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Recent Trends in Violence-Related Behaviors Among High School Students in the United States

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FATAL VIOLENCE REFLECTS ONLY the most visible tip of the iceberg when estimating the consequences of violence.¹ Aggressive behaviors such as fighting and weapon carrying are extremely common in the daily lives of many adolescents. These behaviors may not always lead to physical injuries, but they are strongly associated with risk for injury, exposure to intimidation and threats, and perceptions of fear and vulnerability.^{2,3} In addition, although less than 1% of homicides and suicides among school-aged youths occur on school grounds or while traveling to or from school or school-sponsored events,⁴ recent multiple-victim, school-associated violent deaths have focused national attention on what can be done to prevent violence in schools.

The first step in developing strategies to prevent violent behaviors and their consequences is to describe the problem systematically.⁵ National surveillance systems help do this by identifying the subgroups most affected and monitoring temporal trends. Such information is important in helping direct prevention strategies toward subpopulations with the greatest need for them and in providing early and sensitive data for evaluating the impact of

Context Violence-related behaviors such as fighting and weapon carrying are associated with serious physical and psychosocial consequences for adolescents.

Objective To measure trends in nonfatal violent behaviors among adolescents in the United States between 1991 and 1997.

Design, Setting, and Participants Nationally representative data from the 1991, 1993, 1995, and 1997 Youth Risk Behavior Surveys were analyzed to describe the percentage of students in grades 9 through 12 who engaged in behaviors related to violence. Overall response rates for each of these years were 68%, 70%, 60%, and 69%, respectively. To assess the statistical significance of time trends for these variables, logistic regression analyses were conducted that controlled for sex, grade, and race or ethnicity and simultaneously assessed linear and higher-order effects.

Main Outcome Measures Self-reported weapon carrying, physical fighting, fighting-related injuries, feeling unsafe, and damaged or stolen property.

Results Between 1991 and 1997, the percentage of students in a physical fight decreased 14%, from 42.5% (95% confidence interval [CI], 40.1%-44.9%) to 36.6% (95% CI, 34.6%-38.6%); the percentage of students injured in a physical fight decreased 20%, from 4.4% (95% CI, 3.6%-5.2%) to 3.5% (95% CI, 2.9%-4.1%); and the percentage of students who carried a weapon decreased 30%, from 26.1% (95% CI, 23.8%-28.4%) to 18.3% (95% CI, 16.5%-20.1%). Between 1993 and 1997, the percentage of students who carried a gun decreased 25%, from 7.9% (95% CI, 6.6%-9.2%) to 5.9% (95% CI, 5.1%-6.7%); the percentage of students in a physical fight on school property decreased 9%, from 16.2% (95% CI, 15.0%-17.4%) to 14.8% (95% CI, 13.5%-16.1%); and the percentage of students who carried a weapon on school property decreased 28%, from 11.8% (95% CI, 10.4%-13.2%) to 8.5% (95% CI, 7.0%-10.0%). All of these changes represent significant linear decreases.

Conclusions Declines in fighting and weapon carrying among US adolescents between 1991 and 1997 are encouraging and consistent with declines in homicide, non-fatal victimization, and school crime rates. Further research should explore why behaviors related to interpersonal violence are decreasing and what types of interventions are most effective.

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policy and program changes. In 1990, the Centers for Disease Control and Prevention launched the national Youth Risk Behavior Survey (YRBS) to assess priority behaviors that most influence health among young people in the United States.⁶

The current study uses YRBS data collected during 1991, 1993, 1995, and 1997 to examine trends in the percentage of high school students reporting involvement in fights, injuries from fights, gun carrying, and carrying weapons other than guns. It also uses YRBS data collected during 1993, 1995, and 1997 to examine trends in the percentage of high school students engaging in behaviors related to violence on school property. Because there are significant associations between involvement in violent behavior and demographic characteristics,⁷⁻¹⁰ we examined whether these trends varied by sex, race or ethnicity, and school grade.

METHODS

Study Design

The first national school-based YRBS was conducted in the spring of 1990. Since 1991, the YRBS has been conducted biennially. Because of differences in question wording between the 1990 YRBS questionnaire and subsequent questionnaires, analyses of trends are restricted to the 4 national surveys conducted in 1991, 1993, 1995, and 1997.

Each of the 4 surveys used a similar 3-stage, cluster-sample design to obtain a nationally representative sample of students in grades 9 through 12 in the United States. The target population consisted of all public and private high school students in the 50 states and the District of Columbia. Details of the sample design for each of the 4 surveys have been described previously.⁸⁻¹⁰ A general description of the sampling method and modifications made to combine the 4 national data sets is provided below.

The first-stage sampling frame for each national survey contained primary sampling units (PSUs) consisting of large counties or groups of smaller, adjacent counties. From this

frame, PSUs were selected from 16 strata formed according to the degree of urbanization and the relative percentages of black and Hispanic students in the PSUs. The PSUs were selected with the probability of selection proportional to the total school enrollment for the PSUs.

At the second stage of sampling, schools were selected from the PSUs; probability of selection was proportional to school enrollment size. To ensure that racial or ethnic subgroups were large enough to analyze subgroup differences, schools with substantial numbers of black and Hispanic students were sampled at relatively higher rates than were other schools. The final stage of sampling consisted of randomly selecting, within each chosen school and in each of the 4 grades, 1 or 2 entire classes of a required discipline, such as English or social studies. All students in the selected classes were eligible to participate.

In combining the 4 national data sets, the strata from each survey year were individually coded, creating an additional stratum of "time." In addition, to improve the accuracy of SE calculations, a small number of PSUs (with very large school enrollments) that were selected with certainty were recoded as their own strata. The sampled schools within the strata created from "certainty PSUs" were then treated as PSUs within those strata. This recoding of PSUs as their own strata was not done until the 1997 survey. In this study, recoding was implemented for the 1991, 1993, and 1995 data sets to maintain consistency. As a result, the confidence intervals in previously published reports of the 1991, 1993, and 1995 data sets⁸⁻¹⁰ vary slightly from those reported in the present study.

Survey procedures were designed to protect student privacy and allow for anonymous participation. A questionnaire containing approximately 90 items was administered in the classroom by trained data collectors. The questionnaire covered 6 categories of behaviors: (1) those that contribute to unintentional and intentional inju-

ries, (2) tobacco use, (3) alcohol and other drug use, (4) sexual behaviors that contribute to unintended pregnancies and sexually transmitted diseases, (5) dietary behaviors, and (6) physical activity. Students recorded responses on computer-scannable answer sheets.

Following local procedures, parental consent was obtained prior to survey administration. Several methods were used to maximize participation at all levels. For example, multiple mailings to parents increased parental consent rates; student response rates were increased by revisiting schools to collect data from previously absent students. In 1991, 1993, 1995, and 1997, school response rates were 75%, 78%, 70%, and 79%, respectively; student response rates were 90%, 90%, 86%, and 87%, respectively; overall response rates were 68%, 70%, 60%, and 69%, respectively; and the sample sizes were 12 272, 16 296, 10 904, and 16 262, respectively.

In each of the 4 surveys, students answered the following questions about interpersonal violence: "During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club?"; "During the past 12 months, how many times were you in a physical fight?"; and "During the past 12 months, how many times were you in a physical fight in which you were injured and had to be treated by a doctor or nurse?" In 1993, 1995, and 1997, students were asked, "During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club on school property?"; "During the past 12 months, how many times were you in a physical fight on school property?"; "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?"; "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?"; "During the past 12 months, how many times has someone stolen or deliberately damaged your property

such as your car, clothing, or books on school property?"; and "During the past 30 days, on how many days did you carry a gun?" By combining the questions about gun carrying and weapon carrying, a new variable was created to measure whether students carried a weapon other than a gun. Specifically, the variable was designed to identify students who carried weapons, but not guns, in the 30 days preceding the survey. To calculate prevalence estimates, responses to each of the above questions were recoded into 2 categories: 0 vs 1 or more days or times. To measure progress toward national health objectives for the year 2000,¹¹ incidence rates per 100 students were estimated for fighting and weapon carrying. Students who replied that they carried a weapon 0 or 1 days during the 30-day period were assigned a weapon-carrying frequency of 0 or 1, respectively; 2 or 3 days, 2.5; 4 or 5 days, 4.5; and 6 or more days, 6.0. Similarly, students who reported fighting 0 or 1 times during the 12-month period were assigned a fighting frequency of 0 or 1, respectively; 2 or 3 times, 2.5; 4 or 5 times, 4.5; 6 or 7 times, 6.5; 8 or 9 times, 8.5; 10 or 11 times, 10.5; and 12 times or more, 12.0.

Data Analyses

A weighting factor based on student sex, race or ethnicity, and grade in school

was applied to each record to adjust for student nonresponse and the oversampling of black and Hispanic students. The final, overall weights were scaled so that the weighted count of students equalled the total sample size, and the weighted proportions of students in each grade matched national population projections for each survey year. All estimates are based on weighted data.

All analyses were performed using a statistical software package that accounts for the complex sampling design and weighting factors in the data set.¹² Data for racial or ethnic groups other than white, black, and Hispanic were combined, because when presented separately, sample sizes were too small for meaningful analysis. The race or ethnicity of these students is referred to as "other." To analyze main effects of sex, race or ethnicity, and grade, a set of logistic regression models was run that included these demographic variables. To analyze secular trends, time was treated as a continuous variable with linear and higher-order (quadratic, cubic) components. For each behavior variable, a series of orthogonal coefficients representing linear, quadratic, and cubic effects were assigned in a manner corresponding to the biennial spacing of the surveys. For example, for variables with 4 years of data, coefficients for linear time vari-

ables were -3, -1, 1, and 3; those for quadratic time variables were 1, -1, -1, and 1; and those for cubic time variables were -1, 3, -3, and 1. Linear and higher-order time variables were simultaneously entered into logistic regression models that controlled for sex, grade, and race or ethnicity. Overall (combined linear and higher-order) time effects were calculated using contrast statements.

Next, a set of logistic regression models that included significant time variables and their interactions with sex, grade, and race or ethnicity was run. For those interactions that were significant at $P \leq .05$, a set of nested time variables was used in logistic regression models to produce β coefficients for time trends in the subgroups of interest.

RESULTS

During all years for which data were collected, male students were significantly more likely than female students to engage in each of the behaviors we examined except feeling too unsafe to go to school (TABLE 1). Ninth-grade students were significantly more likely to engage in each of the behaviors than were 12th-grade students. Students in 10th grade also were more likely to engage in all but 2 of the 10 behaviors than were students in 12th grade, and students in 11th grade were more likely than students in 12th grade

Table 1. Relationship Between Violence-Related Behaviors and Sex, Grade, and Race or Ethnicity*

	Carried a Weapon†	Carried a Gun‡§	Carried a Weapon Other Than a Gun‡§	In a Physical Fight‡	Injured in a Physical Fight‡	Carried a Weapon on School Property†§	Felt Too Unsafe to Go to School†§	Threatened or Injured With a Weapon on School Property‡§	In a Physical Fight on School Property‡§	Property Stolen or Deliberately Damaged on School Property‡§
Male sex	5.3 (4.8-5.9)	7.7 (6.3-9.4)	3.6 (3.1-4.1)	2.2 (2.0-2.3)	2.2 (1.9-2.7)	3.8 (3.2-4.4)	1.1 (0.9-1.2)	2.2 (2.0-2.4)	3.0 (2.7-3.3)	1.5 (1.4-1.7)
Grade										
9	1.5 (1.3-1.7)	1.5 (1.2-1.9)	1.4 (1.2-1.6)	2.0 (1.8-2.2)	1.3 (1.1-1.6)	1.4 (1.2-1.6)	2.0 (1.6-2.5)	1.7 (1.4-2.1)	2.5 (2.2-2.8)	1.5 (1.4-1.7)
10	1.2 (1.1-1.4)	1.3 (1.1-1.6)	1.1 (0.9-1.3)	1.5 (1.4-1.7)	1.1 (0.9-1.4)	1.2 (1.0-1.3)	1.6 (1.3-2.0)	1.4 (1.2-1.7)	1.8 (1.5-2.1)	1.3 (1.2-1.5)
11	1.3 (1.2-1.4)	1.1 (0.9-1.4)	1.2 (1.0-1.4)	1.3 (1.2-1.4)	1.0 (0.8-1.2)	1.2 (1.1-1.4)	1.3 (1.0-1.7)	1.2 (1.0-1.4)	1.3 (1.1-1.5)	1.2 (1.1-1.4)
Race/ethnicity										
Black	1.6 (1.4-1.8)	2.2 (1.8-2.6)	1.1 (1.0-1.3)	1.5 (1.4-1.7)	2.0 (1.6-2.4)	1.4 (1.2-1.6)	2.7 (2.2-3.4)	1.8 (1.5-2.2)	1.8 (1.6-2.0)	1.1 (1.0-1.2)
Hispanic	1.3 (1.2-1.5)	1.9 (1.5-2.4)	1.1 (1.0-1.3)	1.3 (1.2-1.4)	1.6 (1.3-1.9)	1.4 (1.2-1.7)	3.3 (2.7-4.1)	1.6 (1.3-1.8)	1.5 (1.3-1.7)	1.0 (0.9-1.1)
Other	0.9 (0.8-1.1)	1.3 (1.0-1.7)	0.8 (0.7-1.0)	1.1 (1.0-1.3)	1.8 (1.3-2.4)	1.1 (0.8-1.4)	2.4 (1.7-3.3)	1.4 (1.1-1.8)	1.1 (0.9-1.4)	1.1 (1.0-1.2)

*All data are presented as odds ratio (95% confidence interval). Female sex, 12th grade, and white race are the reference categories. Data are from the Youth Risk Behavior Surveys, 1991, 1993, 1995, and 1997.

†On 1 or more of the 30 days preceding the survey.

‡One or more times during the 12 months preceding the survey.

§Data not available for 1991.

more likely than students in 12th grade to carry a weapon, both in general and on school property, to engage in a physical fight in general and on school property, and to have property deliberately stolen or damaged while at school. Relative to white students, black and Hispanic students were significantly more likely to engage in all but 2 of the 10 behaviors. Students of "other" races or ethnic groups were significantly more likely than white students to be injured in a physical fight, to feel too unsafe to go to school, and to be threatened or injured with a weapon on school property.

The prevalence estimates for the violence-related behaviors for all years of available data are presented in TABLE 2. From 1991 to 1997, the percentage of all students who carried a weapon on 1 or more of the 30 days preceding the survey decreased 30%, the percentage of students who engaged in a physical fight 1 or more times during the 12

months preceding the survey decreased 14%, and the percentage of students injured in a physical fight decreased 20%. Similarly, between 1991 and 1997, the 12-month incidence of fighting decreased 16%, from 137 to 115 events per 100 students, and the 30-day incidence of weapon-carrying decreased 31%, from 107 to 74 events per 100 students. From 1993 to 1997, the percentage of students who carried a gun on 1 or more of the 30 days preceding the survey decreased 25%, the percentage of students who carried a weapon on school property on 1 or more of the 30 days preceding the survey decreased 28%, and the percentage of students who engaged in a physical fight on school property 1 or more times during the 12 months preceding the survey decreased 9%.

From 1991 to 1997, a significant linear decrease in the likelihood that students carried a weapon, engaged in a physical fight, or were injured in a physi-

cal fight was identified through logistic regression analyses (TABLE 3). From 1993 to 1997, the likelihood that students carried a weapon on school property and engaged in a physical fight on school property showed a significant linear decrease. In addition, from 1993 to 1997, the likelihood that students carried a gun and the likelihood that students carried any weapon showed a significant linear decrease. For weapon carrying from 1993 to 1997, Wald F, an omnibus test of the effect of time, was 4.56 ($P = .01$; $\beta = -.08$, $P = .003$). However, analyses did not detect a significant trend over time in the likelihood that students carried a weapon other than a gun.

To determine whether any of the time trends varied by sex, grade, or race or ethnicity, a series of logistic regression models was run that examined the interaction of sex, grade, and race or ethnicity with the linear time variable, because only the linear time variable

Table 2. High School Students Who Engaged in Violence-Related Behaviors*

Survey Year	Carried a Weapon†	Carried a Gun†	Carried a Weapon Other Than a Gun†	In a Physical Fight‡	Injured in a Physical Fight‡	Carried a Weapon on School Property†	Felt Too Unsafe to Go to School†	Threatened or Injured With a Weapon on School Property‡	In a Physical Fight on School Property‡	Property Stolen or Deliberately Damaged on School Property‡
1991	26.1 (2.3)	...	...	42.5 (2.4)	4.4 (0.8)	...	...	...	...	...
1993	22.1 (2.3)	7.9 (1.3)	14.2 (1.7)	41.8 (1.9)	4.0 (0.8)	11.8 (1.4)	4.4 (0.7)	7.3 (0.9)	16.2 (1.2)	32.7 (1.7)
1995	20.0 (1.3)	7.6 (1.1)	12.5 (1.5)	38.7 (2.1)	4.2 (0.6)	9.8 (0.9)	4.5 (0.7)	8.4 (1.1)	15.5 (1.6)	34.9 (2.0)
1997	18.3 (1.8)	5.9 (0.8)	12.4 (1.4)	36.6 (2.0)	3.5 (0.6)	8.5 (1.5)	4.0 (0.6)	7.4 (0.9)	14.8 (1.3)	32.9 (2.6)

*All data are presented as percentages ($\pm 95\%$ confidence intervals). Data are from the Youth Risk Behavior Surveys, 1991, 1993, 1995, and 1997. Ellipses indicate data not available for 1991.

†On 1 or more of the 30 days preceding the survey.

‡One or more times during the 12 months preceding the survey.

Table 3. Effects of Time on Violence-Related Behaviors, Controlling for Sex, Grade, and Race or Ethnicity*

	Linear	Quadratic	Cubic	Wald F
Carried a weapon†	-.0911 (<.001)	.0267 (.39)	-.0048 (.72)	16.84 (<.001)
Carried a gun†	-.1019 (.001)	-.0190 (.28)	... (. . .)	6.47 (.002)
Carried a weapon other than a gun†	-.0433 (.08)	.0109 (.42)	... (. . .)	1.82 (.16)
In a physical fight‡	-.0506 (<.001)	-.0195 (.38)	.0087 (.37)	10.17 (<.001)
Injured in a physical fight‡	-.0444 (.02)	-.0313 (.49)	-.0178 (.41)	2.67 (.049)
Carried a weapon on school property†	-.1046 (.002)	.0042 (.77)	... (. . .)	5.95 (.003)
Felt too unsafe to go to school†	-.0398 (.11)	-.0107 (.51)	... (. . .)	1.54 (.22)
Threatened or injured with a weapon on school property‡	-.0097 (.63)	-.0245 (.08)	... (. . .)	1.63 (.19)
In physical fight on school property‡	-.0369 (.04)	.0024 (.84)	... (. . .)	2.39 (.10)
Property stolen or deliberately damaged on school property‡	-.0005 (.98)	-.0162 (.11)	... (. . .)	1.35 (.26)

*Linear, quadratic, and cubic data are presented as logistic regression coefficient β s (P values). Data are from the Youth Risk Behavior Surveys, 1991, 1993, 1995, and 1997. Ellipses indicate cubic effects could not be calculated. Wald F is an omnibus test of the effect of time.

†On 1 or more of the 30 days preceding the survey.

‡One or more times during the 12 months preceding the survey.

reached significance in the preceding analyses. One of these interactions reached significance (linear time by race or ethnicity [Wald F = 3.10, P = .03]), and 1 approached significance (linear time by sex [Wald F = 3.89, P = .05]), both for general physical fighting.

To explore the nature of these interactions, a final set of logistic regres-

sion analyses was performed using nested time variables for the subgroups of interest. The race or ethnicity subgroup analysis showed that the decrease in fighting from 1991 to 1997 was the result of a decrease in fighting among white and black students but not among Hispanic students or those of other racial or ethnic groups (TABLE 4). This pattern also is evident from prevalence comparisons (TABLE 5). Although physical fighting decreased from 41% to 34% among white students and from 51% to 43% among black students from 1991 to 1997, physical fighting remained essentially unchanged among Hispanic students and those of other racial or ethnic groups during this period. While analyses revealed a significant linear decrease in physical fighting for both male and female students,

the β for females was larger, suggesting they had a steeper decline (Table 4). This sex difference also is apparent in prevalence comparisons (Table 5); the percentage of females who engaged in a physical fight decreased 24%, from 34% to 26%, from 1991 to 1997, while the percentage of males who engaged in a physical fight decreased 8%, from 50% to 46%, during the same period.

COMMENT

Results of this study indicate that between 1991 and 1997, US high school students became less likely to carry weapons, to engage in physical fights, and to be injured in physical fights. Our findings also indicate that between 1993 and 1997, students became less likely to carry guns but not other weapons,

Table 4. Subgroup Analyses of the Effects of Linear Time on Physical Fighting*

	In a Physical Fight	
	β	P
Females	-0.0674	<.0001
Males	-0.0394	.0003
White	-0.0616	<.0001
Black	-0.0663	.001
Hispanic	-0.0100	.57
Other	-0.0043	.88

*Logistic regression coefficients (β s) and P values are from the Youth Risk Behavior Surveys, 1991, 1993, 1995, and 1997.

Table 5. High School Students Who Engaged in Violence-Related Behaviors, by Sex, Race or Ethnicity, and Survey Year*

Subgroup	Survey Year	Carried a Weapon†	Carried a Gun‡	Carried a Weapon Other Than a Gun†	In a Physical Fight‡	Injured in a Physical Fight‡	Carried a Weapon on School Property†	Felt Too Unsafe to Go to School†	Threatened or Injured With a Weapon on School Property‡	In a Physical Fight on School Property‡	Property Stolen or Deliberately Damaged on School Property‡
Female	1991	10.9 (2.1)	...	...	34.4 (2.9)	2.7 (1.0)	...	...	...	...	...
	1993	9.2 (1.7)	1.8 (0.4)	7.4 (1.4)	31.7 (2.3)	2.7 (0.8)	5.1 (1.3)	4.4 (0.9)	5.4 (0.8)	8.6 (1.4)	28.1 (1.8)
	1995	8.3 (1.4)	2.5 (1.0)	5.8 (1.1)	30.6 (2.8)	2.5 (1.0)	4.9 (1.0)	4.3 (1.1)	5.8 (1.4)	9.6 (1.9)	28.0 (1.9)
	1997	7.0 (1.0)	1.4 (0.6)	5.6 (0.9)	26.0 (2.5)	2.2 (0.5)	3.7 (0.7)	3.9 (0.6)	4.0 (0.6)	8.6 (1.5)	29.0 (3.7)
Male	1991	40.6 (2.9)	...	...	50.2 (2.6)	6.0 (1.0)	...	...	...	...	...
	1993	34.3 (3.3)	13.7 (2.2)	20.5 (2.5)	51.2 (2.0)	5.2 (1.1)	17.9 (1.9)	4.3 (0.8)	9.2 (1.3)	23.5 (1.4)	37.0 (1.9)
	1995	31.1 (2.0)	12.3 (1.8)	18.8 (2.5)	46.1 (2.0)	5.7 (1.0)	14.3 (1.4)	4.7 (1.1)	10.9 (1.2)	21.0 (1.9)	41.4 (3.1)
	1997	27.7 (3.1)	9.6 (1.6)	18.2 (2.4)	45.5 (2.1)	4.6 (0.9)	12.5 (2.9)	4.1 (0.8)	10.2 (1.4)	20.0 (2.0)	36.1 (2.6)
White	1991	25.0 (2.6)	...	...	41.0 (2.8)	3.8 (0.9)	...	...	...	...	...
	1993	20.6 (2.8)	6.8 (1.4)	13.8 (2.1)	40.3 (2.2)	3.2 (1.0)	10.9 (1.7)	3.0 (0.7)	6.4 (1.1)	15.0 (1.3)	32.0 (2.2)
	1995	18.9 (1.8)	6.2 (1.5)	12.7 (2.1)	36.0 (2.0)	3.4 (0.9)	9.0 (1.3)	2.8 (0.8)	7.0 (1.0)	12.9 (1.2)	34.9 (2.3)
	1997	17.0 (2.5)	4.4 (1.0)	12.6 (1.8)	33.7 (2.5)	2.5 (0.5)	7.8 (2.3)	2.4 (0.6)	6.2 (1.1)	13.3 (1.6)	32.6 (3.7)
Black	1991	32.8 (3.2)	...	...	50.6 (4.7)	6.6 (1.2)	...	...	...	...	...
	1993	28.5 (2.3)	12.3 (1.5)	16.1 (2.3)	49.5 (3.5)	6.4 (1.8)	15.0 (1.6)	7.1 (1.4)	11.2 (1.8)	22.0 (2.7)	35.5 (2.0)
	1995	21.8 (4.0)	10.6 (1.8)	11.3 (2.9)	41.6 (3.9)	4.4 (1.4)	10.3 (2.1)	7.7 (1.8)	11.0 (3.3)	20.3 (2.2)	33.6 (4.2)
	1997	21.7 (3.9)	9.2 (1.9)	12.7 (2.6)	43.0 (3.8)	5.7 (1.7)	9.2 (1.9)	6.8 (1.5)	9.8 (1.8)	20.7 (2.4)	34.0 (3.0)
Hispanic	1991	25.8 (4.4)	...	...	41.4 (4.2)	4.3 (1.6)	...	...	...	...	...
	1993	24.4 (2.6)	10.0 (1.8)	14.5 (2.1)	43.2 (3.0)	5.1 (1.2)	13.3 (2.2)	10.1 (1.7)	8.6 (1.5)	17.9 (3.1)	32.2 (4.1)
	1995	24.7 (4.1)	10.5 (2.7)	14.1 (2.7)	47.9 (5.0)	6.4 (1.7)	14.1 (3.3)	8.4 (2.7)	12.4 (3.2)	21.1 (3.3)	34.0 (4.3)
	1997	23.3 (2.8)	10.1 (2.3)	13.2 (1.8)	40.7 (3.3)	4.3 (1.0)	10.4 (1.9)	7.2 (1.7)	9.0 (1.2)	19.0 (2.9)	32.1 (3.2)
Other	1991	23.1 (8.0)	...	...	42.6 (5.3)	5.3 (2.4)	...	...	...	...	...
	1993	21.6 (4.7)	8.4 (2.2)	13.1 (4.6)	39.8 (3.8)	5.6 (1.8)	12.7 (4.1)	5.3 (1.1)	8.0 (2.3)	15.8 (3.7)	34.6 (3.8)
	1995	20.0 (5.5)	10.1 (2.9)	10.3 (3.5)	42.6 (7.9)	6.9 (2.2)	9.6 (3.6)	7.3 (3.0)	10.4 (5.2)	20.8 (8.1)	37.2 (4.2)
	1997	17.0 (3.8)	6.4 (2.8)	10.8 (2.8)	40.5 (6.0)	5.3 (2.5)	9.4 (3.1)	6.4 (2.5)	8.8 (2.2)	13.4 (3.2)	33.7 (3.8)

*All data are presented as percentages (\pm 95% confidence intervals) and are from the Youth Risk Behavior Surveys, 1991, 1993, 1995, and 1997. Ellipses indicate data not available for 1991.

†On 1 or more of the 30 days preceding the survey.

‡One or more times during the 12 months preceding the survey.

to carry weapons on school property, and to engage in physical fights on school property. In each of these 3 survey years, the percentages of students carrying weapons on school property and engaging in physical fights on school property were far lower than the percentages of those engaging in these behaviors in general. This suggests that, although recent events have focused national attention on school violence, violence among adolescents is a more generalized problem. School violence may be viewed as a reflection or extension of youth violence in the larger community.¹³

National health objectives for the year 2000 recognize that violence among adolescents is not restricted to schools and therefore include reducing the incidence of weapon carrying and fighting in general. The Public Health Service goal of reducing the incidence of weapon carrying among adolescents by 20% from the 1991 baseline has been met, and progress is being made toward meeting the objective of reducing fighting among adolescents.¹¹ From 1991 to 1997, the incidence of weapon carrying decreased 31%, and the incidence of fighting decreased 16%. However, other violence-related national health objectives for the year 2000 have not been met, and rates of youth violence remain alarmingly high.

Even among the behaviors showing decreasing trends, the reduction in rates of violent behavior are not similar for all subgroups; the decrease in physical fighting between 1991 and 1997 was the result of a decrease in fighting among black and white students but not among Hispanic students or those of other racial or ethnic groups, and the decrease in physical fighting between 1991 and 1997 was greater for female students than for male students. These findings indicate the need to continue examining trends in violent behavior among various demographic subgroups, so that variations in trends can be identified and subgroups for which rates are not decreasing are not overlooked. Future research should focus on ways to reach subgroups that are not showing decreasing rates of violent be-

havior as well as those, such as male students, black and Hispanic students, and younger students, in which prevalence is consistently high.

These trends in violent behavior are consistent with trends in homicide, non-fatal victimization, and school crime rates. For example, data from the National Crime Victimization Survey for 1996 indicate that the rates of violent victimization among adolescents are at their lowest levels since the survey instrument was revised in 1992.^{14,15} Similarly, the homicide rate among young people aged 14 to 17 years has decreased steadily since 1993, and the rate in 1997 was at the lowest level since 1988.¹⁶ These results also are consistent with data from other national surveys that indicate a decrease in weapon carrying on school property and a decline in the rate of victimization at school during a similar time period.¹⁷ Despite these recent reductions, rates of youth homicide, nonfatal victimization, and perpetration of violence remain at historically high levels. In addition, this study did not find significant decreases in the percentage of students feeling too unsafe to go to school, being threatened or injured with a weapon on school property, or having property stolen or deliberately damaged at school. Furthermore, no decrease has occurred in the percentage of students carrying weapons other than guns, and in 1997, this behavior was twice as prevalent as gun carrying. Therefore, although the reductions in gun carrying and fighting are encouraging, the prevalence of youth violence and school violence is still unacceptably high. These findings indicate that schools, families, and communities need to work together to prevent violence.

This study is subject to several limitations. First, data on weapon carrying are available only for the 30 days preceding the survey. This reference period is less likely to capture sporadic weapon carrying, which might not have shown similar decreasing trends. Second, these data apply only to adolescents who attend high school and, therefore, are

not representative of all adolescents. In 1996, 5% of persons aged 14 to 17 years were not enrolled in school.¹⁸ These adolescents are more likely than their in-school peers to engage in risky behavior.¹⁹ Third, YRBS data are based on student self-reporting. While the survey questions demonstrate good test-retest reliability,²⁰ students may underreport or overreport these types of behaviors. Fourth, the analysis of violence-related behaviors on school property is based on data from only 3 years, ending before the recent multiple-victim, school-associated violent deaths. It is unclear whether students' perceptions of vulnerability will increase as a result of these incidents and whether this will be reflected in increases in the proportion of students carrying weapons and feeling unsafe at school.

Understanding the factors that account for recent reductions in youth violence is important in maintaining and enhancing these reductions. This study was not designed, however, to explain the underlying factors that contribute to violent behavior among youth. Researchers are exploring potential explanations for the decrease in violence-related behavior, such as improvements in economic conditions, changes in the crack cocaine market, changes in legislation and law enforcement practices, changes in school policies and school environments, and improvements in the quantity or quality of youth violence prevention programs.²¹⁻²³ Future research should continue to explore why behaviors related to interpersonal violence are decreasing and what types of interventions are most effective at enhancing and sustaining these reductions.

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War is an invention of the human mind. The human mind can invent peace.

—Norman Cousins (1912-1990)