formal structure (Spreitzer 1994; Chalip and Green 1998).

This analysis, however, has illustrated that sport participation, while having a statistically significant impact upon deviance, only moderately inhibits deviant behavior. In fact, this analysis has pointed to other developmental contexts as, potentially, having equal importance upon adolescent deviance, which reinforces Feldman and Matjasko's (2005) point: specific sports should be studied individually to truly understand their unique dynamics, structure, and affect upon adolescents. An example of the importance of developmental contexts includes family characteristics. It appears that family variables extracted from the database and informed by social bond

theory could have a great impact upon adolescent deviance. In addition, the use of Hirschi's social bond theory can help to understand how individual adolescent deviance is affected by larger institutional arrangements. Until this question of how deviance is related to sport participation is conclusively resolved, continued work should be done examining the relationship of participation in school sanctioned sports and various definitions of institutionally defined deviant behavior.

References

- Babbie, Earl. 2002. *The Basics of Social Research*. 2nd ed. Belmont, CA: Wadsworth Belmont Learning.
- Berry, Bonnie and Earl Smith. 2000. "Race, Sport, and Crime: The Misrepresentation of African Americans in Team Sports and Crime." *Sociology of Sport Journal*, 17: 171-197.
- Benedict, Jeffrey R. 1998. *Athletes and Acquaintance Rape*. Thousand Oaks, CA: Sage.
- Broh, Beckett A. 2002. "Linking Extracurricular Programming to Academic Achievement: Who Benefits and Why?" *Sociology of Education*, 75: 69-95.
- Chalip, Laurence and Christine Green. 1998. "Establishing and Maintaining a Modified Youth Sport Program: Lessons from Hotelling's Location Game" *Sociology of Sport Journal* 15, 326-342.
- Coakley, Jay. 2006. *Sports in Society: Issues and Controversies*. 8th ed. Boston, MA: McGraw-Hill Higher Education.
- Coleman, James. 1961. *Adolescent Society*. New York: Free Press.
- Cookston, Jeffrey. 1999. "Parental Supervision and Family Structure" *Journal of Divorce and Remarriage* 32, 107-122.
- Crosset, Todd W, Jeffrey R. Benedict, and Mark A. McDonald. 1995. "Male Student-Athletes Reported for Sexual Assault: A Survey of Campus Police Departments and Judicial Affairs Offices" *Journal of Sport and Social Issues*, 2: 126-140.
- Crosset, Todd W, James Ptack, Mark A. McDonald, and Jeffrey R. Benedict. 1996. "Male Student-Athletes and Violence against Women." *Violence Against Women* 2,2: 163-179.
- Csikszentmihaly, Mihaly. 1990. *Flow: The Psychology of Optimal Experience*. New York: HarperCollins.

- Darling-Hammond, Linda. 1998. "Unequal Opportunity: Race and Education" *Brookings Review* 16, 28-34.
- Dozier, Arthur and Michael Barnes. 1997. "Ethnicity, Drug User Status, and Academic Performance" *Adolescence* 32, 825-838.
- Donaldson, Sarah J. and Kevin R. Ronan. 2006. "The Effects of Sports Participation on Young Adolescents' Emotional Well-Being." *Adolescence* 41, 162: 369-389.
- Eccles, Jacquelynne and Bonnie Barber. 1999. "Student Council, Volunteering, Basketball, or Marching Band: What Kind of Extracurricular Involvement Matters?" *Journal of Adolescent Research* 14, 10-43.
- Empey, Lamar and Steven Lubeck. 1982. *Explaining Delinquency* revised edition. Homewood, IL: Dorsey.
- Erkut, Sumru and Allison J. Tracy. 2002. "Predicting Adolescent Self-Esteem From Participation in School Sports Among Latino Subgroups." *Hispanic Journal of Behavioral Sciences* 24,4: 409-429.
- Fejgin, Naomi. 1994. "Participation in High School Competitive Sports: A Subversion of School Mission or Contribution to Academic Goals?" *Sociology of Sport Journal* 11, 211-230.
- Feldman, Amy and Jennifer Matjasko. 2005. "The Role of School-Based Extracurricular Activities in Adolescent Development: A Comprehensive Review and Future Directions" *Review of Educational Research*, 75,2: 159-210.
- Frey, James and Stanley Eitzen. 1990. "Sport and Society." *Annual Review of Sociology*, 17: 503-522.
- Hanks, Michael P. and Bruce K. Eckland. 1976. "Athletics and Social Participation in the Educational Attainment Process." *Sociology of Education*, 49: 271-294.
- Hirschi, Travis. 1969. *Causes of Delinquency*. Berkley: University of California Press.
- Huebner, Angela J and Sherry C. Betts. 2002. "Exploring the Utility of Social Control Theory for Youth Development: Issues of Attachment, Involvement, and Gender" *Youth & Society*, 34, 2: 123-145.
- Hughes, Robert., and Jay Coakley. 1991. "Positive Deviance among Athletes: The Implications of Overconformity to the Sport Ethic. *Sociology of Sport Journal*, 8: 307-325.
- Jessor, Richard, Mark S. Turbin, and Frances M. Costa. 1998. "Risk and Protection in Successful Outcomes among Disadvantaged Adolescents" *Applied Developmental Sciences*, 2,4: 194-208.

- Landers, Daniel M. and Donna M. Landers. 1978. "Socialization Via Inter-scholastic Athletics: Its Effects on Delinquency." *Sociology of Education* 51: 299-303.
- Langbein, Laura and Roseana Bess. 2002. "Sports in School: Source of Amity or Antipathy?" *Social Science Quarterly* 83, 2: 436-454.
- Lapchick, Richard. 2000. "Crime and Athletes: New Racial Stereotypes" *Society* 37, 14-21.
- Leonard, Wilbert M. II. 1998. *A Sociological Perspective of Sport* 5th ed. Boston, MA: Allyn and Bacon.
- Mahoney, Joseph L, Beverly D Cairns, and Thomas W. Farmer. 2003. "Promoting Interpersonal Competence and Educational Success Through Extracurricular Activity Participation." *Journal of Educational Psychology*, 95: 409-418.
- Marsh, Herbert. 1993. "The Effects of Participation in Sport during the Last Two Years of High School." *Sociology of Sport Journal* 10: 18-43.
- Marsh, Herbert. and Sabrina Kleitman. 2003. "The Effects of Participation in Sport During the Last 2 Years of High School" *The Sociology of Sport Journal*, 10: 18-43.
- McHale, James P, Penelope G. Vinden, Loren Bush, Derek Richer, David Shaw, and Brien Smith. 2005. "Patterns of Personal and Social Adjustment among Sport-Involved and Noninvolved Urban Middle-School Children." *Sociology of Sport Journal* 22, 2: 119-136.
- Melnick, Merrill, Donald Sabo, and Beth. Vanfossen. 1992. "Education Effects of Inter-Scholastic Athletic Participation on African-American and Hispanic Youth." *Adolescence* 27: 295-308.
- Menard, Scott. 1995. *Applied Logistic Regression Analysis*. Sage Publications. Series: Quantitative Applications in the Social Sciences, No. 106.
- Miller, Kathleen, Don Sabo, Michael Farrell, Grace Barnes, Merrill Melnick. 1999. "Sports, Sexual Behavior, Contraceptive Use, and Pregnancy among Female and Male High School Students: Testing Cultural Resource Theory" *Sociology of Sport Journal* 16, 366-87.
- Muir, Kenneth B. and Trina Seitz. 2004. "Machismo, Misogyny, and Homophobia in a Male Athletic Subculture: A Participant Observation Study of Deviant Rituals in Collegiate Rugby." *Deviant Behavior* 25, 4: 303-327.
- Peretti-Watel, Patrick, Valerie Guarliardo, Pierre Verger, Jacques Pruvost, Patrick Mignon, and Yolande Obadia. 2004. "Risky Behaviors Among Young Elite-Student-Athletes: Results from a Pilot Survey in South-Eastern France." *International Review for the Sociology of Sport* 39, 2: 233-244.

- Sabo, Don, Kathleen E. Miller, Merrill J. Melnick, Michael P. Farrell, and Grace M. Barnes. 1999. "High School Athletic Participation, Sexual Behavior and Adolescent Pregnancy: A Regional Study." *Journal of Adolescent Health* 25: 207-216.
- Sack, Allen L. Parbudyal Singh, and Robert Thiel. 2005. "Occupational Segregation on the Playing Field: The Case of Major League Baseball." *Journal of Sport Management* 19: 300-318.
- Sage, George H. *Power and Ideology in American Sport: A Critical Perspective*. Champaign, Ill: Human Kinetics Books.
- Seagrave, Jeffrey O., Claude Moreau, and Douglas N. Hasted. 1985. "An Investigation into the Relationship between Ice Hockey Participation and Delinquency." *Sociology of Sport Journal* 2: 281-298.
- Schafer, Walter E. 1969. "Some Social Sources and Consequences on Inter-Scholastic Athletics: The Case of Participation and Delinquency." *International Review of Sport Sociology*, 4: 63-81.
- Schiffman, S. 1994. "Biological and Psychological Benefits of Exercise in Obesity. Pp. In *Exercise and Obesity* edited by A. P. Hills and M. L. Wahlqvist. London: Smith-Gordon and Company Limited.
- Shoemaker, Donald J. 2000. *Theories of Delinquency: An Examination of Explanations of Delinquent Behavior* 4th ed. Oxford University Press New York.
- Snyder, Eldon. and Elmer Spreitzer. 1977. "Participation in Sports as Related to Education Expectations Among High School Girls." *Sociology of Education* 50: 313-325.
- Spreitzer, Elmer. 1994. "Does Participation in Interscholastic Athletics affect Adult Development?" *Youth & Society* 25: 368-387.
- Thom, Moore. 2002. "Girls in Science and Technology: What's New, What's Next?" *Education Digest* 67, 17-25.
- Videon, Tami M. 2002. "Who Plays and Who Benefits: Gender, Interscholastic Athletics, and Academic Outcomes." *Sociological Perspectives* 45, 4: 415-444.
- Washington, Robert and David Karen. 2001. "Sport and Society" *Annual Review of Sociology* 27, 187-212.
- Weber, Linda R, Andrew Miracle, John Rosicky, and Tom Crow. 2001. "Bonding to Youth Clubs and Delinquency." *Sociological Practice: A Journal of Clinical and Applied Sociology*, 3,4: 319-339.
- Williams, Susan. 2001. *City Kids and Country Cousins: Rural and Urban Youths, Deviance, and Labor Market Ties; Chapter 12 in Social Awakening*, pgs 379-410, Robert T. Michael ed. Russell Sage Foundations: NY.

- Wright, David. 2001. "Application of Advanced Statistical Techniques." Wichita State University, Wichita, KS. Unpublished.
- Wright, Kevin and Karen Wright. 1994. *Family Life, Delinquency, and Crime: A Policymaker's Guide*. Washington, D.C.: Office of Juvenile Justice and Delinquency Prevention.
- Young, Kevin. 1988. "Performance, Control, and Public Image of Behavior in a Deviant Subculture: The Case of Rugby." *Deviant Behavior* 9,3: 275-293.