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## Associations of School Violence with Physical Activity among U.S. High School Students

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### Abstract

**Background:** This study investigated associations of violence-related behaviors with physical activity (PA)-related behaviors among U.S. high school students.

**Methods:** Data from the 2009 national Youth Risk Behavior Survey, a cross-sectional survey of a nationally representative sample of 9<sup>th</sup>–12<sup>th</sup> grade students, were analyzed. Sex-stratified, adjusted odds ratios (aORs) and 95% confidence intervals (CIs) were estimated for associations between violence-related behaviors and being physically active for 60 minutes daily, sports participation, TV watching for 3 hours/day, and video game/computer use for 3 hours/day.

**Results:** Among male students, at-school bullying victimization was negatively associated with daily PA (aOR: 0.72; 95%CI: 0.58–0.87) and sports participation; skipping school because of safety concerns was positively associated with video game/computer use (1.42; 1.01–2.00); and physical fighting was positively associated with daily PA. Among female students, at-school bullying victimization and skipping school because of safety concerns were both positively associated with video game/computer use (1.46; 1.19–1.79 and 1.60; 1.09–2.34, respectively), and physical fighting at school was negatively associated with sports participation and positively associated with TV watching.

**Conclusions:** Bullying victimization emerged as a potentially important risk factor for insufficient PA. Schools should consider the role of violence in initiatives designed to promote PA.

### Keywords

adolescent; schools; violence; physical activity

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

## Introduction

Insufficient physical activity puts individuals at increased risk for chronic conditions such as obesity, some cancers, cardiovascular disease, and diabetes,<sup>1</sup> and is responsible for approximately 1 in 10 deaths in the U.S.<sup>2</sup> Physical activity benefits for youth include better cardiovascular health, increased muscle strength, reduced body fatness, improved bone health, and better mental health.<sup>1</sup> Though it is recommended that adolescents participate in at least 60 minutes of physical activity daily,<sup>3</sup> few high school students in the U.S. meet this guideline.<sup>4</sup>

Sedentary behaviors also pose risks for adolescents. Adolescents participating in high levels of TV/video viewing and video/computer gaming are less likely to have positive risk behavior outcomes; these students may be more likely than other groups of students to be delinquent and truant, smoke, drink alcohol, and use drugs and less likely to wear a seatbelt, and sleep 8 hours per night.<sup>5</sup> A review of the literature has shown that there is a relationship between sedentary behaviors and a number of health indicators. In particular, watching TV for >2 hours/day is associated with poor body composition, decreased fitness, lower self-esteem, and decreased pro-social behavior and academic achievement.<sup>6</sup>

Many correlates to youth physical activity exist, including neighborhood and school environment factors. Youth report neighborhood crime/danger as a barrier to physical activity,<sup>7</sup> and youth who perceive their neighborhood as unsafe are less likely to be physically active.<sup>8–11</sup> Higher crime rates have also been found to be associated with higher levels of media usage.<sup>12</sup> Homicide is the second leading cause of death among adolescents and over 324,000 youth aged 10–19 years were treated in emergency departments for nonfatal injuries from physical assaults in 2009 ([www.cdc.gov/ncipc/wisqars](http://www.cdc.gov/ncipc/wisqars)). Violence victimization is also associated with psychological problems, alcohol and other drug use, sexually transmitted diseases, reckless driving, truancy, school dropout, and poor academic achievement.<sup>13–14</sup>

Violence-related behaviors may be indicative of an unsafe environment in which one is fearful of violence or harm. The most common reasons youth cite for carrying weapons are for protection and fear of victimization.<sup>15–17</sup> Safety of the school environment is an important issue for youth. In 2008, youth aged 12–18 years were victims of nonfatal crimes at school at a rate of 47/1000 students as compared to an outside school rate of 38/1000 students.<sup>14</sup> Youth aged 12–18 years also reported being more fearful of harm in school or on the way to or from school than away from school.<sup>14</sup>

Few studies have examined the relationship between youth violence and physical activity.<sup>18–23</sup> Orpinas and colleagues<sup>18</sup> looked at the association between violence-related behaviors as a predictor and physical activity as an outcome and found no association of physical fighting or weapon carrying with exercise or muscle toning. Other studies have examined the association between physical activity as a predictor and violence-related behaviors as the outcome. Most of these studies have focused on sports participation with conflicting results. All identified studies of the association between violence-related behaviors and

sedentary behaviors conceptualized sedentary behavior as the predictor and the violence-related behavior as the outcome and mixed results were found across studies.<sup>24–27</sup>

Better understanding of factors that influence physical activity can lead to development of more effective interventions. Though most previous literature has looked at the violence-physical activity association with violence as the outcome, we considered the opposite perspective. Given that personal safety is an important concern for U.S. youth<sup>28</sup> and they frequently report crime/danger as a barrier to physical activity,<sup>7</sup> we investigated the associations of violence-related behaviors occurring on and off school property with participation in physical activity-related behaviors among U.S. high school students. We hypothesized that violence-related behaviors would be associated with a lower prevalence of physical activity behaviors and a higher prevalence of sedentary behaviors.

## Methods

### Participants and Procedures

Data were obtained from the 2009 national Youth Risk Behavior Survey (YRBS), a cross-sectional, school-based survey that monitors six categories of priority health risk behaviors, obesity, and asthma. The sampling frame included all regular public and private schools that enrolled students in at least one of grades 9–12 in the U.S. A three-stage cluster sampling design was used to create a nationally representative sample. Before survey administration, local parental permission procedures were followed. Students completed an anonymous, 97-item self-administered questionnaire during one class period and recorded their responses on a computer-scannable booklet or answer sheet. Participation by schools and students was voluntary. Study protocols were designed to protect students' privacy. Study design details and questionnaire psychometric properties are described elsewhere.<sup>4,29–30</sup> The national YRBS study protocol was reviewed and approved by CDC's Institutional Review Board.

### Measures

The YRBS assesses weapon carrying and physical fighting in two settings- the youth's general environment and on school property- with two questions for each behavior. Other violence-related behaviors occurring on school property or on the way to or from school included being bullied, skipping school because of safety concerns, and being threatened or injured with a weapon. Students were asked "During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club?" and the same question specifying "on school property." The response options for these questions ranged from "0 days" to "6 or more days." Students also were asked "During the past 12 months, how many times were you in a physical fight?" and the same question specifying "on school property." The response options for these questions ranged from "0 times" to "12 or more times." Bullying was assessed with the question "During the past 12 months, have you ever been bullied on school property?" and response options were "yes" or "no." Students were asked "During the past 30 days, on how many days did you not go to school because you felt you would be unsafe at school or on your way to or from school?" The response options for these questions ranged from "0 days" to "6 or more days." Students were also asked "During the past 12 months, how many times has someone threatened or injured you with a weapon

such as a gun, knife, or club on school property?” The response options for these questions ranged from “0 times” to “12 or more times.”

Outcome measures included two physical activity behaviors and two sedentary behaviors. Students were asked “During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)” Sports participation was assessed with the question “During the past 12 months, on how many sports teams did you play? (Include any teams run by your school or community groups.)” The response options ranged from “0 teams” to “3 or more teams.” Sedentary behaviors were assessed with the following questions: “On an average school day, how many hours do you watch TV?” and “On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Include activities such as Nintendo, Game Boy, PlayStation, Xbox, computer games, and the Internet.)” The response options ranged from none to “5 or more hours per day.”

All behaviors were initially dichotomized as having engaged in the behavior or not (referent). Responses to the weapon carrying questions were combined to create a three-level variable. Students who responded “0 days” to weapon carrying in general and on school property were categorized as not carrying a weapon; this served as the referent. Students who reported weapon carrying in general, but not on school property were categorized as carrying a weapon off school property. Students who reported weapon carrying at school were categorized as carrying a weapon on school property. This same three-level categorization was performed for physical fighting.

The outcomes of interest were being physically active for at least 60 minutes/day on each of the last 7 days, participation on at least one sports team during the last 12 months, TV watching for 3 hours/day on an average school day, and video game/computer use for 3 hours/day on an average school day. The cutpoints for physical activity and sedentary behaviors are based on national recommendations.<sup>3,31</sup> There are no recommendations for sports participation; therefore we chose a conservative cutpoint.

### Statistical Analysis

In 2011, analyses were conducted on weighted data from 16,345 students using SUDAAN, a software package that accounts for the complex survey sampling design. Logistic regression models were used to estimate adjusted odds ratios (aORs) and 95% confidence intervals (CIs) for associations between violence-related behaviors and physical activity and sedentary behaviors. All violence-related behaviors were included in each model. Statistically significant interactions were found by sex in preliminary analysis. Given that there is also evidence that violence affects child psychosocial development differently by sex<sup>32</sup> and sex-specific associations between activity and violence victimization have been found,<sup>16</sup> the analyses were sex-stratified. The models were adjusted for race/ethnicity and grade. Overweight/obesity status and substance use variables were examined as potential confounders, but no significant confounding was evident; therefore, they were not included in the final models.

## Results

The school response rate for the 2009 national YRBS was 81% and the student response rate was 88%; resulting in an overall response rate of 71%. Among the students with non-missing sex data, the demographic characteristics were as follows: 47.8% female and 52.2% male; 58.7% white, 14.4% black, 18.5% Hispanic, 8.4% other; 28.0% 9<sup>th</sup> grade, 26.2% 10<sup>th</sup> grade, 23.6% 11<sup>th</sup> grade, 22.2% 12<sup>th</sup> grade.

Physical fighting was the most commonly reported violence-related behavior (31.4%; 95% CI=30.0–32.8) (Table 1). The prevalence of violence-related behaviors was higher among male than female students, except for being bullied at school and skipping school because of safety concerns. No significant sex difference was detected in the latter. Male students were also more likely than female students to be physically active for 60 minutes daily, participate in sports, and play video games or use the computer for 3 hours/day.

### Male Students

Among male students, being bullied on school property was associated with lower odds of daily physical activity (aOR=0.71; 95% CI=0.58–0.87) and sports participation (aOR=0.76; 95% CI=0.64–0.89), but no significant associations with sedentary behaviors were found (Table 2). Skipping school because of safety concerns was not significantly associated with physical activity, but was associated with higher odds of video game/computer use (aOR=1.42; 95% CI=1.01–2.00). Male students who were threatened or injured with a weapon on school property had higher odds of daily physical activity (aOR=1.36; 95% CI=1.06–1.74) and sports participation (aOR=1.37; 95% CI=1.11–1.68), but no associations with sedentary behaviors were found. Weapon carrying both on and off school property were negatively associated with sports participation (aOR=0.77; 95% CI=0.59–1.00 and aOR=0.66; 95% CI=0.51–0.86). Physical fighting both on and off school property were associated with increased odds of daily physical activity (aOR=1.29; 95% CI=1.06–1.56 and aOR=1.30; 95% CI=1.08–1.57, respectively), but neither was associated with sedentary behaviors. Only physical fighting off school property was associated with increased odds of sports participation (aOR=1.35; 95% CI=1.15–1.59).

### Female Students

Among female students, being bullied on school property and skipping school because of safety concerns were both associated with increased odds of video game/computer use (aOR=1.46; 95% CI=1.19–1.79 and aOR=1.60; 95% CI=1.09–2.34, respectively). Being threatened or injured with a weapon on school property and weapon carrying on and off school property were not associated with any outcomes. Physical fighting on school property was associated with decreased odds of sports participation (aOR=0.75; 95% CI=0.58–0.98) and increased odds of TV watching (aOR=1.75; 95% CI=1.33–2.29).

## Discussion

The findings presented in this manuscript suggest that violence-related behaviors may be associated with physical activity and sedentary behaviors among U.S. high school students, though not all associations were in the same direction. Previous studies on this topic have

found conflicting results,<sup>18–27</sup> especially for the association between sports participation and violence.<sup>19–23</sup>

More significant associations were found among male than female students and interactions by sex were identified in preliminary analyses. Of note, male students had significant associations between bullying and daily physical activity and sports participation; between physical fighting and daily physical activity; and between fighting off school property and sports participation while no associations between these variables were found among female students. Female students had significant associations between physical fighting on school property and sports participation and between fighting on school property and watching TV 3 hours/day while no associations between these variables were found among male students. The fact that more significant associations were found among male students is an interesting result as it seems to contradict previous studies which indicate that safety may have a greater influence on the physical activity of girls than boys.<sup>10,33</sup> However, more changes in physical activity among female students may not be seen here as this study assessed personal experiences with violence (which may be proxies of an unsafe environment), not the actual safety of the neighborhood or school environment. Measures of personal experiences with violence and actual safety of the environment may operate differently.

Being bullied on school property and skipping school because of safety concerns were each associated with lower odds of physical activity and/or associated with higher odds of sedentary behavior; however, the results were not consistent. Bullying victimization is associated with low psychological well-being, poor social adjustment, and poor physical health and this may make bullied students less likely to be active.<sup>34</sup> Those who feel unsafe at school may also skip school or avoid certain school locations or activities to promote personal safety.<sup>14</sup> Adolescents report bullying as one of the main reasons for skipping school.<sup>35</sup> Video game/computer use may be more common among these students as they spend more time at home during the school day with more opportunity for these behaviors. This study does not examine the influence of school attendance, but specifically skipping school due to safety concerns.

Being threatened or injured with a weapon at school and physical fighting were both associated with increased odds of daily physical activity among male students. Physical fighting was also positively associated with physical activity among male students, but not among female students. Violence in general tends to be more acceptable behavior for boys as some explain away their problem behaviors with the idiom “boys will be boys.”<sup>36</sup> Violence-related behaviors may, therefore, impact girls and boys differently. Furthermore, violence and aggression are common among athletes.<sup>37</sup> Sports participation is reported to be associated with both nonviolent and violent delinquency among boys, but not among girls,<sup>38</sup> and is an important contributor to overall physical activity levels.<sup>39</sup>

The most commonly reported reasons for weapon carrying are for protection and fear of victimization.<sup>15–17</sup> Youth who carry a weapon for protection generally do so because they feel scared and unsafe.<sup>40</sup> The primary reason for youth feeling unsafe in one’s community is due to violence,<sup>40</sup> which youth report to be a barrier to physical activity.<sup>7</sup> This analysis

found that weapon carrying was associated with decreased odds of sports participation among male students but not female students. Students who are caught carrying weapons to school are often not allowed to participate in sports.<sup>41</sup> Besides for protection, students choose to carry weapons frequently for aggressive reasons such as to threaten someone or out of revenge,<sup>17</sup> and these aggressive incidents may be less indicative of fear. Furthermore, though weapon carrying is associated with not feeling safe at school, previous research has shown that it is more strongly associated with fighting.<sup>42</sup> Given that youth report carrying weapons for both protective and aggressive reasons, this may help explain why associations with daily physical activity and sedentary behaviors were not found.

There are some important additional points to consider for this investigation. Violence-related behaviors may be markers of an unsafe environment in which one is fearful of violence. Skipping school because of safety concerns and bullying victimization might be proxy indicators of fear. Unlike the bullying victimization and skipping school because of fear variables, which seem to reflect victimization, the measures of physical fighting, weapon carrying, and being threatened/injured with a weapon can potentially reflect both victimization and perpetration and may therefore be less indicative of fear or perceived vulnerability. More research is needed to better understand the associations between violence and physical activity. The literature in this research area is still in its infancy and findings have been mixed. In addition, previous literature has not examined a wide variety of violence-related behaviors. Furthermore, other factors that would be helpful in understanding the association between fear of violence and physical activity-related behaviors include perceptions of fear and vulnerability, opportunities to be active with friends, and the perception that others would intervene to help if violence were to occur; these measures were not assessed in the YRBS. Additional research should also explore racial/ethnic and grade differences in these associations.

The findings of this study must be considered along with its limitations. National YRBS data are based on self-report and subject to associated bias, although psychometric studies have shown that the national YRBS questions have good test-retest reliability.<sup>29</sup> Another limitation is that national YRBS data are cross-sectional; therefore, causality and directionality cannot be concluded. Lastly, data are only collected on youths who attend school and, therefore, are not representative of all persons in this age group. Nationwide, in 2008, of persons aged 16–17 years, approximately 4% were not enrolled in a high school program and had not completed high school.<sup>43</sup>

## Conclusion

The study findings provide limited support for the hypothesis that violence-related behaviors are associated with physical activity and sedentary behaviors. Skipping school because of safety concerns was associated with higher odds of video game/computer use among both female and male students. Being bullied on school property was associated with lower odds of physical activity among males and higher odds of video game/computer use among females. In contrast, being threatened or injured with a weapon on school property and physical fighting on and off school property were positively associated with physical activity among males. These behaviors may not be appropriate markers for feeling unsafe, especially

among males. Data on reasons for violent encounters, the circumstances, the outcomes, and the role the student played in these encounters (i.e. aggressor or victim) may help explain these findings.

As non-fatal crimes at school have become more prevalent than non-fatal crimes occurring away from school and students continue to report fear in the school environment,<sup>14</sup> changes to further promote student safety are needed; one way is through efforts designed to improve school connectedness, a factor found to be strongly protective against violence.<sup>44</sup> School connectedness and engagement may also be positively associated with physical activity,<sup>45–46</sup> possibly enhancing the effectiveness of programs designed to address each behavior. School connectedness efforts may include encouraging school staff to be more relatable/supportive, developing a positive social environment in which students feel like they belong and are accepted, encouraging students to be committed to their education, and creating/maintaining a positive school climate. It is also important for providers to consider the role of violence when encouraging physical activity.

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**Table 1.** Percentage of students reporting violence-related behaviors, physical activity, and sedentary behaviors—United States, 2009.

Behaviors	Overall		Males		Females	
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
<b>Violence-related behaviors</b>						
Bullied on school property <sup>a</sup>	19.9 (18.8–21.1)	18.7 (17.4–20.1)	21.2 (19.8–22.7)			
Skipped school because of safety concerns <sup>b</sup>	4.9 (4.3–5.7)	4.6 (3.8–5.6)	5.3 (4.6–6.1)			
Threatened/injured with weapon on school property <sup>c</sup>	7.6 (6.9–8.4)	9.6 (8.5–10.8)	5.5 (4.8–6.3)			
Carried a weapon <sup>b,d</sup>	17.5 (16.0–19.0)	27.1 (24.3–30.2)	7.1 (6.3–7.9)			
Carried a weapon on school property <sup>b,d</sup>	5.6 (5.0–6.3)	8.0 (7.1–9.2)	2.9 (2.5–3.4)			
In a physical fight <sup>c</sup>	31.4 (30.0–32.8)	39.3 (36.9–41.7)	22.9 (21.4–24.4)			
In a physical fight on school property <sup>c</sup>	11.1 (10.0–12.2)	15.1 (13.1–17.3)	6.7 (5.9–7.6)			
<b>Physical activities</b>						
Physical activity 60 minutes/day <sup>e,f</sup>	18.4 (17.3–19.5)	24.8 (23.4–26.3)	11.4 (10.1–12.9)			
Sports team participation <sup>g</sup>	58.3 (55.5–61.1)	63.8 (59.5–67.9)	52.3 (49.9–54.7)			
<b>Sedentary behaviors</b>						
TV watching 3 hours/day <sup>h</sup>	32.8 (30.4–35.3)	33.5 (29.9–37.2)	32.1 (29.9–34.4)			
Video game/computer use 3 hours/day <sup>h,i</sup>	24.9 (22.9–27.0)	28.3 (25.1–31.8)	21.2 (19.4–23.1)			

<sup>a</sup>During the 12 months before the survey.

<sup>b</sup>On at least 1 day during the 30 days before the survey.

<sup>c</sup>One or more times during the 12 months before the survey.

<sup>d</sup>For example, a gun, knife, or club.

<sup>e</sup>Were physically active doing any kind of physical activity that increased their heart rate and made them breathe hard some of the time.

<sup>f</sup>During the 7 days before the survey.

<sup>g</sup>Played on at least 1 sports team run by their school or community groups during the 12 months before the survey.

<sup>h</sup>On an average school day.

For something that was not school work.

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**Table 2.** Prevalence and aOR<sup>a</sup> for physical activities by violence-related behaviors among students—United States, 2009.

	Physical Activity for 60 min/day <sup>b,c</sup>		Sports Team Participation <sup>d</sup>		TV Watching 3 hours/day <sup>e</sup>		Video Game/Computer Use 3 hours/day <sup>e,f</sup>	
	%	aOR (95% CI)	%	aOR (95% CI)	%	aOR (95% CI)	%	aOR (95% CI)
<b>Males</b>								
Bullied on school property <sup>g</sup>								
No	25.3	1.00 (ref)	64.7	1.00 (ref)	32.8	1.00 (ref)	27.0	1.00 (ref)
Yes	21.8	0.71 (0.58, 0.87)	60.1	0.76 (0.64, 0.89)	35.4	1.15 (0.97, 1.37)	32.3	1.18 (0.97, 1.43)
Skipped school because of safety concerns <sup>h</sup>								
No	24.8	1.00 (ref)	64.1	1.00 (ref)	33.1	1.00 (ref)	27.8	1.00 (ref)
Yes	24.7	0.89 (0.61, 1.30)	58.1	0.68 (0.45, 1.02)	40.5	1.09 (0.77, 1.54)	41.5	1.42 (1.01, 2.00)
Threatened/injured with weapon on school property <sup>i</sup>								
No	24.3	1.00 (ref)	63.6	1.00 (ref)	33.1	1.00 (ref)	27.8	1.00 (ref)
Yes	30.0	1.36 (1.06, 1.74)	66.4	1.37 (1.11, 1.68)	37.7	0.92 (0.71, 1.20)	34.0	1.06 (0.79, 1.43)
Carried a weapon <sup>h,j</sup>								
No	23.6	1.00 (ref)	65.4	1.00 (ref)	33.1	1.00 (ref)	28.0	1.00 (ref)
Off school property <sup>k</sup>	27.2	1.11 (0.96, 1.27)	58.3	0.66 (0.51, 0.86)	33.1	1.02 (0.83, 1.24)	27.3	0.89 (0.71, 1.13)
On school property	30.5	1.32 (0.98, 1.77)	61.9	0.77 (0.59, 1.00)	37.3	1.13 (0.89, 1.44)	32.4	1.09 (0.86, 1.38)
In a physical fight <sup>l</sup>								
No	22.4	1.00 (ref)	62.0	1.00 (ref)	32.0	1.00 (ref)	27.1	1.00 (ref)
Off school property <sup>l</sup>	28.2	1.30 (1.08, 1.57)	67.8	1.35 (1.15, 1.59)	34.6	1.05 (0.88, 1.26)	28.5	1.09 (0.96, 1.23)
On school property	29.0	1.29 (1.06, 1.56)	64.4	1.24 (0.91, 1.68)	38.1	1.06 (0.87, 1.29)	32.6	1.19 (0.96, 1.47)
<b>Females</b>								
Bullied on school property <sup>g</sup>								
No	11.4	1.00 (ref)	52.0	1.00 (ref)	32.6	1.00 (ref)	19.6	1.00 (ref)
Yes	12.4	1.05 (0.84, 1.31)	53.7	1.05 (0.90, 1.22)	30.4	0.94 (0.79, 1.12)	26.4	1.46 (1.19, 1.79)
Skipped school because of safety concerns <sup>h</sup>								
No	11.3	1.00 (ref)	52.3	1.00 (ref)	31.7	1.00 (ref)	20.7	1.00 (ref)

	Physical Activity for 60 min/day <sup>b,c</sup>		Sports Team Participation <sup>d</sup>		TV Watching 3 hours/day <sup>e</sup>		Video Game/Computer Use 3 hours/day <sup>e,f</sup>	
	%	aOR (95% CI)	%	aOR (95% CI)	%	aOR (95% CI)	%	aOR (95% CI)
Threatened/injured with weapon on school property <sup>g</sup>	13.7	1.35 (0.83, 2.18)	53.3	1.12 (0.78, 1.61)	40.8	1.28 (0.93, 1.76)	31.1	1.60 (1.09, 2.34)
No	11.3	1.00 (ref)	52.3	1.00 (ref)	32.1	1.00 (ref)	20.9	1.00 (ref)
Yes	13.3	1.20 (0.75, 1.93)	52.9	1.06 (0.85, 1.31)	33.5	0.79 (0.59, 1.05)	26.4	1.01 (0.66, 1.57)
Carried a weapon <sup>h,j</sup>								
No	11.2	1.00 (ref)	52.8	1.00 (ref)	32.1	1.00 (ref)	21.1	1.00 (ref)
Off school property <sup>k</sup>	12.6	1.22 (0.66, 2.24)	43.6	0.78 (0.53, 1.16)	28.0	0.74 (0.49, 1.14)	22.7	0.91 (0.64, 1.29)
On school property	14.5	1.12 (0.73, 1.71)	47.2	0.85 (0.59, 1.23)	39.8	1.03 (0.74, 1.45)	24.7	0.85 (0.54, 1.32)
In a physical fight <sup>i</sup>								
No	11.6	1.00 (ref)	53.2	1.00 (ref)	30.2	1.00 (ref)	20.1	1.00 (ref)
Off school property <sup>l</sup>	9.9	0.78 (0.60, 1.01)	50.3	0.91 (0.77, 1.07)	34.5	1.11 (0.94, 1.31)	22.9	1.08 (0.89, 1.31)
On school property	12.2	0.83 (0.54, 1.28)	45.7	0.75 (0.58, 0.98)	48.0	1.75 (1.33, 2.29)	27.7	1.23 (0.94, 1.59)

aOR, adjusted odds ratio.

<sup>a</sup> Adjusted for grade, race/ethnicity, and all violence-related behaviors.

<sup>b</sup> Were physically active doing any kind of physical activity that increased their heart rate and made them breathe hard some of the time.

<sup>c</sup> During the 7 days before the survey.

<sup>d</sup> Played on at least 1 sports team run by their school or community groups during the 12 months before the survey.

<sup>e</sup> On an average school day.

<sup>f</sup> For something that was not school work.

<sup>g</sup> During the 12 months before the survey.

<sup>h</sup> On at least 1 day during the 30 days before the survey.

<sup>i</sup> One or more times during the 12 months before the survey.

<sup>j</sup> For example, a gun, knife, or club.

<sup>k</sup> Carried a weapon, but not on school property during the 30 days before the survey.

In a physical fight, but not on school property during the 12 months before the survey.

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