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Multi–College Bystander Intervention Evaluationon for Violence Prevention

Ann L. Coker, PhD[1], **Heather M. Bush, PhD**[2], **Bonnie S. Fisher, PhD**[3], **Suzanne C. Swan, PhD**[4], **Corrine M. Williams, ScD**[5], **Emily R. Clear, MPH**[1], and **Sarah DeGue, PhD**[6]

[1]Department of Obstetrics and Gynecology, College of Medicine, University of Kentucky, Lexington, Kentucky

[2]Department of Biostatistics, College of Public Health, University of Kentucky, Lexington, Kentucky

[3]School of Criminal Justice, College of Education, Criminal Justice and Human Services, University of Cincinnati, Cincinnati, Ohio

[4]Department of Psychology and Women's and Gender Studies Program, College of Arts and Sciences, University of South Carolina, Columbia, South Carolina

[5]Department of Health Behavior, College of Public Health, University of Kentucky, Lexington, Kentucky

[6]Research and Evaluation Branch, Division of Violence Prevention, CDC, Atlanta, Georgia

Abstract

Introduction—The 2013 Campus Sexual Violence Elimination Act requires U.S. colleges to provide bystander-based training to reduce sexual violence, but little is known about the efficacy of such programs for preventing violent behavior. This study provides the first multiyear evaluation of a bystander intervention's campus-level impact on reducing interpersonal violence victimization and perpetration behavior on college campuses.

Methods—First-year students attending three similarly sized public university campuses were randomly selected and invited to complete online surveys in the spring terms of 2010–2013. On one campus, the Green Dot bystander intervention had been implemented since 2008 (Intervention, *n*=2,979) and two Comparison campuses had no bystander programming at baseline (Comparison, *n*=4,132). Data analyses conducted in 2014–2015 compared violence rates by condition over the four survey periods. Multivariable logistic regression was used to estimate

Address correspondence to: Ann L. Coker, PhD, Department of Obstetrics and Gynecology, C361, Pavilion H, A. B. Chandler Medical Center, University of Kentucky, Lexington KY 40536-0293. ann.coker@uky.edu.

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violence risk on Intervention relative to Comparison campuses adjusting for demographic factors and time (2010–2013).

Results—Interpersonal violence victimization rates (measured in the past academic year) were 17% lower among students attending the Intervention (46.4%) relative to Comparison (55.7%) campuses (adjusted rate ratio, 0.83; 95% CI=0.79, 0.88); a similar pattern held for interpersonal violence perpetration (25.5% in Intervention; 32.2% in Comparison; adjusted rate ratio, 0.79; 95% CI=0.71, 0.86). Violence rates were lower on Intervention versus Comparison campuses for unwanted sexual victimization, sexual harassment, stalking, and psychological dating violence victimization and perpetration ($p<0.01$).

Conclusions—Green Dot may be an efficacious intervention to reduce violence at the community-level and meet Campus Sexual Violence Elimination Act bystander training requirements.

Introduction

The 2013 Campus Sexual Violence Elimination Act[1] requires all schools receiving Title IV funding to implement prevention programming that teaches “safe and positive bystander intervention to prevent harm or intervene when there is a risk of violence.” This training is proposed to reduce rates of sexual[2,3] and dating violence.[4] Although bystander interventions have been described by the White House Task Force, formed to protect students from sexual assault,[5] as “among the most promising prevention strategies,” few published empirical studies have tested the efficacy of bystander programs on college campuses to reduce violence.[6]

The bystander approach is unique in engaging individuals as potential witnesses to violence rather than as possible victims or perpetrators. This model may decrease defensiveness and enable individuals to envision a role for themselves in ending violence.[7] Bystander training provides individuals with the skills to reduce the risk for violence by learning to:

1. recognize situations or behaviors that may become violent or that reinforce social norms supportive of violence; and
2. safely and effectively intervene to change social norms and reduce the likelihood of future violence.

At the individual level, bystander interventions may reduce violent behaviors by increasing willingness and self-efficacy to challenge violence-supportive norms and behaviors in their peer group[11] and intervene in risky situations to prevent violence.[8–10] At the community level, bystander interventions may reduce violence among those not receiving bystander training, because training is diffused through other trained students’ social networks and results in community-level changes in social norms and modeled bystander behaviors, which ultimately may reduce community violence.

A review of primary prevention strategies for sexual violence perpetration[6] identified only one rigorously designed evaluation of a college-based bystander intervention with evidence of impact on risk factors and related outcomes for sexual violence. Banyard et al.[8] found that Bringing in the Bystander increased bystander behavior among trained students. Whether

bystander training changes sexual and dating violence rates among those trained has been addressed.[12–14] Gidycz and colleagues[12] reported reduced sexually violent perpetration among trained college men at 4 months post-intervention follow-up; intervention effects were not sustained at 7 months follow-up. When comparing 2010 violence rates for one campus with the Green Dot bystander program relative to two similar campuses without a bystander program, Coker et al.[13] observed significantly lower rates of unwanted sex, sexual harassment, and stalking on the Green Dot campus. Miller and colleagues[14] reported significant reductions in dating violence perpetration at 1-year follow-up in male high schoolers receiving the Coaching Boys into Men intervention.

The current study extends prior research by examining the effects of Green Dot on rates of violence victimization and perpetration among first-year students with data collected over a 4-year period (2010–2013). This is the first evaluation of a college-based bystander program to examine sexual and other interpersonal (IP) violence outcomes at the population level over time rather than examining outcomes among intervention participants.Two hypotheses were tested:

1. Students attending the Intervention campus will report less violence victimization and perpetration than students at the Comparison campuses when pooling data across time periods.
2. Violence will be lower on the Intervention campus relative to Comparison campuses during each of the 4 years of data collection.

Methods

A comparative design was used in which violence rates (%) among students attending the Intervention campus (University of Kentucky [UK]) were compared with rates among students attending two Comparison campuses (University of Cincinnati and University of South Carolina). Similar sampling and online survey methodologies were used at all three campuses across a 4-year period (2010–2013). Comparison campuses were selected based on having:

1. no currently implemented bystander program;
2. demographic comparability to the Intervention campus; and
3. willing research collaborators.

All campuses provided similar services to victims, including campus police, student health services, and psychological support and counseling as requested. Midway through data collection (fall 2011), one comparison campus implemented a bystander program (Stand Up Carolina! www.sa.sc.edu/shs/savip/stand-up/). Like Green Dot, this bystander-based program teaches students to identify potentially risky situations.

Sampling and Data Collection

At each campus, researchers obtained a stratified random sample of first-year students aged 18–24 years using registrar data; half of the sample was female (Table 1). At the Intervention campus, 1,875 students were sampled in 2010, 3,252 in 2011, 2,000 in 2012,

and 1,997 in 2013. At Comparison campuses, a similar sampling strategy was used: 1,998, 4,670, 4,679, and 2,000, respectively. First-year students were oversampled in 2011 and 2012 with additional funding for incentives. Data were collected each spring. Students were told the study's purpose was to learn "more about how to prevent dating and sexual violence on college campuses." In April of 2010 and 2011, a letter describing the study's purpose and a $2 cash incentive was sent to all sampled students' local mailing addresses. Two days later, students were invited to complete an online survey. Students were not required to provide their e-mail addresses; instead, their university-assigned e-mail address was used to provide a representative sample. No identifying information, including the e-mail address, was retained in the analytic database. Because placing cash in >4,000 letters became onerous, the authors opted to provide a $5 Amazon e-gift card by e-mail after students completed the survey in 2012 and 2013. Reminder e-mails were sent every 3 days for up to 3 weeks. Survey completion averaged 20–25 minutes. The IRB at each University approved the protocol. The NIH granted a certificate of confidentiality because physical violence and forced sex perpetration were queried. Local sexual and dating violence resources were provided to all participants.

The Green Dot Intervention

Green Dot (www.livethegreendot.com) seeks to empower potential bystanders to actively engage their peers. Green Dot was implemented by staff at the UK's Violence Intervention and Prevention Center in 2008, in two components: 50-minute motivational speeches (Green Dot speech) targeting first-year students in introductory-level courses throughout the academic year, and Intensive Bystander Training delivered to a select group of student leaders. This interactive, skill development training was conducted in groups of 20–25 students and lasted 4–6 hours. A Popular Opinion Leader strategy[15] was initially used to recruit students into training; over time, all interested students were welcomed to complete this training, as were leaders from sororities or fraternities. This training was provided in group settings, at least once a semester during 2010–2013. Programming elements included social marketing, delivering speeches to UK staff, and asking faculty to endorse Green Dot in syllabi.

An intent-to-treat approach was used for this analysis conducted in 2014–2015. It was impossible to randomly assign Green Dot training at the campus or student level. Students attending the Intervention campus (n=2,979) were considered Green Dot exposed, whereas students attending the two Comparison campuses (n=4,132) were categorized as unexposed. On the Intervention campus, Green Dot Intensive Bystander Training was implemented using a Popular Opinion Leader approach,[15] which recommends targeting approximately 15% of the population; in 2010, 15.5% of UK first-year students were so trained, 5.5% in 2011, 1.4% in 2012, and 0.6% in 2013 (based on sampled students' responses). Green Dot speeches were widely disseminated to UK first-year students; the proportion receiving this training remained consistently high (65.4% in 2010 to 55.9% in 2013).

Measures

In all surveys, participants were asked how frequently they had been victimized by or had perpetrated each of the following forms of violence since the beginning of the fall term:

1. unwanted sex;
2. sexual harassment;
3. stalking; and
4. physical and psychological dating violence.

This study adapted widely used measures of unwanted sex (National Intimate Partner and Sexual Violence Survey[16]), sexual harassment (Sexual Experiences Questionnaire[17]), stalking (National Violence Against Women Survey[18]), and dating violence (Revised Conflicts Tactic Scales[19]). Psychometric properties and items are provided elsewhere.[13] A dichotomous measure of having experienced each violent behavior by form and victimization or perpetration status was created. Unwanted sex and dating violence were considered present if individuals experienced one or more incidents. Sexual harassment and stalking were considered present if individuals experienced at least three incidents.[20,21] Experience with any of the four forms of violence measured, either as a victim or perpetrator (assessed separately), was captured in the overall rate (%) of IP violence.

Statistical Analysis

Students were asked their gender, age, race/ethnicity, fraternity or sorority membership, and sexual attraction (dichotomized as exclusively attracted to the opposite sex or not). Comparisons between campuses on respondent sociodemographic attributes were made with chi-square tests; comparisons were used to identify potential confounders (Table 1). Rates and SEs for each violent behavior measured over the prior academic year were adjusted for potential confounders (gender, female; age, 18–20 years; sexual attraction, not exclusively heterosexual; and fraternity/sorority membership, Greek) identified in bivariate comparisons (Tables 2 and 3, Figure 1). Log-binomial regressions (overall and by gender) were used to compare violence rates (%) by condition using PROC GENMOD (link, log; dist, binomial) for each of the violence forms by victimization and perpetration using all 4 years of data (Hypothesis 1), while controlling for potential confounders. To test Hypothesis 2, these analyses were conducted separately by year. Because another bystander program was implemented on one comparison campus, a sensitivity analysis was added; students from this comparison campus were excluded for the affected years (2012–2013, n=255). These results are presented in Tables 2 and 3. Data were analyzed using SAS, version 9.3.

Results

Across the three campuses, 22,468 first-year students were invited to complete the online survey over the 4 survey years (9,124, Intervention campus; 13,344, Comparison campuses) and 8,814 completed all or part of the survey (response rate, 39.2%). As described elsewhere,[13] female and white students were more likely to complete the survey relative to each campus' student body (p<0.001).

Student response rates were significantly lower (adjusted Mantel–Haenszel weighted by yearly sample strata, χ^2=37.76; p<0.0001) on the Intervention campus (35.4%, 3,328/9,124) relative to Comparison campuses (41.9%, 5,586/13,344). More than 85% of students who clicked on the survey link sent to campus e-mail addresses completed the survey. Of the

8,814 students completing at least a part of the survey, 1,703 were excluded because of incomplete data on demographic items (n=316), violent behavior items (n=800), or Green Dot training items (n=587). The final analyzable data set included 7,111 students (32.7% of invited students). Students attending the Intervention campus were more likely to be female (p=0.01), exclusively heterosexual (p=0.01), currently in a fraternity/sorority (p<0.0001), and younger (p=0.02); no differences in race or current relationship status were observed (Table 1). The data from Comparison campuses were more evenly distributed across all 4 years relative to the Intervention campus, except in 2011 when first-year students were oversampled.

The IP violence rates by form are presented by condition, by victimization (Table 2) and perpetration (Table 3), and within gender. Rate ratios (RRs) for the comparison of violence by condition were provided adjusting for potential confounders and data collection year. The unwanted sex victimization rate on the Intervention campus was 15.5% and 20.7% on Comparison campuses (Table 2). The adjusted RR (aRR) of 0.75 (95% CI=0.65, 0.85) corresponds to a 25% lower unwanted sex victimization rate on the Intervention campus compared with the Comparison campuses. Participants on the Intervention campus were less likely than those on Comparison campuses to indicate that they had sex when they were too drunk or high to consent to sex; no differences by campus were observed for either coerced or physically forced sex victimization.

Consistent with Hypothesis 1, violence victimization was significantly lower for the Intervention versus Comparison campuses (Table 2) for any unwanted sex victimization (aRR=0.75), sexual harassment (aRR=0.88), stalking (aRR=0.80), and psychological dating violence (aRR=0.83). When all types of IP violence were included, a 17% reduction in victimization (aRR=0.83) was observed in the Intervention (46.4%) relative to Comparison campuses (55.7%). Similarly and consistent with Hypothesis 1, violence perpetration was significantly lower for the Intervention versus Comparison campuses (Table 3) for sexual harassment (aRR=0.74), stalking (aRR=0.66), and psychological dating violence (aRR=0.86), and when all types of IP violence perpetration were included, a 21% reduction (aRR=0.79) was observed in the Intervention (25.5%) relative to Comparison campuses (32.2%). Campuses did not differ in rates of physical dating violence victimization or perpetration or unwanted sex perpetration. Results from sensitivity analyses confirmed these findings. This pattern of lower violence victimization and perpetration in Intervention versus Comparison campuses was similar for both male and female participants.

For each year, the rates of IP violence victimization and perpetration were lower in the Intervention relative to the Comparison campuses (Figure 1). This pattern was statistically significant for IP violence in 2010 (p=0.04 [victimization], p=0.0009 [perpetration]), 2011 (p<0.0001 [victimization], p=0.0004 [perpetration]), and 2012 (p<0.0001 [victimization], p=0.01 [perpetration]), but not in 2013 (p=0.51 [victimization], p=0.07 [perpetration]). A similar pattern was noted for unwanted sex victimization. Sensitivity analyses that excluded surveyed students attending the comparison campus with a bystander programming in 2012–2013 confirmed these findings, with the exception that IP violence perpetration remained lower in Intervention versus Comparison campus across all 4 years (2013: aRR=0.75, p<0.03).

Discussion

In the current study, first-year students attending the Intervention campus reported lower rates of unwanted sex victimization, sexual harassment, stalking, and psychological dating violence victimization and perpetration than those attending Comparison campuses. These patterns were consistent over time, with attenuation in 2013.

Rates of unwanted sexual victimization, particularly being too drunk or high to consent, were 36% lower on the Green Dot campus than on the Comparison campuses. Because bystander training and adoption of bystander behaviors are targeted toward reducing violence perpetration at the campus community level, finding lower rates of overall IP perpetration on the Intervention campus is also suggestive of Green Dot efficacy. In prior research,[11] a reduction in sexual violence acceptance and an increase in bystander behaviors were associated with an individual's receipt of Green Dot training. Finding a significant reduction in violence on the Green Dot campus suggests that this community-based bystander program may reach those who have not been trained through diffusion from trained peers modeling bystander behaviors. Lower rates of intensive bystander training in 2012–2013, due to personnel changes, may explain the finding of no difference in violence rates by intervention status in 2013.

Findings from this multiyear study are consistent with a previous analysis using 2010 survey data alone[13] on the same three campuses. In contrast with Gidcyz et al.[12] who found a reduction in sexual violence perpetration among college men receiving a bystander-based intervention, the present study found no differences in unwanted sex perpetration by condition. Although Miller and colleagues[14] found lower psychological dating violence perpetration rates among male high school athletes receiving Coaching Boys Into Men relative to controls, the present study found a reduction in psychological dating violence perpetration only among female participants. Different interventions, study designs, study power, and exposure comparison may explain inconsistencies in findings evaluating the efficacy of bystander interventions.

Limitations

Though this large study provides initial evidence of impact of a bystander intervention on violence outcomes, the observational study design represents a limitation. As noted elsewhere,[13] campuses could not be randomized. Because bystander interventions are hypothesized to work by training students to engage their peers through their social networks, any individual's randomization of training could quickly become contaminated with "exposure" to others within one's social network. The authors found no significant difference in sexual violence perpetration by condition. The measure of sexual violence perpetration was based on items from the National Intimate Partner and Sexual Violence Survey[16] and had good internal consistency[13] (Cronbach's α=0.752), yet physically forced sex perpetration may have been underestimated (<3%, this study). Lack of power (Type II error) may explain these findings. The response rate (39.2% of students sampled completed the survey) was lower than desired but respectable given students' use of campus mail and e-mail. Response rates were lower on the Intervention (35.4%) relative to Comparison campuses (41.9%). Limited study power for data collection in 2013 may explain finding no

differences by condition in all but 2013. Lastly, the 800 students excluded from final analyses owing to missing violence responses differed in a predictable pattern from those who completed the survey. Those excluded were more likely to be male, aged 18 years, and not in a relationship; these demographic attributes were correlated with lower violence rates among completers. Thus, a bias toward the null finding is the likely result of excluding these 800 with missing violence responses.

Several strengths deserve mention. The current study utilized data from four cohorts of first-year students. This is important because first-year students are recognized as having higher rates of IP victimization[4] and were the focus of Green Dot speeches. Using similar recruitment and data collection methodology on all campuses reduced the potential for measurement error. Including a range of violence forms and measuring victimization and perpetration provides a more comprehensive assessment of intervention efficacy. The finding of consistently lower violence rates on the Green Dot campus despite one of the two control campuses having had exposure to another bystander program (Stand Up Carolina!) suggests direct comparisons of bystander programs may be particularly important now that the Campus Sexual Violence Elimination Act mandates bystander interventions for all schools receiving Title IV funds.

These results provide evidence that students on a campus with a Green Dot bystander intervention experienced 21% lower rates of IP violence victimization and perpetration relative to students attending campuses without this intervention. These community-level findings have direct relevance for college administrators deciding which bystander programs to implement given requirements of the Campus Sexual Violence Elimination Act.[1] Green Dot may be an effective bystander intervention to fulfill the mandate of this Act.

Conclusions

This study provides a longer-term evaluation of the potential impact of a bystander intervention on IP victimization and perpetration among first-year students. These findings indicate that Green Dot is associated with lower rates of IP violence over time and measured at the campus level. This observation suggests that Green Dot is a promising strategy for the prevention of sexual and other forms of violence victimization and perpetration among students. These findings point to the need for additional research, using more-rigorous methodologies, to provide stronger conclusions regarding Green Dot's effectiveness and other bystander prevention strategies for reducing rates of violent behavior among college students.

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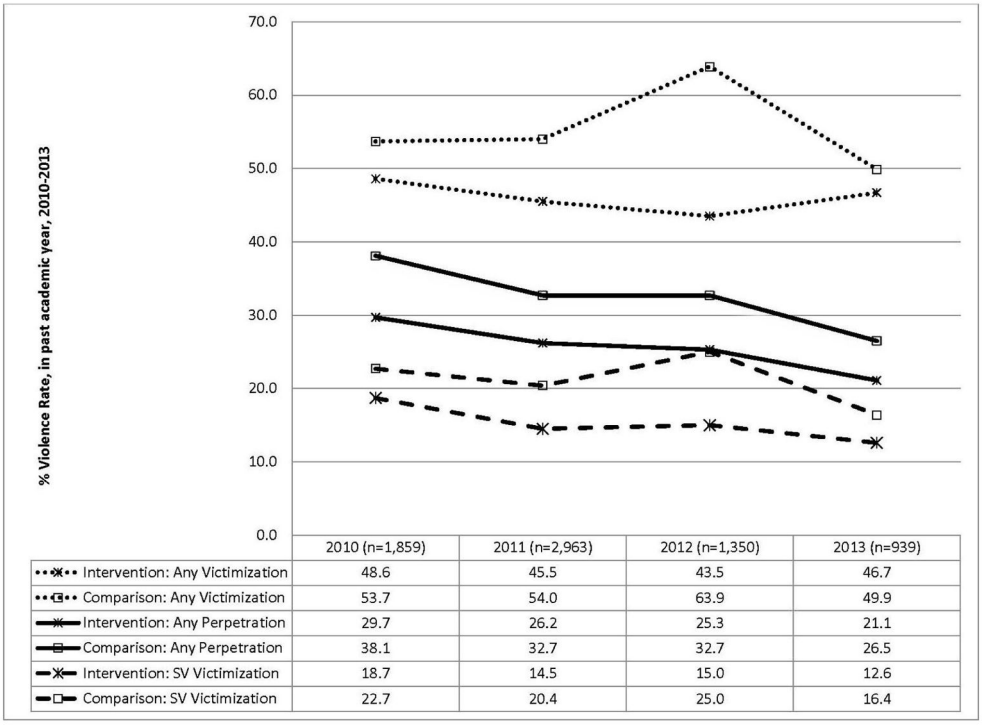

	2010 (n=1,859)	2011 (n=2,963)	2012 (n=1,350)	2013 (n=939)
Intervention: Any Victimization	48.6	45.5	43.5	46.7
Comparison: Any Victimization	53.7	54.0	63.9	49.9
Intervention: Any Perpetration	29.7	26.2	25.3	21.1
Comparison: Any Perpetration	38.1	32.7	32.7	26.5
Intervention: SV Victimization	18.7	14.5	15.0	12.6
Comparison: SV Victimization	22.7	20.4	25.0	16.4

Figure 1.

Figures 1. Violence rates in the Intervention and Comparison campuses over time.

Notes: Rates adjusted for gender=female, age=18,19,20, sexual attraction=not exclusively heterosexual, fraternity or sorority membership=Greek, with intervention - year interaction term included in the model.

Table 1

Demographic Characteristics for First-Year Students on Intervention and Comparison Campuses

Demographic characteristics	Campus condition		X^2_{df} *p*-value two tail
	Intervention n=2,979	Comparison n=4,132	Comparing demographic characteristics by condition
Female	**63.8%**	60.9%	$5.94_{df=1}^{p=0.01}$
Non-White	14.2%	13.7%	$0.39_{df=1}^{p=NS}$
In a romantic or dating relationship in the past 12 months	60.6%	60.1%	$0.19_{df=1}^{p=NS}$
Sexual attraction: not exclusively attracted to the opposite sex	**10.5%**	12.5%	$6.99_{df=1}^{p=0.01}$
Currently in a Fraternity or Sorority	**20.9%**	16.0%	$27.90_{df=1}^{p<0.0001}$
Age:			$7.64_{df=2}^{p=0.02}$
18	**31.0%**	28.6%	
19	59.5%	60.4%	
≥ 20	9.5%	11.0%	
Year survey conducted (spring term)[a]			$97.44_{df=3}^{p<0.0001}$
2010	**25.2%**	26.8%	
2011	**43.9%**	40.0%	
2012	**14.6%**	22.2%	
2013	**16.3%**	11.0%	

[a] Indicates the proportion of all students across four years who completed a survey by I and C campus.

Note: Boldface indicates statistical significance ($p<0.05$).

Table 2

Interpersonal Violence Victimization: Adjusted[a] Rate Ratios for Intervention and Comparison Campuses Among First-Year Students

Form of interpersonal violence (N=7,111)	Population by gender [4,418 Females] [2,693 Males]	Violence rate (%)(SE)		Adjusted rate ratio (95% CI), intervention versus comparison
		Intervention n=2,979	Comparison n=4,132	
Any unwanted sex	All students	15.5 (1.0)	20.7 (1.1)	**0.75 (0.65–0.85)****
	All students[b]	14.9 (0.9)	19.9 (1.1)	**0.75 (0.67–0.83)****
	Females	28.8 (1.4)	31.9 (1.6)	**0.72 (0.64–0.80)****
	Males	10.5(1.1)	13.4 (1.1)	**0.78 (0.62–0.99)***
By specific item				
Coerced sex	All students	7.4 (0.8)	7.9 (0.8)	0.93 (0.75–1.16)
	Females	13.1 (1.1)	14.7 (1.2)	0.89 (0.76–1.04)
	Males	4.1 (0.7)	4.2 (0.6)	0.97 (0.65–1.46)
Too drunk or high to consent	All students	10.4 (0.9)	16.1 (1.1)	**0.64 (0.55–0.76)****
	Females	13.7 (1.1)	24.0 (1.5)	**0.57 (0.49–0.67)****
	Males	7.9 (1.0)	10.9 (1.1)	**0.72 (0.54–0.97)****
Physically forced sex	All students	1.2 (0.3)	1.5 (0.3)	0.83 (0.48–1.45)
	Females	2.9 (0.6)	2.9 (0.5)	1.00 (0.69–1.43)
	Males	0.5 (0.2)	0.8 (0.3)	0.70 (0.24–2.00)
Sexual harassment	All students	15.7 (1.0)	17.9 (1.0)	**0.88 (0.77–0.99)***
	All students[b]	14.9 (0.9)	18.6 (1.0)	**0.80 (0.73–0.88)****
	Females	24.1 (1.4)	31.4 (1.5)	**0.77 (0.69–0.85)****
	Males	10.2 (1.1)	10.2 (0.9)	1.01 (0.79–1.28)
Stalking	All students	22.8 (1.2)	28.5 (1.3)	**0.80 (0.73–0.88)****
	All students[b]	22.6 (1.1)	28.3 (1.3)	**0.80 (0.73–0.87)****
	Females	28.7 (1.5)	36.5 (1.6)	**0.79 (0.71–0.86)****
	Males	18.1 (1.4)	22.2 (1.4)	**0.81 (0.69–0.97)****
Physical dating violence	All students	10.5 (0.9)	11.6 (1.0)	0.91 (0.78–1.06)
	All students[b]	10.5 (0.9)	11.2 (0.9)	0.93 (0.80–1.08)
	Females	9.7 (1.0)	10.8 (0.9)	0.90 (0.75–1.09)
	Males	11.3 (1.3)	12.4 (1.2)	0.91 (0.72–1.15)
Psychological dating violence	All students	23.6 (1.2)	28.3 (1.3)	**0.83 (0.76–0.91)****
	All students[b]	23.4 (1.2)	27.9 (1.3)	**0.84 (0.77–0.92)****
	Females	23.9 (1.4)	29.7 (1.5)	**0.80 (0.72–0.90)****
	Males	23.2 (1.7)	26.9 (1.6)	**0.86 (0.74–1.00)***

Form of interpersonal violence (N=7,111)	Population by gender [4,418 Females] [2,693 Males]	Violence rate (%)(SE)		Adjusted rate ratio (95% CI), intervention versus comparison
		Intervention n=2,979	Comparison n=4,132	
Any interpersonal violence	All students	46.4 (1.4)	55.7 (1.4)	**0.83 (0.79–0.88)****
	All students[b]	46.5 (1.3)	55.0 (1.4)	**0.85 0.81–0.89)****
	Females	55.6 (1.6)	66.6 (1.6)	**0.83 (0.79–0.88)****
	Males	38.8 (1.7)	46.6 (1.6)	**0.83 (0.75–0.92)****

Notes: Boldface indicates statistical significance

* $p<0.05$;

** $p<0.01$

Recent violence rates = self-reported on the survey conducted each year in spring term as having occurring since the fall term; Recent prevalence rates defined as violence experienced in the past academic year (Fall through Spring of an academic year)

[a] Adjusted for gender=female, age=18,19,20, sexual attraction=not exclusively heterosexual, fraternity or sorority membership=Greek, and year=2010, 2011, 2012, 2013; for gender-specific estimates, an interaction term was included in modeling.

[b] Revised analysis: Because a bystander program was implement fall 2011 in one Comparison campus, students completing the survey on this campus (n=255) were excluded from 2012–2013 analyses.

Table 3

Interpersonal Violence Perpetration: Adjusted[a] Rate Ratios for Intervention and Comparison Campuses Among First-Year Students

Form of interpersonal violence N=7,111	Population by gender [4,418 Females] [2,693 Males]	Violence rate (%)(SE)		Adjusted rate ratio (95% CI), intervention v comparison
		Intervention n=2,979	Comparison n=4,132	
Any unwanted sex	All students	1.7 (0.4)	2.2 (0.4)	0.75 (0.50–1.13)
	All students[b]	1.7 (0.4)	2.3 (0.4)	0.74 (0.50–1.12)
	Females	1.0 (0.3)	1.7 (0.4)	0.59 (0.32–1.08)
	Males	2.7 (0.7)	2.8 (0.6)	0.95 (0.56–1.63)
Sexual harassment	All students	9.8 (0.8)	13.2 (0.9)	**0.74 (0.64–0.86)****
	All students[b]	9.8 (0.8)	13.0 (1.0)	**0.75 (0.64–0.87)****
	Females	6.9 (0.7)	10.4 (0.9)	**0.66 (0.53–0.82)****
	Males	14.0 (1.4)	16.9 (1.4)	0.83 (0.67–1.01)
Stalking	All students	9.0 (0.8)	13.5 (1.0)	**0.66 (0.56–0.78)****
	All students[b]	9.0 (0.8)	13.7 (1.0)	**0.66 (0.56–0.77)****
	Females	8.8 (0.9)	13.8 (1.1)	**0.64 (0.52–0.78)****
	Males	9.1 (1.1)	13.1 (1.3)	**0.69 (0.53–0.90)****
Physical dating violence	All students	7.3 (0.7)	8.0 (0.7)	0.92 (0.74–1.15)
	All students[b]	7.2 (0.7)	7.9 (0.7)	0.91 (0.78–1.08)
	Females	12.0 (1.1)	13.2 (1.2)	0.90 (0.76–1.08)
	Males	4.5 (0.8)	4.8 (0.7)	0.93 (0.62–1.40)
Psychological dating violence	All students	12.9 (1.0)	14.9 (1.0)	**0.86 (0.75–0.99)***
	All students[b]	12.4 (0.9)	14.4 (1.0)	**0.87 (0.76–0.98)***
	Females	15.9 (1.2)	19.2 (1.3)	**0.83 (0.72–0.96)***
	Males	10.4 (1.2)	11.6 (1.1)	0.90 (0.70–1.15)
Any interpersonal violence	All students	25.5 (1.2)	32.2 (1.3)	0.79 (0.71–0.86)**
	All students[b]	25.5 (1.2)	32.3 (1.3)	**0.79 (0.73–0.86)****
	Females	27.0 (1.4)	34.4 (1.5)	**0.78 (0.71–0.86)****
	Males	24.1 (1.6)	30.1 (1.6)	**0.80 (0.69–0.92)****

Note: Boldface indicates statistical significance

* $p<0.05$;

** $p<0.01$.

Recent violence rates = self-reported on the survey conducted each in spring term as having occurring since the fall term; Recent prevalence rates defined as violence experienced in the past academic year (Fall through Spring of an academic year)

[a] Adjusted for gender=female, age=18,19,20, sexual attraction=not exclusively heterosexual, fraternity or sorority membership=Greek, and year=2010, 2011, 2012, 2013; for gender-specific estimates, an interaction term was included in modeling.

[b] Revised analysis: Because a bystander program was implement fall 2011 in one Comparison campus, students completing the survey on this campus (n=255) were excluded from 2012–2013 analyses.