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High School Sports Involvement Diminishes the Association Between Childhood Conduct Disorder and Adult Antisocial Behavior

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A B S T R A C T

Purpose: Life course–persistent antisocial behavior manifests as a display of aggressive and antisocial behavior beginning in childhood (conduct disorder [CD]) and lasting through adulthood (adult antisocial personality disorder). This study aimed to build on prior research by evaluating whether involvement in high school sports helped attenuate the association between CD and subsequent adult antisocial behavior (AAB).

Methods: A prospective sample of 967 male and female adolescents (56% adopted) was used. Structured interviews were used to assess CD (symptoms before the age of 15 years), involvement in sports during high school, and past-year adult antisocial personality disorder symptoms in young adulthood (M age = 22.4 years).

Results: As expected, the association between CD and AAB was significantly less for those involved in sports ($\beta = .28$; $p < .001$) compared with those not involved in sports ($\beta = .49$; $p < .001$), $\chi^2(1) = 4.13$; $p = .04$. This difference remained after including known covariates of antisocial behavior in the model (age, gender, adoption status), and results were consistent across males and females. Involvement in other extracurricular activities (e.g., student government, plays, clubs) did not significantly moderate the relationship between CD and AAB.

Conclusions: Although selection effects were evident (those with more CD symptoms were less likely to be involved in sports), findings nevertheless suggest high school sports involvement may be a notable factor related to disrupting persistent antisocial behavior beginning in childhood and adolescence and lasting through young adulthood. Implications are discussed.

IMPLICATIONS AND CONTRIBUTION

Although selection effects are evident, high school involvement in sports, but not other extracurricular activities, appears to offset risk for life course–persistent antisocial behavior. Findings suggest sports involvement is a unique protective factor for children exhibiting externalizing behaviors. Experimental research is needed to tease apart causal effects.

Antisocial behavior, for example, failure to conform to norms or cruel, aggressive behavior, manifests as conduct disorder (CD) in childhood, which may or may not persist as antisocial personality disorder in adulthood. Adolescent-limited antisocial behavior may be normative, whereas life course–persistent antisocial behavior is particularly problematic [1,2]. Persistent antisocial behavior is substantially influenced by personality, neurocognitive [3,4], and genetic factors [5–7], which may be offset by beneficial environmental experiences [8,9]. Characteristics of neighborhood environment (e.g., presence of delinquent young people, availability of marijuana) are among the most consistent predictors of persistent antisocial behavior [10]. Other research has shown that CD and adult antisocial behavior (AAB) are more strongly related if there is an early onset of alcohol

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abuse [11,12]. Conversely, education and occupational achievement appear to offset the risk of persistent antisocial behavior [13], as does middle-to-high socioeconomic status [14].

The goal of the present study was to evaluate whether sports involvement in high school mitigates the association between childhood CD (before the age of 15 years) and young AAB (age ~22 years). High school sports involvement may offset risk for persistent antisocial behavior for several reasons. Typically, practice times often occur after school when adolescents are often unsupervised and when juvenile arrest rates peak [15]. Sports activity also provides exercise and guides other health behaviors, for example, adequate nutrition, that are correlated with childhood externalizing disorders [16]. Varsity sports may require a contract in which participating youth agree to maintain their grades and not use drugs to participate. For example, in Minnesota, students must make adequate progress toward school graduation requirements and not repeat a grade; engage in harassment or violence; or use tobacco, alcohol, or other drugs during the entire year [17]. Finally, although rare, sports involvement may provide an athletic scholarship for college and therefore may alter young adult trajectories for at-risk youth.

Cross-sectional research supports an association between reduced antisocial behavior and sports involvement and other extracurricular activities [18–21]. Mahoney and Stattin [19] found that for 14-year-old boys and girls, participation in highly structured leisure activities (e.g., sports) was negatively associated with antisocial behavior, whereas participation in low structure leisure activities (e.g., hanging out at a recreation center) was associated with higher levels of antisocial behavior. Other correlational research has found that involvement in sports or other extracurricular activities reduces the odds for smoking, illicit substance use, criminal activity in high school and young adulthood, being a high school dropout [18,22–24], and may be particularly important for children most at risk [19,25].

In their review of the literature, Morris et al. [26] concluded that, although some cross-sectional research supports an association between sports involvement and antisocial behavior, there has been little longitudinal research. Thus, we sought to investigate whether involvement in high school sports moderated the relationship between CD (before the age of 15 years) and past-year AAB in young adulthood (*M* age ~22), with the expectation that involvement in sports would help attenuate the CD–AAB association. We also aimed to evaluate whether involvement in extracurricular activities other than sports (e.g., clubs, debate, musicals) moderated the association between CD and AAB or whether this effect may be unique to sports specifically. Through this analysis, we were able to extend previous work that evaluated the impact of extracurricular activities broadly [18–21] rather than the impact of each extracurricular activity specifically.

Methods

Participants

Data from all three waves of the Sibling Interaction and Behavior Study (SIBS) [27] were used in this investigation. An overall aim of SIBS was to understand genetic and environmental contributions to adolescent alcohol use and related psychopathology. Two types of families were recruited: families with a sibling pair who were related by adoption (n = 409) and families with full biological siblings (n = 208). Eligibility criteria for all families included having two children younger than 5 years of age. Families with adopted children were first recruited through three large adoption agencies (~600 to 700 placements per year). Adoptive family eligibility additionally included having an adopted child aged between 11 and 21 years who had been permanently placed into the adoptive home before 2 years of age (*M* age at placement = 4.7 months; standard deviation [SD] = 3.4 months; 96% were adopted before 1 year of age) and a second adolescent in the home who was not biologically related to the adopted adolescent. Families with biologically related children were recruited through publicly available birth certificates to match the adoptive sample in age and sex. SIBS was approved by the University Institutional Review Board.

Participation rates between nonadoptive (57%) and adoptive (63%) families were not significantly different. Comparisons of parents' education and marital status to 2000 census data show that parents were generally representative of the population although adoptive parents were more likely to have a college degree compared with nonadoptive parents [27]. After the baseline assessment, four sibling pairs were deemed ineligible (e.g., biologically related adopted siblings, developmental delay, death) and were excluded from further analysis.

Of the 1,226 eligible adolescents participating at Wave 1 (613 sibling pairs; *M* age = 14.9 years; SD = 1.92), more than half were adopted (n = 691, 56%) and female (n = 671, 55%). Adoptees included international (74%) and domestic placements (26%), with differences in ethnicity and gender across these two groups (international: 90% Asian ancestry; 60% female; domestic: 79% European ancestry; 41% female). Most nonadopted offspring were of European ancestry (n = 96%, 46% female). Of those who participated in Wave 1, 94% (n = 1,158) returned for Wave 2 (~3.5 years later; *M* age = 18.3 years; SD = 2.1), and 92% (n = 1,125) participated at Wave 3 (~3.5 years later; *M* age = 22.4 years; SD = 1.85).

Procedure

After parents provided written informed consent for themselves and their children to participate (youth younger than 18 years provided written assent), families completed a variety of assessments, including diagnostic interviews and self-report surveys. Parents and children were interviewed separately by a different interviewer; each of whom had completed extensive training. Procedures at Wave 2 were similar to Wave 1, except only one parent (usually the mother) visited. Participants who were unable to visit the laboratory at Wave 2 were interviewed by phone (15%). All Wave 3 interviews were conducted by phone.

Measures

Diagnostic assessment of antisocial behavior during childhood and early adulthood. Consistent with the DSM-IV definition of antisocial personality disorder, we assessed CD before the age of 15 years and AAB since the age of 15 years. DSM-IV symptoms of childhood CD (e.g., truancy, lying, and stealing) were assessed using the Diagnostic Interview for Children and Adolescents—Revised [28], modified for DSM-IV. A best estimate of both parent and child report was used so that if either endorsed the symptom, it was considered present. Symptoms were assigned based on a thorough review of the interviews and consensus by two individuals with advanced clinical training, supervised by a Ph.D.-level clinical psychologist. To maximize sensitivity, a weighted symptom count was utilized for CD so that