

# A School-Based Program to Prevent Adolescent Dating Violence

## A Cluster Randomized Trial

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**Objective:** To determine whether an interactive curriculum that integrates dating violence prevention with lessons on healthy relationships, sexual health, and substance use reduces physical dating violence (PDV).

**Design:** Cluster randomized trial with 2.5-year follow-up; prespecified subgroup analyses by sex.

**Setting:** Grade 9 health classes.

**Participants:** A total of 1722 students aged 14-15 from 20 public schools (52.8% girls).

**Intervention:** A 21-lesson curriculum delivered during 28 hours by teachers with additional training in the dynamics of dating violence and healthy relationships. Dating violence prevention was integrated with core lessons about healthy relationships, sexual health, and substance use prevention using interactive exercises. Relationship skills to promote safer decision making with peers and dating partners were emphasized. Control schools targeted similar objectives without training or materials.

**Main Outcome Measures:** The primary outcome at 2.5 years was self-reported PDV during the previous year. Secondary outcomes were physical peer violence, sub-

stance use, and condom use. Analysis was by intention-to-treat.

**Results:** The PDV was greater in control vs intervention students (9.8% vs 7.4%; adjusted odds ratio, 2.42; 95% confidence interval, 1.00-6.02;  $P=.05$ ). A significant group  $\times$  sex interaction effect indicated that the intervention effect was greater in boys (PDV: 7.1% in controls vs 2.7% in intervention students) than in girls (12.1% vs 11.9%). Main effects for secondary outcomes were not statistically significant; however, sex  $\times$  group analyses showed a significant difference in condom use in sexually active boys who received the intervention (114 of 168; 67.9%) vs controls (65 of 111 [58.6%]) ( $P<.01$ ). The cost of training and materials averaged CA\$16 per student.

**Conclusion:** The teaching of youths about healthy relationships as part of their required health curriculum reduced PDV and increased condom use 2.5 years later at a low per-student cost.

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**A**DOLESCENT DATING VIOLENCE is one of the strongest precursors to intimate partner violence in adulthood<sup>1</sup> and is associated with injuries and health-compromising behaviors, such as unsafe sex, substance use, and suicide attempts.<sup>2-4</sup> For adolescents, physical dating violence (PDV), defined as acts ranging from threats of harm to punching or hitting with an object,<sup>5,6</sup> emerges during critical and stressful transition periods that involve new pressures and responsibilities for handling conflict and emotions in unfamiliar contexts.<sup>7-9</sup> Nationally representative surveillance studies of PDV victimization since the mid-1990s indicate that approximately 1 in 10<sup>6</sup> to 1 in 5<sup>4</sup> high school-aged teens are hit, slapped, or beaten by a dating partner each year.

Slightly lower prevalence rates are found for perpetration rates based on local study samples only.<sup>10</sup> Unlike adult intimate partner violence, most studies find rates of perpetration to be similar for boys and girls, or even greater for girls, for reasons not fully understood.<sup>11,12</sup> Given these findings and the importance of reducing the cycle of violence, efforts to educate high school students about healthy dating relationship behaviors and ways to avoid or reduce PDV and associated risks are strongly recommended.<sup>13,14</sup>

*For editorial comment  
see page 767*

Adolescent dating violence is linked to numerous individual, peer, family, and sociocultural risk factors, which makes iden-

tification and treatment on the basis of individual risk factors nonfeasible and prevention more fitting.<sup>15</sup> Theoretical bases to violence prevention stem from social cognitive tenets of the ways that youths learn to formulate and choose their behavioral strategies, which translate into knowledge and practice in decision making, non-aggressive conflict resolution skills, and self-efficacy.<sup>16</sup> Universal preventive interventions for the related problems of substance use and unsafe sex focus on the promotion of well-being and enhancement of resilience through awareness, positive alternatives, skills, and help-seeking strategies.<sup>17-20</sup> Similar strategies may be well suited to reducing PDV because violence prevention benefits most youths and may be enhanced if delivered along with messages that pertain to related risk behaviors that occur in a relational context, such as sexual activity and substance use.<sup>21-23</sup> Because boys and girls both report perpetration of dating violence during this period of development, it is also appropriate to target universal intervention efforts to both sexes, taking into account developmental and gendered aspects of violence in adolescent relationships faced by youths of today.<sup>24,25</sup>

The Safe Dates Project of Foshee et al<sup>26</sup> involves 10 classroom sessions designed to shift adolescent gender-based expectations and behavior and is one of very few school-based programs that have shown reductions in PDV longitudinally. We sought to expand these efforts by integrating 21 lessons into the grade 9 curriculum to be taught by classroom teachers that meet the curriculum requirements, provide academic credit for participants, and provide a more sustainable and less expensive strategy compared with programs delivered by nonteachers. Dating violence was addressed in the context of overlapping areas of risk behaviors (sexual activity, substance use, and peer violence) by the emphasis on core relationship issues and pressures in early adolescence and by teaching the necessary skills to promote safer decision making with peers and dating partners. The program was timed to capitalize on the natural interest and motivation of youths to learn about lifestyle issues, a factor deemed essential in health promotion efforts with youths.<sup>9</sup> A cluster design was used because randomization by school was most feasible and it reduced contamination between the intervention and control groups.

## METHODS

### PARTICIPANTS

This study was conducted in schools in southwestern Ontario between September 20, 2004, and May 31, 2007. Schools were recruited in June 2003 from a large public board that serves more than 80 000 students and that includes 30 high schools located in rural and urban areas. Eligible schools had general student populations and the agreement of principals to conduct randomization, teacher training, delivery of the assigned intervention, evaluation, and restriction of similar programs during delivery. Schools that participated in the development phase of the program (2001-2003) were ineligible. All students enrolled in the required Grade 9 Health and Physical Education curriculum were eligible to participate. This study was con-

ducted in compliance with the research ethics boards of the Centre for Addiction and Mental Health and The University of Western Ontario.

### EXPERIMENTAL DESIGN AND INTERVENTIONS

Eligible schools were enrolled by a senior educator from the school board and were stratified by size ( $\geq 500$  vs  $< 500$  students) and location (rural vs urban). Schools were randomly assigned by strata to intervention or control on the basis of a coin toss in the presence of the educator and co-investigators. Random assignment was performed 1 year before the study cohort to provide experience with the intervention to the teacher. Students were masked to condition in that they were aware only that they were receiving Health class.

The experimental intervention, known as the "Fourth R: Skills for Youth Relationships," was integrated into existing Health and Physical Education curriculum requirements and was taught in sex-segregated classes. It met provincially mandated education requirements in Ontario and, therefore, was taught as part of the regular curriculum without the requirement of additional class time, scheduling, or human resources aid. Individual- and school-level components were designed to integrate evidence-based strategies for addressing adolescent dating violence and related risk behaviors, such as negotiation, delay, and refusal skills, and exercises to define and rehearse responsibilities associated with healthy relationships. Examples of peer and dating conflicts faced by teens were provided, as were role-play instructions designed to increase interpersonal and problem-solving skills.

The individual student-level intervention was a 21-lesson manualized curriculum delivered by teachers with specialization in health and physical education (protocol available from the authors). The curriculum comprised 3 units containing seven 75-minute classes each: (1) personal safety and injury prevention, (2) healthy growth and sexuality, and (3) substance use and abuse (**Box**). Rather than addressing these topics independently, an underlying theme of healthy, nonviolent relationship skills was woven throughout the units to increase generalization across risk situations and behaviors. Detailed lesson plans, video resources, role-play exercises, rubrics, and handouts were provided for all lessons. There was extensive skill development using graduated practice with peers aimed at the development of positive strategies for dealing with pressures and the resolution of conflict without abuse or violence. It included examples of conflicts faced by teens, with peer and dating examples used concurrently to increase relevance for youth who were not dating. The intervention takes a gender-strategic approach to dating violence by emphasizing gender-specific patterns and factors and matching activities accordingly.<sup>27</sup> Slightly different exercises and activities were used for boys and girls to maximize relevance and minimize defensiveness on the part of participants.

School-level components included additional teacher training on dating violence and healthy relationships, information for parents, and student-led "safe school committees." Teachers received a 6-hour training workshop taught by an educator and a psychologist to review the materials and participate in skill-building exercises for engaging youths. Parents received information during grade 9 orientation and from 4 newsletters that describe the topics being taught. Each school received a "Youth Safe Schools" manual that describes ways to involve students in school and community violence prevention activities, such as guest speakers, field trips, community resources, and volunteering.

Standardization and adherence focused on teacher delivery. Teachers received detailed lesson plans, viewed training videos

**Unit 1: Personal Safety and Injury Prevention**

1. Focus on healthy relationships (myths/facts about teen relationships, relationship rights and responsibilities)
2. Barriers to healthy relationships (active listening skills, types of violence and abuse)
3. Contributors to violence (group effects on violence, individual differences)
4. Conflict and conflict resolution (communication styles: passive, assertive, and aggressive; conflict scenarios)
5. Media violence (student presentations of examples of violence in the media)
6. Conflict resolution skills (rights and responsibilities when ending a relationship)
7. Action in the school and community

**Unit 2: Healthy Growth and Sexuality**

1. Focus on healthy sexuality (review of sexuality, myths clarified)
2. Sexuality in the media (media and peer pressure to have a partner or to have sex)
3. Responsible sexuality (communication with your partner, healthy relationships)
4. Preventing pregnancies and sexually transmitted infections
5. Assertiveness skills to deal with pressure in relationships (negotiation, delay, and refusal skills)
6. Sexuality: responsibilities and consequences (sexual abuse, dating violence, decision making)
7. Sexual decision making and community resources (scenarios and discussion, research community resources)

**Unit 3: Substance Use and Abuse**

1. Myths/facts and definitions (interactive game to get students to examine their opinions and values)
2. Effects of substance use and abuse (discussion of physical and nonphysical effects)
3. Making informed choices about smoking (discussion: why teens may smoke, health and financial costs)
4. Factors influencing decisions about drug use (discussion of media, culture, and peer pressure)
5. Building skills to avoid pressure to use substances (negotiation, delay, and refusal skills)
6. Practicing skills and community resources (role-play exercises: using skills and decision-making model)
7. Coping and making the connection between drug use, sex, and violence

<sup>a</sup>Each of the 3 units consists of 7 classroom sessions of 75 minutes each. Examples of content are in parentheses.

and role-play demonstrations, and received individual feedback from an experienced educator. They implemented the curriculum for at least 1 semester before the trial to increase familiarity and standardization. It was not feasible to observe classroom sessions in this effectiveness trial, which sought to deliver the program by teachers under realistic conditions (89% of the intervention lessons were completed according to teacher checklists [89%, 88%, and 90% for units 1, 2, and 3, respectively]).

The curriculum guidelines and requirements for grade 9 Health and Physical Education in Ontario formed a standard control group (<http://www.edu.gov.on.ca/eng/curriculum/secondary/health.html>). Teachers in control schools were expected to teach 21 required lessons that cover the same 3 units as those covered in intervention schools but without training or background on these topics or access to a structured curriculum that emphasizes relationship skills for preventing violence and risk behaviors. These classes were also segregated by sex.

## OBJECTIVES AND OUTCOME MEASURES

The primary objective of this trial was to determine whether an interactive curriculum that integrates dating violence prevention with lessons on healthy relationships, sexual health, and substance use reduces PDV more than 2 years later relative to standard content delivery. Secondary objectives involved reductions in related risk behaviors of peer violence, substance use, and unsafe sex (ie, condom use).

The primary outcome was perpetration of PDV 2.5 years after baseline. The PDV was assessed using 8 items from the Conflict in Adolescent Dating Relationships Inventory, a self-report measure with established convergent/divergent validity.<sup>28</sup> Students marked actions (yes or no) that they had used in the

past year toward a boyfriend or girlfriend “while you were having an argument, angry at one another, or having a fight.” The PDV was indicated if the respondent endorsed 1 or more items involving physical abuse or threats to harm (eg, “I pushed, shoved, or shook him/her” and “I threatened to hurt him/her”). Respondents who had no dating partners in the past year or did not endorse any item received a score of 0.

Physical peer violence was based on self-report of any of 3 items during the past 3 months (ie, “have you fought with someone to the point where they needed care for their injuries,” “have you been in a fight where you hit someone with something other than your hands,” and “have you hit, slapped, or physically hurt another teen with the intention of scaring or humiliating him or her”) derived from the National Longitudinal Survey of Children and Youth delinquent behavior inventory.<sup>29</sup> Experience with alcohol and illicit drugs was assessed using the National Longitudinal Survey of Children and Youth and was converted to problem substance use based on any 1 of 4 criteria: drinking alcohol 1 to 2 days a week or more, having 5 or more alcoholic drinks at 1 time in the past 30 days, using marijuana 1 to 2 days a week or more, or having tried any other illicit drug in the past 3 months. Condom use was defined as always wearing a condom during sexual intercourse in sexually active participants only.

## PROCEDURES

Research assistants explained the research component to students and distributed information sheets, consent/assent forms, and a brief demographic form for parents to complete. Students who consented to be included in the cohort completed a confidential survey in school at baseline (September-October

2004) and at follow-up 2.5 years later (April-May 2007). At each assessment, students accessed an online survey by entering a unique identifier; they were supervised by teachers and research assistants. Students were masked to the objectives of the study, and they completed additional health-related survey questions (eg, smoking, diet and exercise, and peer and family relationships) to mask the primary outcome. Students who transferred schools were included for analysis purposes in the intervention group to which they had been randomized. Students were located at follow-up in their original schools; if they had moved or left the province, attempts were made to locate them through school records or information provided at baseline (eg, e-mail, family physician, or a relative).

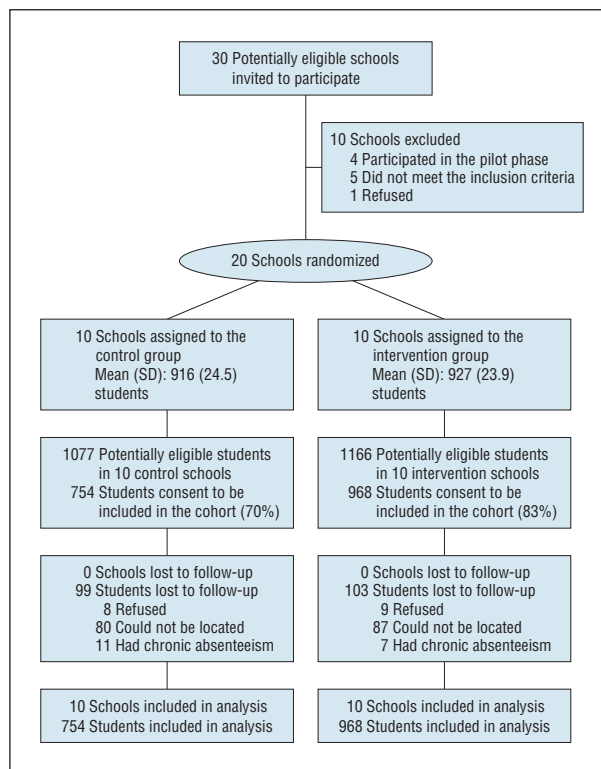
To estimate the cost of the intervention, we calculated the cost of teacher release time for 1 day of training and the cost of the curriculum and video resources. Research incentives included free curriculum materials for schools in both groups (provided year 3 for control schools), CA\$500 to each school for youth resources, and CA\$1000 to teachers in intervention schools to cover additional training requirements.

## STATISTICAL METHODS

Categorical data for primary and secondary outcomes were analyzed using 2-level hierarchical models to account for clustering of students in schools. Intervention effects at follow-up were estimated using random-effects Bernoulli models, with school as a random effect. Intention-to-treat analyses for PDV were performed with all randomized participants, with missing values on the outcome measure assigned the value 0. Although loss to follow-up was expected to be random with respect to intervention group, sensitivity analyses were conducted to determine the robustness of the findings relative to missing data. Separate analyses were also conducted using the subsample of students who had been dating in the year before follow-up. Stratification variables, baseline score, and sex were included in the adjusted models. Students who had missing data on baseline scores were omitted from the fitted models. Proportions were reported along with odds ratios (ORs) and 95% confidence intervals (CIs) to estimate effect size. In all analyses, the reported OR estimates the relative odds of a control student using physical violence compared with an intervention student (ie, the OR should not be interpreted as a ratio of adjusted PDV rates). Due to the gendered nature of dating violence and condom use, prespecified interaction tests of sex  $\times$  intervention were conducted on these outcomes to determine whether intervention had a differential effect for boys and girls. The statistical analysis was performed using Hierarchical Linear Modeling statistical software (HLM version 6.0; Scientific Software International, Lincolnwood, Illinois).<sup>30</sup>

## RESULTS

The trial flow diagram of clusters and students is shown in the **Figure**. Of the 2243 potentially eligible students in 20 participating schools, 1722 (76.8%) provided consent. Intervention schools had higher consent rates, a result that possibly reflects teacher effort to obtain consent as a result of their greater familiarity with the intervention. At follow-up, 88% of the sample provided data; most students lost to follow-up could not be located from school records or baseline contact information. Pretest comparisons of individuals lost to follow-up ( $n=202$ ) with those who completed the study revealed that they were more likely to be male (60%) and to have reported problem alcohol use in



**Figure.** Flow diagram of schools and students randomized to the control and intervention groups.

grade 9 (25% vs 16%, respectively); no pretest differences were found in dating violence perpetration, and rates of loss to follow-up were similar in the intervention and control groups.

Baseline characteristics of schools and students by group are given in **Table 1**. Schools had large student bodies, were split equally between urban and rural locations, and had comparably experienced teachers. The parents of most participants were married, were employed, and had some postsecondary education. Both groups were similar in terms of student risk behaviors, with physical peer violence being the most commonly reported and PDV the least reported at baseline.

## EFFECT OF PREVENTIVE INTERVENTION ON PDV

By the end of grade 11, PDV had increased from 1.1% (18 of 1722) when students were 13 to 14 years old to 8.5% (146 of 1722) when students were 16 to 17 years old (**Table 2**). The PDV was significantly higher for students in control schools at follow-up than for those in intervention schools (9.8% vs 7.4%, respectively; adjusted OR, 2.42; 95% CI, 1.00-6.02;  $P=.05$ ). When the analysis was restricted to the subset of students dating in the year before follow-up ( $n=1041$ ), the difference between the control and intervention groups was not significant (adjusted OR, 2.13; 95% CI, 0.81-5.66;  $P=.12$ ) (**Table 2**).

Further analyses of PDV showed a significant effect for the sex  $\times$  group interaction ( $P=.002$ ), which indicates that the effect of intervention differed significantly between boys and girls (**Table 3**). Boys in intervention



**Table 1. Baseline Characteristics of Participating Schools and Students According to Experimental Group<sup>a</sup>**

Characteristic	Control Group	Intervention Group
<b>Schools</b>		
Total No. (N=20)	10	10
Size of student body, mean (SD), No.	916 (24.5)	927 (23.9)
Schools with ≥500 students, No./total No. (%)	9/10 (90.0)	8/10 (80.0)
Schools with urban (vs rural) location, No./total No. (%)	5/10 (50.0)	5/10 (50.0)
Grade 9 health teachers participating, No./total No. (%)	36/38 (94.7)	40/40 (100.0)
Years of teaching experience, No./total No. (%) of teachers		
≤5 y	11/36 (30.6)	14/40 (35.0)
6-10 y	10/36 (27.8)	10/40 (25.0)
>10 y	15/36 (41.7)	16/40 (40.0)
<b>Students, No. (%)</b>		
Total (N=1722)	754 (43.8)	968 (56.2)
Female	415 (55.0)	494 (51.0)
Parents married/common law	626 (83.0)	794 (82.0)
Parent education, No. (%)		
High school degree or less	211 (28.0)	271 (28.0)
Some college or university training	106 (14.1)	165 (17.0)
College diploma or university degree	437 (58.0)	532 (55.0)
1 or Both parents employed	641 (85.0)	832 (86.0)
Risk behaviors, No. (%)		
Physical dating violence in past year	8 (1.1)	10 (1.0)
Physical peer violence in previous 3 mo	173 (22.9)	261 (27.0)
Alcohol problem use <sup>b</sup>	136 (18.0)	165 (17.0)
Drug problem use <sup>c</sup>	75 (9.9)	126 (13.0)
Sexual intercourse, lifetime	53 (7.0)	87 (9.0)
Condom use if sexually active in past 3 mo	37/53 (69.8)	64/87 (73.6)

<sup>a</sup>Some percentages do not total 100 because of rounding.

<sup>b</sup>Using alcohol 1 to 2 d/wk or more or having consumed 5 or more drinks at 1 time in the past 30 days.

<sup>c</sup>Using marijuana 1 to 2 d/wk or more or having tried any other illicit drug in the past 3 months.

**Table 2. Physical Dating Violence Reported in the Past Year at 2.5-Year Follow-up According to Experimental Group**

	Students With PDV, No./Total No. (%)		ICC	OR (95% CI)	t Test	P Value
	Control Group	Intervention Group				
All students	74/754 (9.8)	72/968 (7.4)	0.02			
Unadjusted OR <sup>a</sup>				1.42 (0.87-2.33)	1.49	.15
Adjusted OR <sup>b</sup>				2.42 (1.00-6.02)	2.06	.05
Students who dated in the past 12 mo	71/369 (19.2)	72/480 (15.0)	0.02			
Unadjusted OR <sup>a</sup>				1.37 (0.89-2.13)	1.53	.14
Adjusted OR <sup>b</sup>				2.13 (0.81-5.66)	1.65	.12

Abbreviations: CI, confidence interval; ICC, intraclass correlation coefficient; OR, odds ratio; PDV, physical dating violence.

<sup>a</sup>Odds ratios of the intervention effect from the multilevel model.

<sup>b</sup>Odds ratios were adjusted for baseline behavior, stratifying variables, and sex (n=1722 in the full model; n=1041 in the model restricted to the dating sample).

schools were less likely than boys in control schools to engage in dating violence (2.7% vs 7.1%; adjusted OR, 2.77; 95% CI, 1.39-5.29). However, girls had similar rates of PDV in both groups (11.9% vs 12.0% for the intervention and control, respectively; adjusted OR, 1.02; 95% CI, 0.61-1.72). Similar results were obtained when the analysis was restricted to the dating subsample (Table 3).

#### EFFECT ON SECONDARY OUTCOMES

Differences between the control and intervention groups were not significant for physical peer violence (17.1% vs 18.4%; adjusted OR, 1.09; 95% CI, 0.83-1.59; *P* = .58), substance use (47.8% vs 52.4%; adjusted OR, 1.11; 95% CI, 0.84-1.44; *P* = .43), or condom use (54.1% vs 55.0%; adjusted OR, 1.04; 95% CI, 0.51-2.12; *P* = .91) (**Table 4**).

However, the effect of intervention on condom use differed significantly between boys and girls (*P* < .01). In particular, condom use among sexually active boys was greater in intervention schools (114 of 168 [67.9%]) than in control schools (65 of 111 [58.6%]; OR, 1.70; 95% CI, 1.10-2.66), and condom use by partners was less for girls in the intervention group (86 of 196 [43.9%]) than in the control group (73 of 144 [50.7%]; OR, 0.76; 95% CI, 0.50-1.16). Because these analyses were based on only 619 of 1722 teens (35.9%), they must be considered exploratory.

Costs for program delivery included teacher release time for training (CA\$200 × 40 teachers = CA\$8000) and reusable curriculum materials (mean, CA\$700 per school or CA\$175 per teacher). These 1-time costs translate to CA\$16 per student in the initial year. There were no adverse events reported.

**Table 3. Prespecified Analyses of Physical Dating Violence at Follow-up by Sex and Experimental Group**

	Boys, No./Total No. (%)			Girls, No./Total No. (%)			<i>t</i> Test	<i>P</i> Value <sup>b</sup>
	Control Group	Intervention Group	Adjusted OR (95% CI) <sup>a</sup>	Control Group	Intervention Group	Adjusted OR (95% CI) <sup>a</sup>		
All students (n=1722)	24/339 (7.1)	13/474 (2.7)	2.77 (1.39-5.29)	50/415 (12.0)	59/494 (11.9)	1.02 (0.61-1.72)	3.18	.002
Students who had dated in the past 12 mo (n=1041)	21/142 (14.8)	13/207 (6.3)	2.63 (1.22-5.56)	50/227 (22.0)	59/273 (21.6)	1.03 (0.62-1.75)	2.41	.02

Abbreviations: CI, confidence interval; OR, odds ratio.

<sup>a</sup>Odds ratios of the intervention effect from the multilevel model adjusted for sex, baseline behavior, and stratifying variables.

<sup>b</sup>Interaction between sex and group.

**Table 4. Secondary Outcomes at Follow-up by Experimental Group**

	Students, No./Total No. (%)		ICC	Adjusted OR (95% CI) <sup>a</sup>	<i>t</i> Test	<i>P</i> Value
	Control Group	Intervention Group				
Physical peer violence	126/739 (17.1)	174/944 (18.4)	0.01	1.09 (0.83-1.59)	0.63	.58
Problem substance use	354/740 (47.8)	498/950 (52.4)	0.03	1.11 (0.84-1.44)	0.80	.43
Condom use if sexually active <sup>b</sup>	138/255 (54.1)	200/364 (55.0)	0.01	1.04 (0.51-2.12)	0.12	.91

Abbreviations: CI, confidence interval; ICC, intraclass correlation coefficient; OR, odds ratio.

<sup>a</sup>Odds ratios of the intervention effect from the multilevel model adjusted for sex, baseline behavior, and stratifying variables.

<sup>b</sup>Analyses are based on 619 students who were sexually active (619 of 1722 students [35.9%]).

## COMMENT

The reduction of violence in relationships is a national and international priority.<sup>13,14,31</sup> Universal prevention of violence holds considerable promise in reducing high-risk and health-compromising behaviors in youths, and this randomized controlled trial supports the effectiveness of school-based efforts toward reduction of dating violence. We found support for the hypothesis that teaching youth about healthy relationships and ways to avoid PDV in Grade 9 Health classes would reduce PDV 2.5 years later, but this effect may be limited to boys. Because the program integrated a focus on healthy relationships into the related topics of sexual health, substance use, and peer violence, we examined these outcomes in secondary analyses. Although overall rates of substance use and peer violence were unaffected by the intervention, exploratory analyses indicated that boys in the intervention schools reported safer sexual practices (indicated by always using condoms). This finding is potentially important given recent evidence that non-use of condoms is higher in adolescent male perpetrators of dating violence, particularly in the context of steady relationships.<sup>32</sup>

These results should first be considered in light of the limitations of the study. One challenge is the use of self-reported acts of dating violence perpetration, which cannot capture the intensity, frequency, or context of such behavior. Like other researchers in this area, we measured PDV by having respondents indicate whether they have performed a specific act, such as hitting, pushing, or threatening a partner with harm. Such reports do not encompass motivations or circumstances surrounding violent acts or distinguish between acts of offense or defense, which may account for the higher rates of PDV reported by girls

than by boys.<sup>10</sup> The scope of dating violence was also limited to physical acts and did not include sexual violence or coercion. Furthermore, although modification of self-report is a possibility, it is unlikely to be a confounding factor of the intervention. Boys in the control schools received similar information about dating violence (without skills training), which would presumably affect their awareness of social norms as well. The message about the unacceptability of violence was similar between groups, whereas the interactive, skills-based delivery and the focus on positive relationship skills differed.

The extent to which these findings can be generalized to all youths is limited by 3 sample characteristics. First, these findings apply only to high school students who were attending school at follow-up and may not be representative of all persons in this age group. Second, youths did not specify their sexual orientation, so it is not possible to determine whether the findings would be the same for gay and lesbian relationships. Finally, adolescents were predominantly from white, 2-parent families. The extent to which the patterns generalize to youths of different ethnicities or family characteristics remains unknown.

The issue of the higher reports of PDV among girls and their limited response to intervention warrants careful consideration. Rates of aggressive behavior have increased disproportionately for girls compared with boys during the past 2 decades, yet relatively little is known about risk factors for girls.<sup>33</sup> Both sexes report more acceptance of the use of physical violence by girls than by boys, and many perceive a double standard with respect to the responses of adults to physical abuse by boys vs girls.<sup>34,35</sup> In qualitative interviews, girls describe the circumstances surrounding their use of dating violence as a response to male partner violence approximately half the time (ie, self-defense or retaliation), with the remain-

ing incidents described as efforts to engage, tease, or express anger toward their male partner.<sup>36,37</sup> Despite similar perpetration rates, female victims of dating violence are more likely than male victims to experience fear, anxiety, and hurt and to express a desire to leave the situation for self-protection.<sup>38,39</sup> Thus, the gender difference in findings may reflect the extent to which girls experience control over their relationships. That is, if girls are more likely to use violence in response to violence and are less able to compel condom use compared with boys, then their reported behavior may, in fact, be in response to the negative behavior of dating partners.

There is a parallel sex debate in the adult domestic violence literature, where rates of victimization for women and men look very similar (8% of women and 7% of men reported being victims of an act of spousal violence in the previous 5 years).<sup>40</sup> However, female victims are more likely than male victims to experience injuries or death, to require medical attention, to lose time from work, to live in fear, and to worry about the safety of their children.<sup>31,41,42</sup> These findings and concerns highlight the importance of gender considerations in program development and evaluation.<sup>27</sup> Boys, for example, are seldom willing to engage in a discussion of relationship violence and personal responsibility that does not acknowledge, at some level, the reality of the aggression of girls; similarly, girls may not recognize that relational and physical forms of violence are inappropriate, regardless of the apparent lack of injury or the indifference of their peer or partner.<sup>11</sup>

The understanding of the context in which these behaviors occur is essential to developing appropriate programs. Although the current approach had a gender-strategic design, more contextual information about the nature of violence experienced by each sex would help the development of more targeted interventions. For example, if much of the violence and unsafe sex experienced by girls is found to be in the context of relationships with much older partners, it might be important to include information and considerations about dating older partners in the activities for girls. In such relationships, the focus might need to be on ending the relationship rather than expecting the girls to promote healthier relationship skills in a relationship that probably has a significant imbalance of power and control.

The present program was timed to coincide with the transition to high school, a time of considerable adjustment and pressure for most youths.<sup>43</sup> Interventions timed too early may lose their positive effects before teens start to experiment, and, conversely, if too late, the problem(s) may already have begun and thus be difficult to modify.<sup>44,45</sup> The present intervention seems to have been well-timed to the onset of adolescent dating violence. Nationally representative data show that PDV (based on victimization reports) increases from 7.4% in grade 9 to 11.1% in grade 12.<sup>1</sup> Developmental trajectories for dating violence begin at age 13 years and peak by age 16 to 17 years for girls and boys,<sup>36,46</sup> which makes grades 8 and 9 particularly well-suited to the introduction of relationship-based prevention initiatives. However, a steep rise in other risk behaviors, such as binge drinking, marijuana use, and sexual activity,<sup>2</sup> also occurs between grades 8 and 11, and these behaviors were largely unaffected by

the intervention. Baseline data collected at the beginning of grade 9 indicate that almost a quarter of youths were already using peer violence and close to 1 in 5 were at problem levels of substance use experimentation. Earlier and more prolonged interventions are necessary to reduce these related problem behaviors.<sup>47</sup>

The present evaluation of the Fourth R: Skills for Youth Relationships suggests that methods developed for single-focused interventions (eg, skills-based, interactive delivery) can be combined effectively from a core relationship perspective. As in related trials, teachers with supplementary training can implement evidence-based prevention programs with sufficient fidelity and effectiveness to garner significant improvements over status quo classroom methods.<sup>48</sup> The integration of positive messages about healthy relationships, in conjunction with developmentally appropriate knowledge about experimental risk behaviors, moves the field closer to a universal model of health promotion and active youth participation. The focus on embedding the program into curriculum that meets the guidelines for mandatory classes in high schools provides a vehicle for widespread dissemination and sustainability far beyond that which can be achieved by add-on programs. Furthermore, the low cost associated with the intervention removes a potential barrier to sustainability that is found with more expensive interventions. Similar to efforts made with academic subjects, the best policy may involve earlier introduction of these important topics at a lower grade level, with increasing knowledge and practice introduced in core courses throughout high school.

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