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A Case-Control Study of Risk and Protective Factors for Incarceration Among Urban Youth

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Abstract

Purpose—Each day in the United States, approximately 100,000 youth are under correctional supervision. The purpose of this study is to examine the early risk and protective factors for incarceration using a high-risk sample of urban youth.

Methods—Data were obtained from 2,165 (54 who were incarcerated) youth who participated in Project Northland Chicago. Participants were matched exactly on gender, race/ethnicity, and aggressive behavior in sixth grade. Bivariate and multivariate conditional logistic regression analyses were used to examine the risk and protective factors present at sixth grade that increased the odds of incarceration at 12th grade.

Results—The early risk factors for incarceration were age (odds ratio [OR] = 2.51; 95% confidence interval [CI] 1.71–3.69), having been sent to detention (1–3 times: OR = 2.24; 95% CI 1.15–4.37; 4+times: OR = 3.49; 95% CI 1.40–8.72), and the number of hours spent participating in a sport (OR = 1.11; 95% CI 1.03–1.20). Substance use was not significantly related to incarceration after adjusting for other behavioral and contextual risk factors.

Conclusions—General problem behaviors (nonaggressive) strongly predict incarceration among at-risk youth. Implications for prevention programs are discussed.

Keywords

Incarceration; Adolescent; Crime; Case-control; Detention; Aggression

Youth incarceration is a serious public health problem with high monetary costs to society. Each day, approximately 100,000 youth are under the supervision of some juvenile justice organization in the United States [1], largely for violent and crimes against persons (35%), technical violations (22%), and property crime (22%) [2]. According to the Justice Policy Institute [3], \$88,000 is spent annually to incarcerate a juvenile offender in a residential facility. Because juvenile delinquency has been strongly associated with the development of serious criminality [4], the early risk factors for incarceration warrant evaluation.

A small number of studies have examined risk factors for violence and incarceration among youth. One study used official records of youth released from correctional supervision in South Carolina to examine risk factors for recidivism [5]. Barrett and colleagues [6] found that African Americans, youth who were involved with the criminal justice system before age 14, had no father present in the home, and who were enrolled in special education programs were more likely to recidivate than other youth. Other studies have found that youth with disabilities [7], those with general behavior problems, incarcerated parents [8], and poor school performance [9] are more likely to be re-referred to the juvenile justice system. In addition, Loeber and Farrington [10] reviewed the literature on risk factors for violence among juveniles with a focus on prevention. Specifically, they concluded that the aggregated literature suggests that parenting characteristics, alcohol and drug use, and peer associations are related to violent behavior in adolescence.

There is a rich theoretical and empirical literature surrounding the role of risk and protective factors for aggression and violence [11–17]. Specifically, social learning theory suggests that individuals learn to engage in criminal behavior by having an excess of definitions favorable to criminality, associating with deviant peers, having their deviance reinforced, and engaging in imitation [16]. To examine the influence of social learning on incarceration, we included measures of family environment [17], attitudes about alcohol use [18], parental connectedness and communication with their adolescent [19], and peer substance use [20]. These types of measures have been associated with differential reinforcement of attitudes and opinions favorable to drug and alcohol use, which have been associated with delinquent behavior [21] as well as having been well established as risk factors for aggression in the theoretical literature [22].

The purpose of this study is to examine the early risk factors for incarceration using a high-risk sample of urban youth. This study is unique in that the sample is school-based and comprised high-risk (for alcohol use, marijuana use, school drop-out, associating with deviant peers, and aggression) adolescents who were not incarcerated at baseline [23]. Specifically, we were interested in the relationship between substance use (e.g., alcohol and marijuana), early risky behavior (not necessarily violent or delinquent), and parenting practices in primary school on incarceration 6 years later. As informed by social learning theory, we hypothesize that those who used substances, had less connection to and monitoring by parents, and acted out in sixth grade were more likely to be incarcerated in 12th grade.

Methodology

Data were obtained from youth in sixth and 12th grades who participated in Project Northland Chicago (PNC), a group-randomized alcohol prevention intervention implemented in middle schools located in Chicago, IL [24,25]. A long-term follow-up was completed in 2009 when participants were in 12th grade, and all adolescents who participated at baseline and the 12th-grade follow-up (or were coded as incarcerated at 12th grade) were eligible for inclusion. Students were able to complete the 12th-grade follow-up survey in school, via mail, or web. The follow-up rate for the 12th-grade sample was 53% [24]. This cohort consisted of 2,165 adolescents, who were 49.9% male, 13.4% white, 41.9% African American, and 29.5% Hispanic. The average age at baseline was 11.8 (standard error [SE] = .02) and 18.1 (SE = .02) at 12th grade. A total of 54 youth (1.3%) were institutionalized at the 12th-grade follow-up. The Institutional Review Board at two universities approved all secondary analyses of these data.

Measures

Incarceration—Incarceration was determined by enrollment in one of two known “alternative” schools housed within the Chicago Public Schools system. Contacts with the school administration confirmed that these schools were located within a jail or prison. Each participant was coded as having been “enrolled in a residential correctional facility” or “not enrolled in a residential correctional facility.”

Aggression—Physical aggression in sixth grade (baseline) was measured using the following three items: (1) “During the past month, how many times have you told someone you were going to hit or beat them up?”; (2) “During the past month, how many times have you pushed, shoved, pulled someone's hair, or grabbed someone?”; and (3) “During the past month, how many times have you kicked, hit, or beat up another person?” Response options for each item included, “never” (coded as 1), “1–3 times” (coded as 2), and “4 or more times” (coded as 3). The values (1–3) for these three items were summed for each individual and participants were matched based on values of this measure. (Given the way these measures are coded, it is very possible that participants could receive the same aggression scores even though they participated in different behaviors. However, these items are all developmentally appropriate and there is no imbalance in the severity of these three items; therefore, we do not believe that this summation provides an unbalanced estimate of the frequency of aggression.)

Substance use—Alcohol consumption was measured using the item, “During the past 12 months, on how many occasions, or times, have you had alcoholic beverages to drink?” Responses were dichotomized into drinkers and nondrinkers. This item was also administered to measure alcohol consumption “in the past 30 days.” Marijuana use was captured using the item, “During the past 12 months, on how many occasions, or times, have you used marijuana (other names for marijuana are: pot, grass, weed, reefer, blunt, or hashish)?” Responses were dichotomized to include marijuana users and marijuana nonusers. This item was also administered to measure marijuana use “in the past 30 days.” Finally, cigarette smoking was included as a covariate because of the strong association between cigarette use and other substance use [26]. Recent smoking was measured using the item, “About how many cigarettes have you smoked in the past 30 days?” Responses were dichotomized into 1 cigarettes or less and more than 1 cigarette.

Contextual variables—To measure peer alcohol use, participants were asked, “How many of your friends drink alcohol?” Responses ranging from “none” to “almost all” were recoded as “none,” “a few,” or “more than a few.” These items were included because individuals who have peers who use alcohol [27,28] are more likely to engage in aggressive behavior. To put parental monitoring of adolescents' behavior and parental communication into operation, we used two scales available in Tobler and Komro [29]. These scales had Cronbach's alpha coefficients of .74 and .66, respectively. Although these scales are not derived from established, validated measures, the research team has used these scales previously to measure the constructs of interest in the current study [29].

Family discussions and tolerance of alcohol use were measured using the item, “How often does your parent or guardian talk with you about rules against young people drinking alcohol?” Response options were dichotomized into, “Your family does not have rules against young people drinking alcohol,” and “Your family has rules” about alcohol use. These measures were included to assess parental modeling, condoning of and attitudes toward substance use [16]. Indirect exposure to alcohol (in the neighborhood) was measured with one item: “How many adults in your neighborhood drink alcohol?” Responses included, “none” and “few,” and “some,” “many,” and “almost all.” The youth's perception

of alcohol use in the neighborhood provides some measure of the adolescents' perceived social disorganization present within the neighborhood [30].

Youth behavior—Church attendance (measured as number of hours per month, from “less than 1 hour” to “4+ hours”), participation in sporting events (hours per month), and supervised extracurricular clubs and activities were measured independently and retained as continuous measures. To evaluate emotional stability, each respondent was asked, “During the past month, how often have you felt sad or depressed?” Responses were dichotomized into not felt sad in the past month and felt sad at least once in the past month. Sadness was included as a covariate because higher levels of depression have been associated with violence, aggression [31,32], and other risk behaviors [32,33].

In or out of school detention—Misbehavior in school was put into operational using a school-based detention measure, “During the past month, how often have you been sent to the principal's office for doing something wrong or had detention?” Responses included, “never,” “1–3 times,” and “4 or more times”; these were analyzed as three nominal categories with “never” serving as the reference category.

Demographics—Gender was self-identified as male or female. Participants' race and ethnicity was measured using the item, “How do you describe yourself? Mark all that describe you. If you are not sure, mark other and write in how you describe yourself.” Response options included “Asian American or Asian Indian,” “African-American or black,” “Latino, Hispanic, or Mexican-American,” “Native American or American Indian,” “white, Caucasian, or European American,” and “other.” Participants were coded as Hispanic if they identified as Hispanic, regardless of the other options selected. As an indicator of family socioeconomic position, receipt of free or reduced price lunch was measured as “yes” or “no” by the student, and age was calculated using the month and year of the reported date of birth.

Analytical methods

Participants were matched a priori on gender, race/ethnicity, and aggressive behavior in sixth grade (the strongest predictors of incarceration) using the coarsened exact matching package in STATA 12. This package is particularly innovative in that it was designed to require fewer assumptions than other types of matching, thus strengthening the estimation of causal effects by reducing imbalances between groups [34]. Specifically, this package temporarily “coarsens” the data (or categorizes the data into meaningful groups) and identifies exact matches based on these variables using a specified grouping (treatment) variable [34]. Conditional regressions are then conducted using the uncoarsened, matched dataset. This method is preferred to other forms of matching in that the matches are *exact* rather than *similar*. We matched as many controls as possible to each case (1:k match) to maximally retain as much information for control comparisons as possible. Although a 1:4 (one case to four controls) is generally cited as the number controls needed to maximize statistical power, we had sufficient power to detect an effect with four controls per case [35]. However, we did not wish to exclude controls unnecessarily because the information was readily available to us. After the matching process was completed, bivariate conditional logistic regression analyses were conducted to examine the risk and protective factors present at sixth grade that increased the odds of incarceration at 12th grade. Specific multivariate models (e.g., substance use and demographics, parenting and peer influences, community influences) were conducted to examine the substance-specific etiology of incarceration. Finally, results from the bivariate analyses informed the multivariate assessment of the risk and protective factors for incarceration. Sensitivity analyses were conducted (unmatched; controlling for gender and race/ethnicity; and matched only on

gender and race/ethnicity) for bivariate and multivariate analyses to ensure that the findings were not sensitive to the analytical design. Although the students were nested within schools in sixth grade, multivariate models were not hierarchical because baseline cluster was not associated with incarceration at 12th grade ($ICC = .000$; $F = .03$; $p = .86$). (Missing data methods are generally used when missing data exceeds 5% [36]. In our particular study, item missing values did not exceed this value. Thus, considering the minimal amount of missing data in our study, we used listwise deletion where item missing values were present.)

Results

A description of the risk and protective factors for sample characteristics in sixth grade grouped by 12th-grade incarceration status is detailed in Table 1. Youth who were incarcerated at 12th grade were more likely to have used alcohol in the past year (32.1% vs. 18.6%, $p < .001$) and past month in sixth grade (15.1% vs. 8.8%, $p < .05$), have higher alcohol-related behaviors and intentions in sixth grade (mean 6.5 for incarcerated youth, 5.6 for nonincarcerated, $p < .001$), and to have used marijuana in the past year (11.7% compared with 6.3%, $p < .001$) in sixth grade than youth who were not incarcerated in 12th grade. In addition, incarcerated youth spent more than 1 hour a day without adult supervision (84.9% vs. 7.2%, $p < .01$), were more likely have had some form of school-based punishment or in-school detention between one and three times in the past year (35.2% vs. 23.7%, $p < .001$), and more than four times (2.4% vs. 7.3%, $p < .001$), participated in more hours of sporting events (mean 5.5 hours for incarcerated youth compared with 3.6 hours for nonincarcerated youth, $p < .001$), and were older (mean age 12.3 compared with 11.9, $p < .001$) in sixth grade than youth who were not incarcerated in 12th grade.

Table 2 reports the bivariate risk and protective factors (at sixth grade) for incarceration at 12th grade, matched on race/ethnicity, gender, and aggressive behavior in sixth grade. Marijuana use in the past year (odds ratio [OR] = 1.32; 95% confidence interval [CI] 1.03–1.71), and marijuana-related behaviors and intentions (OR = 1.19; 95% CI 1.02–1.39) were associated with increased odds of incarceration six years after baseline. Alcohol and tobacco were not related to incarceration. Spending more than 1 hour unsupervised each day (in sixth grade) also increased the risk of incarceration at 12th grade (OR = 1.34; 95% CI 1.11–1.62). Reported feelings of sadness in the past week was protective from incarceration (OR = .51; 95% CI .35–.75), whereas having in-school detention between one and three times in the past year (OR = 2.13; 95% CI 1.14–4.00) and four or more times (OR = 2.81; 95% CI 1.22–6.53) more than doubled the odds of incarceration. The number of hours spent participating in sporting events increased the odds of incarceration (OR = 1.13; 95% CI 1.10–1.21), and older age more than doubled the risk of incarceration (OR = 2.45; 95% CI 1.69–3.56).

To examine the substance-related etiology of incarceration, Table 3 reports the results of the conditional logistic regression analysis focusing on substance use measures. None of the substance use variables was associated with incarceration; instead, age was most strongly related to incarceration (OR = 2.51; 95% CI 1.71–3.69). Parenting and peer association measures are evaluated in Table 4. Sadness remained protective from incarceration (OR = .52; 95% CI .35–.78), whereas in-school punishment or detention was strongly associated with an increase in incarceration (1–3 times: OR = 2.24; 95% CI 1.15–4.37; 4+ times: OR = 3.49; 95% CI 1.40–8.72). The number of hours that youth participated in a sport (OR = 1.11; 95% CI 1.03–1.20) and older age (OR = 1.31; 95% CI 1.56–3.41) were positively associated with incarceration.

The final multivariate model is presented in Table 5. Although neither alcohol nor marijuana use was significantly related to incarceration in 12th grade, in-school punishment or

detention remained a potent risk factor (1–3 times: OR = 2.24; 95% CI 1.15–4.37; 4+ times: OR = 3.53; 95% CI 1.40–8.86). Sadness was protective (OR = .54; 95% CI .36–.81), and the number of hours spent participating in sports (OR = 1.11; 95% CI 1.02–1.20) and age were retained as risk factors for incarceration (OR = 2.29; 95% CI 1.53–3.41).

Discussion

The purpose of this study was to examine how risk and protective factors in early adolescence (sixth grade) influence incarceration in 12th grade. Several key findings emerged from this effort. Interestingly, the robust early risk factors for later incarceration identified in a multivariate context were age, having been sent to in-school detention, and the number of hours spent participating in a sport. Furthermore, these significant relationships were observed despite matching the at-risk youth based on gender, race/ethnicity, and aggression. Similar results also held in subsequent sensitivity analyses as well (unmatched; controlling for gender and race/ethnicity; and matched only on gender and race/ethnicity). Thus, it appears that the relationship between early risk factors and later incarceration is complex and operates through a host of risk factors, but not necessarily substance use.

These findings are congruent with the extant risk and protective factor literature [11–15,17,22]. Specifically, the finding that school-based punishment or detention (e.g., indicating general misbehavior, statistically independent of aggression) is strongly associated with incarceration fits with research documenting the relationship between general problem behavior and recidivism [6]. Although we do not know the specific reasons that youth received in-school punishment or detention, we did measure several types of aggressive behavior that were analytically removed as possible confounders in the relationship between detention and incarceration. Therefore, it is possible that youth received detention for some unmeasured form of aggression; however, their aggressive tendencies would not have confounded the results demonstrated in the current study. The findings reported in this study are unique in that the sample was high-risk in sixth grade; however, they were not previously enrolled in an educational/correctional institution.

Several unexpected findings emerged as predictors of incarceration; specifically, sport participation and sadness. Although participation in extracurricular activities, particularly sports participation, is generally regarded as a protective factor for offending/incarceration [37], other research has demonstrated that participation in high school team sports can be considered as a risk factor for certain forms of deviance [38]. In addition, the direction of the association between sadness and incarceration is especially unusual, because depression is generally considered a risk factor for many types of criminal behavior, including aggression in this same sample of youth [39]. However, it must be noted that we did not measure depression directly, and a global measure of sadness may not necessarily be related to or operate the same way as a clinical diagnosis of major depression.

These results provided little support for social learning theory as only one of the family/peer variables was statistically significant (e.g., hours spent without adult supervision) [16]. These findings demonstrate that manifestations of antisocial modeling have developed before sixth grade in at-risk communities. Therefore, some interaction between exposure to antisocial behavior, modeling, and actual delinquency (nonviolent) may contribute synergistically to the risk of serious violence resulting in incarceration at the high school level.

These findings have several implications for intervention. First, it appears that in-school detention and having frequent in-school detention referrals at an early age (middle school) is

a rather potent predictor of later incarceration by 12th grade. Should early prevention/intervention be successfully implemented early in adolescence, perhaps the link between and escalation from in-school detention to subsequent incarceration can be disrupted. Second, the results seem to suggest that for those youth who do experience in-school detention, this sanction alone is not effective in deterring problem behavior or avoiding its escalation. Thus, it is important that the method of discipline in the school system be revisited to ensure that its application is only used in extreme cases or to avoid unduly stigmatizing certain at-risk youth, and that when this disciplinary strategy may be necessary that other preventive intervention methods are also used.

Limitations

These results must be considered in light of several limitations. First, cases in this study were considered “incarcerated” if they were enrolled in one of two residential correctional facilities in the Chicago Public Schools system. Therefore, this study does not include youth who were incarcerated in other facilities, because these youth would have been ineligible for participation in the 12th-grade follow-up. Although we were unable to ascertain for certain whether each participant at baseline was incarcerated, we verified that those included in the current analysis as cases were in fact incarcerated. This is considered optimal in case-control studies of this nature [35]. Second, a small number of controls (n = 11 nonincarcerated youth) were unmatched to any incarcerated participant. These youth were not matched because of the small number of incarcerated youth in some of the racial categories. Finally, this sample is drawn from one city (albeit a large metropolitan city) in the United States and these results may not generalize to youth nationwide.

Given these limitations, this research has several notable strengths. First, the sample comprised high-risk youth who have not been previously incarcerated. This adds to the literature in that the vast majority of research on predictors of incarceration has been conducted among those previously involved with the correctional system. Second, this study was conducted prospectively, and we matched nearly all respondents who were not incarcerated to those who were incarcerated. Therefore, a systematic bias could not emerge from the matching process. Finally, these data do not suffer from the inaccurate reporting associated with self-reported arrest and criminal behavior.

Overall, results from this study support the notion that early-onset misbehavior is more strongly associated with incarceration than substance use. Future research should examine specific types of problem behavior that result in school-based punishment or detention, and intervention programming may be introduced during school-based detention.

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Implications and Contribution

Early-onset misbehavior (not necessary violent or physical misbehavior) is more strongly associated with later incarceration than substance use in 6th grade. This impacts the field of prevention science in that intervention programming may be developed for and introduced specifically for implementation during school-based detention.

Table 1
Descriptive comparison of incarcerated vs. nonincarcerated youth, Project Northland
Chicago, N = 2,165^a

	Incarcerated (n = 54)	Not incarcerated (n = 2,111)	p value
Project Northland Chicago treatment (1 = treatment)	17 (31.5%) [†]	943 (44.7%)	.054
Substance use			
Alcohol use (0–1; past year)	17 (32.1%) ^{***}	391 (18.6%)	.001
Alcohol use (0–1; past month)	8 (15.1%) [*]	184 (8.8%)	.025
Heavy alcohol use (0–1; past 2 weeks)	4 (7.5%)	126 (6.0%)	.242
Alcohol behavior and intentions (range: 5–30, mean, standard error [SE] reported)	Mean: 6.48 SE = .53 ^{***}	Mean: 5.59 SE = .04	<.001
Marijuana use (0–1; past year)	11 (2.8%) ^{***}	133 (6.3%)	<.001
Marijuana use (0–1; past month)	6 (11.7%)	77 (3.3%)	.001
Marijuana behavior and intentions (range: 2–14, mean, SE reported)	Mean: 2.76 SE = .33 ^{***}	Mean: 2.16 SE = .02	<.001
Cigarette use (0–1; past month)	2 (3.8%)	53 (2.5%)	.566
Family/peer characteristics			
Free or reduced lunch (1 = free or reduced lunch)	43 (81.1%)	1,731 (82.4%)	.884
Number of friends who use alcohol (0 = no friends; 1 = one or more friends)	26 (48.2%)	751 (35.8%)	.172
Daily time spent without adult supervision (range: 1–5; 1 = less than 1 hour, 5 = 4+ hours)	Mean: 3.43 SE = .21	Mean = 2.69 SE = .03	<.001
Parental involvement (range: 10–51, mean, SE reported)	Mean: 35.86 SE = .97	Mean: 36.31 SE = .17	.661
Parental connectedness (range: 6–30, mean, SE reported)	Mean: 2.72 SE = .55	Mean: 21.20 SE = .10	.776
Family rules about alcohol (0 = family has rules; 1 = family has no rules)	2 (3.7%)	191 (9.1%)	.174
Adults in neighborhood drink alcohol (0 = few adults drink alcohol; 1 = most or almost all adults drink alcohol)	18 (33.3%)	691 (33.0%)	.547
Individual characteristics			
Hours of church attendance per week (range: 1–5; 1 = 0 hours, 5 = 4+ hours)	Mean: 1.80 SE = .133	Mean: 1.89 SE = .02	.750
Sadness (0 = have no felt sad; 1 = have felt sad in past month)	30 (5.9%) [*]	1,560 (74.1%)	.012
School-based punishment or detention (1–3)	19 (35.2%) ^{***}	499 (23.7%)	<.001
School-based punishment or detention (4+)	11 (2.4%) ^{***}	153 (7.3%)	
Hours participated in club in past month (range: 1–5; 1 = less than one hour, 5 = 4+ hours)	Mean: 1.78 SE = .13	Mean: 1.70 SE = .02	.256
Hours participating in sporting events (range 0–11, mean, SE reported)	Mean: 5.48 SE = .51 ^{***}	Mean: 3.62 SE = .07	<.001
Age (mean, SE)	Mean: 12.31 SE = .10 ^{***}	Mean = 11.87 SE = .01	<.001

Note: Cases and controls were matched on gender, aggressive behaviors at baseline, and race/ethnicity.

^aThere may be a very small degree of variation in the denominator of each predictor because of an item missing values.

[†] $p < .1$.

^{*} $p < .05$.

^{***} $p < .001$.

Table 2
Bivariate risk and protective factors for incarceration

	Incarceration matched on race, gender, aggression	
	OR	95% CI
PNC treatment	.55 *	.31–.99
Substance use		
Alcohol use (past year)	1.20	.93–1.55
Alcohol use (past month)	1.13	.76–1.67
Heavy alcohol use (past 2 weeks)	.99	.61–1.63
Alcohol behavior and intentions	1.08	.98–1.18
Marijuana use (past year)	1.32 *	1.03–1.71
Marijuana use (past month)	1.35 †	.97–1.86
Marijuana behavior and intentions	1.19 *	1.02–1.39
Cigarette use (past month)	1.17	.26–5.16
Family/peer characteristics		
Free or reduced lunch	.98	.48–2.01
Number of friends who use alcohol	1.08	.84–1.40
Hours spent without adult supervision	1.34 **	1.11–1.62
Parental Involvement	1.00	.97–1.04
Parental connectedness	.99	.93–1.06
Family rules about alcohol	.34	.08–1.40
Adults in neighborhood drink alcohol	.97	.78–1.20
Individual characteristics		
Church attendance	.89	.67–1.19
Sadness	.51 ***	.35–.75
School-based punishment or detention (1–3)	2.13 *	1.14–4.00
School-based punishment or detention (4+)	2.81 *	1.22–6.53
Participated in club in past month	1.06	.79–1.43
Hours participating in sporting events	1.13 **	1.10–1.21
Age	2.45 ***	1.69–3.56

CI = confidence interval; OR = odds ratio; PNC = Project Northland Chicago.

† $p < .1$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3
Substance-related risk factors for incarceration (N = 2,081)

	Incarceration matched on race, gender, aggression	
	OR	95% CI
Alcohol use (past year)	1.18	.85–1.65
Marijuana use (past year)	1.09	.59–1.83
Marijuana use (past month)	1.07	.58–1.96
Friends who use alcohol	.90	.65–1.25
Treatment condition	.60	.32–1.11
Age	2.51 ***	1.71–3.69

CI = confidence interval; OR = odds ratio.

 $p < .001$.

Table 4
Personal, parenting, and peer-related risk factors for incarceration (N = 2,071)

	Incarceration matched on race, gender, aggression	
	OR	95% CI
Parental involvement	.99	.96–1.04
Sadness	.52 **	.35–.78
School-based punishment or detention (1–3 times)	2.24 *	1.15–4.37
School-based punishment or detention (4+ times)	3.49 **	1.40–8.72
Hours participated in a sport	1.11 **	1.03–1.20
Treatment condition	.55 †	.29–1.02
Age	1.31 ***	1.56–3.41

CI = confidence interval; OR = odds ratio.

† $p < .1$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 5
Multivariate model of risk factors for incarceration (N = 2,065)

	Incarceration matched on race, gender, aggression	
	OR	95% CI
Alcohol use (past year)	1.18	.84–1.54
Marijuana use (past year)	1.04	.61–1.79
Marijuana use (past month)	1.07	.58–1.99
Parental involvement	1.00	.96–1.04
Sadness	.54 ^{**}	.36–.81
School-based punishment or detention (1–3 times)	2.39 [*]	1.22–4.69
School-based punishment or detention (4+ times)	3.53 ^{**}	1.40–8.86
Hours participated in a sport	1.11 [*]	1.02–1.20
Treatment condition	.57 [†]	.30–1.07
Age	2.29 ^{***}	1.53–3.41

CI = confidence interval; OR = odds ratio.

[†]
 $p < .1$.

^{*}
 $p < .05$.

^{**}
 $p < .01$.

^{***}
 $p < .001$.