

Economic Strain and Adolescent Violence.

Are extracurricular activities a conditioning effect?

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Abstract

This article examines the extent to which participation in sports acts as a conditioning effect to the relationship between economic disadvantage and adolescent violent delinquency. Deriving hypotheses from general strain and social control theories, we use data from the National Longitudinal Study of Adolescent Health to test if type of extracurricular activity participation diminishes the risk of economic disadvantage on violent delinquency. In support of social control theory, the direct effect of academic clubs and performing arts is negatively associated with adolescent violence. Additionally, analyses indicate that participation in contact sports decreases the relationship economic disadvantage and violent delinquency when other strain controls are added including race/ethnicity, family structure, lack of parental supervision, etc. Overall findings are expected of the social control conditioning effect of general strain theory.

Keywords: participation in sports; economic disadvantage; adolescent delinquency; social control theory.

Introduction

To what extent does participation in extracurricular activities act as a buffer for poor youth and violence, rather than perpetuating it? Prior research suggests that both financial strain (Allison et al. 1999; Anderson 1999; Baron 2007; Bearman and Moody 2004; Elliot et al. 1996; Kasarda and Janowitz 1974; Kingston, Huizing and Elliott, 2009; Messner and South 1986; Sampson, Morenoff, and Earls, 1999; Shaw and McKay 1942; Webber 2008) involvement in contact sports may lead to violence (Fields, Collins, and Comstock 2010; Kreager 2007; Steinfeldt et al. 2012; Theokas 2009; Young 2013), while participation in performing arts and academic clubs is associated with less violence (CITE). Much of the current research suggests that involvement in extracurricular activities has positive outcomes for adolescents such as academic achievement, fosters closeness to school peers, teachers, and coaches (Coakley 2011; Farb and Matjasko 2012; Fraser-Thomas 2007; Fox et al. 2009; Hughes and Coakley 1991). What has not been addressed is whether or not extracurricular activities may provide a buffering effect for economic strain on violence.

Based on Agnew's (1992) hypothesis that conditioning effects such as social control, social support, and social capital serve to inhibit strain related juvenile violent behavior, it can be argued that the effects of sports participation compared to other extracurricular activities may also serve as a form of social control with respect to delinquent violent behavior. Prior research has indicated that involvement in sports can reduce the likelihood of engaging in delinquency primarily because sports participation involves elements of social control i.e., attachment, involvement, commitment, and belief (Cernkovich and Giordano 1992; Steward and Simons 2006). Participation in sports may moderate the economic disadvantage-delinquency relationship in a fashion similar to religiosity (Pitt and DeMaris 2019).

As there has been no empirical examination to date of the moderation effects of adolescent extracurricular participation upon the relationship between economic disadvantage and violence, the main purpose of this study will be to expand our knowledge of the manner in which these factors might condition the effect of economic disadvantage strain on violence. Further, as there are discrepancies in the literature on type of activity, especially sports, this study will provide a more nuanced understanding of those differences as they pertain to economic disadvantage. To this end, because some involvement in extracurricular activities along with other activities has a similar crime inhibiting effect another purpose of this study is to untangle the possible conditioning effect of participation in extracurricular activities on the relationship between economic disadvantage and teen violence.

This study utilizes an integrated theoretical approach whereas social control theory may be a conditioning effect to general strain theory (GST). As such, the current study allows for the expansion of the theoretical and empirical literatures to include participation in extracurricular activities as a potential conditioning factor in the economic disadvantage-violence relationship. This study utilizes the National Longitudinal Study of Adolescent Health (Add Health), which is a nationally representative sample of adolescent 7th to 12th graders (Chantala and Tabor 1999) and uses waves I and II.

Theoretical background

Strain Theory

Strain theory in its original form suggests that there is a mismatch in what one desires to obtain and what is attainable, an idea that is predicated in part on the Durkheimian concept of anomie. Agnew's General Strain Theory (GST) elaborates on traditional macro-structural strain models proposed by Durkheim ([1897] 2006), Merton (1938) and Cloward and Ohlin (1960) via the use of a micro-level social psychology perspective (Agnew 1985, 1992, 1999, 2001). Agnew (1985) introduced a different type of strain, which is the failure to escape certain situations. Agnew found that individuals who could not escape from these bad environments would be more likely to be involved in violence,

aggression, and other forms of negative behavior directly and indirectly through the expression of anger. Agnew concluded that there are three central components to GST: strain, negative emotion, and coping strategies.

According to Agnew's GST (Agnew 1992), crime is committed through the effects of strain caused by negative life events prompt negative emotional states and that the stress experienced in that state must be eliminated or removed in some manner (Agnew, 1992, 1997, 2001). Agnew posited three types of strain contributing to the likelihood of violent delinquency and offending behavior; failure to achieve positively-valued goals, removal of positive stimuli, and the introduction of negative stimuli.

Additionally, these three types of strain increase an individual's feeling of anger, an emotion that not only increases the desire for revenge, but also helps to both justify aggressive behavior and violence. In looking specifically at strain and its relationship to violent delinquency, Agnew (1992, 2001) found that economic disadvantage strain is accumulative; that is to say, economic disadvantage leads to additional stressors such as those within the family context (e.g., domestic violence between parents and child maltreatment), the formation of criminogenic relationships (e.g., delinquent peers), lack of resources within the community, and racial discrimination.

Accumulative strain thus can lead to violent delinquency because it further depletes an individual's resources that would allow him or her to cope with strain effectively (Agnew 2001; Slocum, Simpson, and Smith 2005). For example, it is not only the lack of family income that creates strain, but also the family processes related to not having enough money. Poorer families often lack the resources to adequately supervise their children, less availability to good schools, and a lack of supervision has been associated with higher rates of violent delinquency (Anderson 1999; Heimer and Matsuada 1994). Families who experience economic disadvantage are also significantly more likely to be susceptible to dealing with stress through violence (Barth, Wildfire and Green, 2006; Lansford et al., 2007); indeed, violence within the home has been found to be highly correlated with future violent delinquency. For instance, children exposed to domestic violence between their parents or other adults within the home are more likely to suffer from a variety of emotional and social problems, as well as to engage in violence against their peers, attempt suicide, abuse drugs and alcohol, run away from home, engage in teenage prostitution, and commit sexual assault (Strauss, Gelles and Smith, 1990).

Adolescents may cope with the stresses and strains of economic disadvantage when there are strains in their household by forming negative relationships with other delinquent and violent friends. This is most common among adolescents who reside in communities that are stricken with economic disadvantage. This often has more to do with friendships networks. In Anderson's (1999) ethnographic study of inner-city black youths in Philadelphia, in areas plagued by economic disadvantage, adolescent

boys adhere to a “code of the streets” that involves the perception of being tough and the use of violence as necessary to achieve desired goals. This code is often taught to younger children by older adolescent peers as a way to navigate the streets (Haynie, Silver, and Teasdale 2006; Stewart and Simons 2006). This same type of behavior has been reported with involvement in certain types of team sports (CITE).

Economic Disadvantage and Violent Delinquency

Economic disadvantage is one of the four main correlates of juvenile violent delinquency (Rekker et al., 2015). However, much of the literature examining the relationship between economic disadvantage the violent delinquency shows merely an association between the two but does not consider how disadvantage is operationalized (Office of the Surgeon General 2001). Empirical research indicating that economic disadvantage is related to violent delinquency tends to be measured by relative economic deprivation (Baron 2007; Messner and South 1986; Webber 2008), as a socioeconomic (SES) measure which includes parental educational level, parental income, and/or parental occupational status, or as concentrated disadvantage, such as living in poor neighborhoods (Allison et al. 1999; Anderson 1999; Bearman and Moody 2004; Elliot et al. 1996; Kasarda and Janowitz 1974; Kingston, Huizing and Elliott, 2009; Sampson, Morenoff, and Earls, 1999; Shaw and McKay 1942).

Studies examining the relationship between economic deprivation and violence indicate that there is a strong relationship with violence (Baron 2006; Messer and South 1986; Webber 2008). Baron (2006) examined the following factors to analyze the relationship between economic deprivation and juvenile violence: income dissatisfaction, unable to meet monetary goals, and objective structural factors that led to crime. Barron (2006) utilized a sample of youth that were homeless, to examine the relationship between relative deprivation and crime. Street homeless youth were categorized as lacking employment, money, food, and shelter and were more likely to engage in higher levels of violent juvenile offending when compared to school populations (Baron 2006). In addition, Baron (2006) found that youth who are homeless and spend a considerable amount of time socializing on the streets, are more prone to participate in violent delinquency. Similarly, Messer and South (1986) found that despite race, those who experienced economic deprivation were more likely to engage in violent delinquency. Both studies indicate that there is a relationship between economic deprivation and violent delinquency.

Empirical studies that utilized the economic disadvantage measure as socioeconomic status (SES) on violent delinquency are mixed (Braithwaite 1981; Johnstone 1978; Tittle and Meier 1990, 1991; Wright et al. 1999). For example, Rekker et al. (2005) found that youth from low socioeconomic families are more likely to engage in delinquent behavior. That is to say, parents may struggle with finding and maintaining steady employment, food insecurity, lack of community resources, or lack of support, guidance, and structure

needed to deter youth from engaging in delinquent activity. Moreover, youth who live in families with low socioeconomic statuses, may experience strain more frequently and severely as compared to juveniles from families with higher socioeconomic statuses. Anderson (1999) argues that time spent in economically disadvantage setting, and lack of role models can lead juveniles to engage in violent delinquency (Parker, Reckdenwald, 2008; Brookman, Bennett, Hochstelter, Copes, 2011). When applying Robert Agnew's general strain theory, failure to escape certain situations would coincide with economically disadvantaged youth having limited opportunities to live, play, and work outside of their economically disadvantaged communities. The removal of positive stimuli can be associated with the lack of male role models present within economically disadvantaged communities. A theoretical study by Gale (2007) found that the integration of African American male role models into black communities could help break the cycle of criminal involvement that young males engage in. Gale (2007) also proposed that having male role models can have a positive effect on helping young males reach their life goals.

A study conducted by Rekker et al., (2015) examined the relationship between socioeconomic status and juvenile delinquency. One of the primary research questions of the study was to determine if socioeconomic status was related to juvenile delinquency. Data from the youngest cohort of the Pittsburgh Youth Study was utilized, where 503 boys participated in 10 annual waves (Rekker et al., 2015). The data revealed that many of the participants were from low socioeconomic families (Rekker et al., 2015). The study assessed delinquency by asking juveniles to report on their delinquent behaviors by completing the Self- Reported Antisocial Behavioral Scale, the Self-Reported Delinquency scale, and the Youth Self-Report. The three surveys were used to measure minor delinquency (e.g., non-violent offenses), moderate delinquency (e.g., gang fighting or simple assault), and severe delinquency (e.g., burglary, automobile theft, forcible robbery, aggravated assault, rape or homicide) (Rekker et al., 2015). If a juvenile committed an offense within one year that could be categorized as minor, moderate, or severe delinquency, that would represent a positive construct (Rekker et al., 2015). The results indicate that 49.9% of the participants committed minor delinquency, 34.0% committed moderate delinquency, and 31.6% committed severe delinquency (Rekker et al., 2015). Socioeconomic status was operationalized as a combination of educational level, household income, occupation, and being on welfare (Rekker et al., 2015). The results of the study indicate juveniles are more likely to engage in violent behavior if they have a lower socioeconomic status. Youth are also more likely to engage in moderate to severe delinquency during the years when their parent's socioeconomic status is lower, as compared to the years when their parent's socioeconomic status is higher (Rekker et al., 2015). Wright et al. (1999) examined whether the relationship between economic disadvantage and delinquency was correlational or causal. The study identified delinquency as juveniles who committed alcohol and drug

use, violent acts, and non-violent acts that were committed before the participants reached the age of 21. Socioeconomic status was determined by Elley and Irving (1976) scale of parental occupational status; in addition, their model accounted for parental education achievement and joint income. Wright et al. (1999) found that the link between socioeconomic status and delinquency was related to a person alienation, financial strain, aggression, and a decrease in educational and career goals. Wright et al., (1999) concluded that there is a causal relationship between socioeconomic status and delinquency, as both can have an indirect negative and positive effect on delinquency. But research shows that there is little causal relationship between socioeconomic status and delinquency (Wright et al.,1999).

There is a significant amount of literature pertaining to the relationship between concentrated disadvantage and violent delinquency (Allison et al. 1999; Anderson 1999; Elliot et al 1996; Kasarda and Janowitz 1974; Kingston et al 2009; Sampson et al. 1999; Shaw and McKay 1942). Shaw and McKay's classic study in 1942 on the geographic distribution of delinquent boys and the way rates of delinquency varied from area to area in Chicago has often been used to understand the relationship between concentrated economic disadvantage and juvenile delinquency. Their main findings, which are still referenced today, are that socially disorganized areas contribute to the occurrence of juvenile violent delinquency when these areas experience low residential stability, high rates of economic disadvantage, and are racially heterogeneous. That is, much of the research shows that living in a neighborhood that is predominately poor increases an adolescent's likelihood of engaging in delinquency and especially in violence.

It is clear that the literature on the relationship between economic disadvantage and delinquency does rest upon the operationalization of economic disadvantage. With that said, the fact that the economic disadvantage-delinquency relationship seems to vary depending on how economic disadvantage is measured is suggestive that economic disadvantage is multidimensional in nature. In other words, it may be the case that economic disadvantage should be operationalized in a way such that all possible aspects of economic disadvantage (i.e., SES elements, relative deprivation elements, and concentrated disadvantage elements) are captured.

Extracurricular Activities and Violence: Social Control Theory

Social control theory, as outlined by Hirschi (1969), posits that institutional forces prevent violent delinquency through attachment, commitment, involvement, and belief. First, attachment refers to an adolescent's relationships with significant people, predominately in this case, coaches, and peers/teammates. Adolescents who do not care what their parents, peers, or teachers think about them are more likely to engage in delinquency. Second, commitment refers to investment in conventional lines of action, such as getting an education or pursuing a career. Adolescents who

lack investments tend to engage in more delinquency because they have nothing to lose. Third, involvement is the amount of time spent in conventional activities. Being highly involved in sports does not leave much time to commit delinquent acts. Finally, the last element is the belief that the rules of society should be followed. Adolescents who believe that engaging in certain behaviors is wrong will not do so.

Involvement in extracurricular activities encourages the formation of positive relationships (i.e., attachment) with teachers, coaches, and peers (Darling, Cadwell and Smith, 2005; Mahoney and Strattin 2000). Specifically, Mahoney and Strattin (2000) found that these relationships were associated with a more positive orientation toward school and less involvement in negative outcomes. For instance, Shields (2001) found that music education is an effective intervention for at-risk urban youth because it provides mentoring from teachers and supportive friendships with other peers in the program. In addition, much of the literature has pointed to the positive aspects of participation in extracurricular activities (Coakley 2011), such as higher GPA/grades (Eccles and Barber 1999; Fox et al. 2010; Mahoney et al 2003; Marsh 1992; Zaff et al 2003), higher standardized test scores (Eccles et al 2003), peer friendships through teammates (Denault and Poulin 2009), closeness to peers (Thomas and Cote 2009), coach/adult positive relationships (Thomas and Cote 2009), school/community attachment (Eccles and Barber 1999; Fredricks and Eccles 2005; and Thomas and Cote 2009—community belonging) liking of school, more educational support, and higher academic performance (Barber et al 2001).

Another set of literature has suggested that type of activity matters (Alder and Alder 1998; Crissey and Honea 2006; Kreager 2007; Pappas, McKenry, & Catlett 2004). For instance, Kreager (2007) examined the relationship between school sports and male violence. He found that males involved in contact sports, such as football and wrestling, were more likely to be violent than males who participated in other types of sports. Similarly, Steinfeldt et al (2012) found that male football players are more likely to engage in physical bullying behavior if they had role models who promoted the behavior. Performing arts participation has been shown to increase self-esteem, improve grades, decrease school dropout, and form attachment to one's educational goals, academic peers, and teachers (Barber, Eccles, and Stone 2001; McNeal 1995; Office of Juvenile Justice and Prevention Programs 2001).

Despite the differences in type of activity, the attachment to significant others (e.g., peers, teachers/coaches, parents) is important for teens who participate in extracurricular activities. These positive relationships generally keep teens from engaging in delinquency and other negative outcomes. Attachment to peers and friends or other positive relationships can be a significant way for coping with the strains of economic disadvantage or other negative stimuli. It is therefore expected that involvement in extracurricular activities will act as a means of coping among poor adolescents.

Current Study

Clearly based on the previous research, there are gaps in our understanding of the relationship between economic disadvantage, violence, and extracurricular participation. Much of the research on economic disadvantage and violence focuses on why violence occurs rather than why it does not occur. The strains associated with economic disadvantage may be related to engaging in violent delinquency. But it has been suggested (Agnew 2001), that certain factors may reduce the strain-violence relationship. The current investigation hopes to identify the possible conditioning association of extracurricular participation.

This study seeks to make two contributions to the field of sociology/criminology. First the findings on direct relationship between extracurricular activities and violent delinquency are inconsistent, which may be problematic on how it may be a measure of social control (Froggio 2007). Second, this study builds on Agnew's suggestion about the possibility of certain factors as conditioning effects on strain.

Hypothesis:

H1: Involvement in any type of extracurricular activities will decrease the relationship between economic disadvantage and violence.

Data and Methods

Data

This study uses The National Longitudinal Study of Adolescent to Adult Health (Add Health), which is a nationally representative sample of U.S. adolescents in grades 7 through 12 that was first conducted during the 1994-1995 school year (Bearman, Jones, and Udry 1997). Add Health initially surveyed over 90,000 students from 132 schools in 80 different communities using a school based clustered sample design. A subset of 20,745 adolescents completed in-home interviews during the Wave I phase that was conducted in 1994 and 1995. A total of 14,396 adolescents completed both an in-home and an in-school survey during Wave I. Wave II data were collected in 1996, in which approximately 71% (n=14,738) of the Wave I sample participated. It should be noted that Wave I 12th graders who graduated between waves were not included in Wave II. Also, those students with physical disabilities were excluded from Wave II.

The Add Health dataset is appropriate for use in this study for the following reasons. First, the Add Health data contain rich measures of economic disadvantage, delinquency, religiosity, extracurricular activities, family supports, and sociodemographic controls. Second, Add Health is a nationally representative sample of adolescents. Despite its advantages, there are two main limitations associated with the Add Health dataset. First, since the dataset uses a school-based sampling technique, it excludes those

teens who have dropped out of school. Teens who drop out of school tend to engage in more violent and serious acts of delinquency, acts which either caused them to either be expelled from school or sent to a juvenile facility (Staff and Kreager 2008). Second, since there is only one year between each wave, the possibility of behavioral change is compressed.

Sample

As stated previously, there were 20,745 respondents who were interviewed during Wave I, yet the response rate in Wave II dropped the sample size to 14,738. The cases that had valid data on all variables brought the base sample for this investigation to 10,798. The use of mean substitution for missing data on all independent variables allowed for an increase of the base sample to 14,091 (Chantala and Tabor 1999).

Measures

Dependent variable

Violent delinquency was created from eight measures that asked respondents two different sets of questions. The first four measures asked the respondent, "How often did you (a) engage in a serious physical fight; (b) hurt someone badly enough to need bandages or medical care; (c) use or threaten to use a weapon to get something from someone and; (d) take part in a fight where a group of your friends was against another group?" These four measures were coded on a scale of 0 (for never) to 3 (for 5 or more times). The second set of questions asked the respondent, "In the past 12 months did you (a) pulled a knife or gun on someone; (b) shoot or stab someone; (c) carry a weapon to school, and (d) use a weapon in a fight?" These four measures were coded 0 (for no) and 1 (for yes). The violent delinquency items were standardized because they had different measurement metrics. The eight items were then scaled to create the violent delinquency measure by taking the mean of these and multiplying by the number of items present. The scale created from all eight measures had a Cronbach's alpha reliability of .75.

Key Independent Variables

Extracurricular participation was created from an aggregation of twenty-eight separate extracurricular activities measured at Wave I. At the beginning of the school year each respondent was asked, "Are you involved or plan on participating later in the year in...?". A list of twenty-eight different extracurricular activities was then presented to the respondent. The Add Health codebook notes that because the interview was conducted at the beginning of the school year (September), some of the activities would not be taking place until later in the year. From the twenty-eight activities, four binary measures were created: performing arts, contact

sports, noncontact sports, and academic clubs. These were each coded 0 (for no participation/no plan to participate) or 1 (for participation/plan to participate). Participation in performing arts consists of five activities: drama club, band, choir, orchestra, and cheerleading/dance team. Contact sports included the following: basketball, football, ice hockey, field hockey, soccer, or wrestling. Noncontact sports consist of the following sports: baseball/softball, swimming, track, tennis, or volleyball. Participation in academic clubs included the following: French club, Spanish club, Sports participation was created from an aggregation of sports activities measured at Wave I. At the beginning of the school year each respondent was asked, "Are you involved or plan on participating later in the year in...?". A list of twenty-eight different extracurricular activities was then presented to the respondent. The Add Health codebook notes that because the interview was conducted at the beginning of the school year (September), some of the activities would not be taking place until later in the year. These were each coded 0 (for no participation/no plan to participate) or 1 (for participation/plan to participate). Contact sports included the following: basketball, football, ice hockey, field hockey, soccer, or wrestling. Noncontact sports consisted of the following sports: baseball/softball, swimming, track, tennis, or volleyball.

Economic disadvantage strain measure

The literature in criminology measures economic disadvantage based on a combination of income, educational level, occupation, welfare/government assistance, and concentrated disadvantage (Allison et al. 1999; Anderson 1999; Bearman and Moody, 2004; Elliot et al. 1996; Kasarda and Janowitz 1974; Kingston et al. 2009; Sampson et al., 1999; Shaw and McKay 1942). However, it has been argued in family research that economic disadvantage is subjective depending on those contributing to the household income, the household size, and the number of children in the household (Edin and Kissane 2010; Roosa et al. 2005). Therefore, to incorporate the multidimensional aspects of economic disadvantage noted throughout both bodies of literature, the measure that operationalized economic disadvantage was created from many indicators. Each indicator was measured at Wave I and was self-reported by the parents of the adolescent.

To obtain an accurate depiction of actual economic disadvantage for each household, an economic disadvantage threshold measure was created. The economic disadvantage threshold measure includes the size of each household (number of adults and children) and the minimum income that the household would need to be considered above the economic disadvantage line (U.S. Census Bureau 1994). The household size was taken from twenty different questions that asked respondents to indicate the ages of persons in their household. Responses for household size ranged from 0 to 90. Persons who were 18 or older were counted as adults, and those 17 and younger were counted as children. Two separate variables were created from this information so that one variable would measure the total number of adults per household, and the other

variable would measure the total number of children per household. Because the data did not ask the respondent to include himself or herself, 1 was added to the summed number of children.

Household income was derived from a single measure that asked the respondents' parents, "About how much total income, before taxes, did your family receive in 1994? Include your own income, the income of everyone else in your household, and income from welfare benefits, dividends, and all other sources". Responses ranged from \$0 to \$999,000. The U.S. Census Bureau's 1994 income threshold chart was used to determine the economic disadvantage level threshold for each household by taking the number of adults, the number of children, and the minimum income that household would need to stay above economic disadvantage. These data were used to create a binary economic disadvantage threshold indicator. Households with income at or below the threshold were coded 1 to indicate economic disadvantage, while those with incomes above the threshold were coded 0 to indicate that they were not in economic disadvantage.

To account for more extreme measures of economic disadvantage, a series of questions asking the respondents' parents, "Did you or any member of your household receive...?" were also included in the analyses. These items included some form of state government assistance, such as supplemental security income (SSI), aid to families with dependent children, food stamps, unemployment, welfare, or housing subsidy/public housing. A binary variable was created to indicate if a respondent's household received one or more forms of assistance, with 1 coded as yes and 0 coded as no. An additional economic stress measure was included using a single question that asked the respondents' parents, "Did you ever feel you didn't have the money to pay your bills?" This question was also coded as a binary measure (0=no, 1=yes).

In alignment with prior research (Bearman and Moody 2004), parents' education and employment status were combined into a scale of family socioeconomic status (fSES). The fSES variable utilizes separate measures of mother's education, father's education, mother's occupation, and father's occupation (each coded as a 5-point scale, from low to high). These four summed scores then range from 1=low SES to 10=high SES. This was then reverse coded to 1=high SES to 10=low SES so that it would be in the same direction as the other economic disadvantage indicators.

A neighborhood economic disadvantage measure was created using the U.S. Census track data that examined the percentage of families below economic disadvantage residing in a given neighborhood. This measure is coded based on the proportions of persons with income in 1989 below the economic disadvantage level in each respondent's neighborhood. Neighborhood economic disadvantage was coded 1 (for 30% or more of families living at or below economic disadvantage level in the

respondent's neighborhood) and 0 (for 29% or fewer of families living at or below economic disadvantage level in the respondent's neighborhood).

All the aforementioned measures (economic disadvantage threshold; extreme measures of economic disadvantage; fSES; neighborhood economic disadvantage) were then standardized since they had different measurement metrics. Once standardized, these items were then scaled by taking the mean of the items and then multiplying by the number of items. This created one measure of economic disadvantage, a measure which includes all of the aforementioned dimensions of economic disadvantage.

Controls

Control variables were measured at Wave I and were self-reported. *Prior violent delinquency* was operationalized via the presence prior violent behavior. These were measured the same way as the outcomes mentioned earlier. The socio-demographic variables include race/ethnicity, gender, family structure, and age. Race and ethnicity were operationalized by four mutually-exclusive racial categories: White, Black, Hispanic/Latino origin, and Other. Three dummy variables (e.g. Black, Hispanic, and White) were created to model these categories, with White serving as the reference category. *Gender* was coded 1 for females and 0 for males with male as the reference group. *Family structure* variables were used to account for findings in previous literature that single parents are most likely to live in economic disadvantage (Petts 2009). A series of binary measures were created to operationalize family structure, and measured whether adolescents live with two biological parents, a stepfamily, a single mother, or a single father. Two-parent biological families served as the reference category. *Age* was calculated as the number of years between birth and the Wave I interview.

Other potentially important controls as outlined by previous literature are family support/coping, parental supervision, and parents' social capital. Family support is a key aspect of adolescent delinquency, as family support provides coping strategies for adolescents when they are dealing with difficulties (Anderson 1999). A five-item index for family social support was created from the following questions: (a) how much do you feel your parent cares about you; (b) your family understands you; (c) your family gives you attention; (d) your family has fun together, and; (e) you desire to leave home. Each of these items was coded 1 (for not at all) to 5 (for very much), with the exception that desire to leave home was reverse coded to that higher numbers indicate less desire to leave home. These five items were then summed, and the scale has a Cronbach's alpha of .76.

Parental supervision is important for keeping adolescents' behavior on task and ensuring they are completing their responsibilities (Anderson 1999). Following Demuth and Brown (2004), a parental supervision index was created for use in the current study. The parental supervision index includes seven items concerning family processes. Six

of the items were derived from the following questions: (a) how often is your mother home when you leave for school; (b) how often is your mother home when you return from school; (c) how often is your mother home when you go to bed; (d) how often is your father home when you leave for school; (e) how often is your father home when you return from school, and; (f) how often is your father home when you go to bed? These variables ranged from 0 (for never) to 4 (for always). The last item included in the index was taken from the question, "How often each week does at least one of your parents eat with you?" This was also measured on a metric ranging from 0 (for never) to 4 (for always). These seven items were summed, and the scale has a Cronbach's alpha of .79

In line with Coleman's (1988) social capital description, intergenerational closure was measured with a single item that asked parents the number of their child's friends' parents they had talked to in the previous four weeks. Possible responses ranged from 0=none to 6=six or more.

Analytical Methods

The analytical sample for this study includes respondents who have valid data for the key independent variables and for the dependent variable. For those who are missing on data that comprise the independent variables, the mean was imputed and this was backed up with the use of multiple imputation.

Tobit is intended for continuous data that are censored or bounded at a limiting value (DeMaris 2004), as is the case in this study. For measures of self-reported violent offending in Add Health data, there may be some response measures (e.g., measures of violent delinquency) that are not sensitive enough to pick up lower levels of the construct measuring delinquency. For example, if the respondent has shoved or pushed someone, this aggression could be classified as gateway violence, but would not be detected by the violence measures available in the Add Health data. Since the goal of the current study is to examine the full construct of those who are committing acts of delinquency, it would not be appropriate to apply OLS as coefficients from OLS will tend to be downwardly biased for the true effects of the regressors on the response. Tobit regression accounts for this as it provides unbiased estimates of regressor effects on the true underlying construct of interest (Breen 1996; DeMaris 2004).

Results:

Descriptive Statistics

Table 1 presents the descriptive statistics for all the variables used in the analysis. This table includes respondents from Waves I and II. The first variables of interest are those that comprise the dependent variable. As can be seen in Table 4.1, involvement

in delinquency for the full sample at Wave II varied depending on the type of crime. Adolescent violence was standardized.

Violence at Wave II has a standard deviation of 5.231. Additionally, 27 percent were involved in contact sports and 10 percent were involved in noncontact sports.

The sociodemographic characteristics of this sample indicate that approximately 52 percent of respondents in the sample were female, 54 percent were White, 22 percent were Black, 16 percent were Hispanic/Latino, and 8 percent were from other racial or ethnic classifications. Average age of respondents was 15.275 years old. About 50 percent of the respondents were residing with both biological parents, 16 percent were residing in stepfamilies, 25 percent were residing in single mother households, 4 percent were residing in single father households, and 6 percent were residing in other family structures.

Other control variables present in Table 4.1 indicate that on average, respondents feel that their family supports them ($M= 19.829$), given that the measurement metric ranged from 5 to 25. Parental supervision for the sample on average was 9.943, which suggests that respondents' parents are moderately supervising them. Social capital for the sample on average was 2.076, which is relatively low, with respect to the measurement metric of 0 to 6. Finally, the standard deviation of economic disadvantage was 5.190. This suggests that any given score of economic disadvantage can deviate from the mean plus or minus 5.190.

Variable	M	SD
Violence Wave 2	-0.123	3.35
Economic Disadvantage	2.355	6.134
Violence Wave 1	0.014	3.127
Performing Arts	0.331	0.048
Contact Sports	0.270	0.444
Non-Contact Sports	0.097	0.295
Academic Clubs	0.251	0.375
Female	0.552	0.497
Age At Wave 1	15.162	1.433
Biological Parents	0.296	0.456
Step Families	0.133	0.340
Single Mom	0.438	0.596
Single Dad	0.029	0.168
Other Parent	0.103	0.304
Family Support	19.959	3.585
Parental Supervision	9.921	2.220
n= 14,091		

Table 1 - Descriptive Statistics

Violence

Table 2 presents the Tobit regression results for the model that used sports as a moderator of the relationship between economic disadvantage and violence. Model 1 establishes a baseline for further analysis of the relationship between economic disadvantage and violence, controlling for Wave 1 violence. In Model 1, economic disadvantage is statistically associated with an increase in the respondent's violence by .067 units.

Model 2 of Table 2 added involvement in extracurricular activities to the equation; specifically, the variables of performing arts, contact sports, noncontact sports, and academic clubs were added to the model. Teens that are involved in performing arts had .353 less violence at the alpha level of .05. Participation in academic clubs lowers violence by .528 at the alpha level of .001. Teens involvement in contact sports had an increase in violence by .413, a value that is significant at an alpha level of .001. Teens involved in noncontact sports had a decrease in violence by .409, a value that is significant at an alpha level of .05.

In Model 3, the interaction terms between contact sports, noncontact, and economic disadvantage were added to the equation. None of the interactions were statistically significant.

Model 4 added controls for gender, age, race and ethnicity, family structure, family support, parental supervision, and social capital. The addition of these controls caused the interaction between contact sports and economic disadvantage to become statistically significant, which suggests that this effect was originally suppressed as a function of the controls. The interaction suggests that the effect of economic disadvantage for those who are involved in contact sports is .003. That is to say, that involvement in contact sports decreases the relationship between economic disadvantage and violence.

Predictors	Model 1		Model 2		Model 3		Model 4	
Intercept	-2.993	(.086)***	-2.493	(.096)***	-3.001	(.109)***	5.544	(.860)***
Economic Disadvantage	0.051	(.020)**	0.046	(.020)*	0.065	(.015)***	0.049	(.017)***
Violence Wave 1	0.826	(.014)***	0.856	(.015)***	0.977	(.019)***	0.887	(.019)***
Contact Sports			0.413	(0.130)***	0.412	(.130)***	0.121	(.134)
Non-Contact Sports			-0.312	(0.207)	-0.306	(.206)	0.051	(.208)
Performing Arts			-0.353	(0.149)*	-0.351	(.149)*	-0.034	(.154)
Academic Clubs			-0.528	(0.164)***	-0.531	(.164)***	-0.490	(.165)**
Contact sports*Economic Disadvantage					-0.040	(.027)	-0.052	(.026)*
Non-Contact sports*Economic Disadvantage					-0.039	(.039)	-0.047	(.039)
Performing arts*Economic Disadvantage					0.048	(.028)	0.049	(.028)
Academic Clubs*Economic Disadvantage					-0.001	(.032)	-0.015	(.033)
Female							-0.957	(.666)***
Age at Wave 1							-0.203	(.021)***
Black							0.440	(.085)***
Hispanic							0.382	(.089)***
Other Race							0.196	(.340)
Step Family							0.196	(.092)*
Single Mother							0.216	(.084)**
Single Father							0.466	(.196)*
Other Family Structure							0.567	(.153)***
Family Support							-0.078	(.009)***
Parental Supervision							0.012	(.016)
R ²	0.1001		0.1011		0.1012		0.1106	

N = 14,091 respondents; *p<0.05, ** p<0.01, ***p<0.001, + p<.1000

Discussion and Conclusions

There were a few limitations in this study that are noteworthy. This study relied on the Add Healthy dataset which is a school-base questionnaire; this creates a potential sample selection bias because it may exclude certain groups. Participation of these groups in certain extracurricular activities may have been excluded. However, it was found that teens who are poor exhibit less violence among those involved in contact sports once controls were added. Such findings are consistent with social control/bond theory on strain (Cernkovich and Giordano 1992; Darling et al. 2005; Mahoney and Stattin 2000), whereby those who participate in activities that strengthen relationships with peers and significant adults (e.g. parents, teachers, and coaches) have ways to cope with or manage stressful circumstances such as economic disadvantage. While it may be the case that these teens may have additional cumulative strains such as lack of parental supervision and have a single mother home, these teens may still find substitutes for this void such as coaches and teammates. Specifically, a coach may be seen as a father or mother figure for the adolescent. Teammates could be positive peers in the adolescent's life.

The final model indicated a number of main effects that may have contributed to the original suppression of contact sports as a function of the control variables pertaining to family processes that warrant further discussion, specifically to the effects of family support and single parent households. This may be important for future exploration especially due to the relationship with economic disadvantage.

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