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Multiple sexual violence prevention tools: doses and boosters

Victoria Banyard, Sharyn J. Potter, Alison C. Cares, Linda M. Williams, Mary M. Moynihan and Jane G. Stapleton

Abstract

Purpose – Sexual violence prevention programs on college campuses have proliferated in recent years. While research has also increased, a number of questions remain unanswered that could assist campus administrators in making evidence-based decisions about implementation of prevention efforts. To that end, the field of prevention science has highlighted the need to examine the utility of booster sessions for enhancing prevention education. The purpose of this paper is to examine how two methods of prevention delivery – small group educational workshops and a community-wide social marketing campaign (SMC) – worked separately and together to promote attitude change related to sexual violence among college students.

Design/methodology/approach – The two-part study was conducted at two universities. Participants were from successive cohorts of first year students and randomly assigned to participate in a bystander based in-person sexual violence prevention program or a control group. Participants were later exposed to a bystander based sexual violence prevention SMC either before or after a follow-up survey. Analyses investigated if attitudes varied by exposure group (program only, SMC only, both program and SMC, no prevention exposure).

Findings – Results revealed benefits of the SMC as a booster for attitude changes related to being an active bystander to prevent sexual violence. Further, students who first participated in the program showed enhanced attitude effects related to the SMC.

Originality/value – This is the first study to look at the combination of effects of different sexual violence prevention tools on student attitudes. It also showcases a method for how to investigate if prevention tools work separately and together.

Keywords Sexual assault, Sexual violence, Bystander interventions, College campus, Prevention education, Violence prevention

Paper type Research paper

Victoria Banyard is a Professor at the Department of Psychology, University of New Hampshire, Durham, New Hampshire, USA.

Sharyn J. Potter is a Professor of Sociology and Director, Prevention Innovations Research Center at the University of New Hampshire, Durham, New Hampshire, USA. Alison C. Cares is an Associate Professor of Sociology & Criminology at Assumption College, Worcester, Massachusetts, USA.

Linda M. Williams is a Senior Research Scientist at Wellesley Centers for Women, Wellesley College, Wellesley, Massachusetts, USA.

Mary M. Moynihan is an Affiliate Associate Professor, Women's Studies and Jane G. Stapleton is the Executive Director of Practice, both at the University of New Hampshire, Durham, New Hampshire, USA.

Introduction

Attention to sexual violence on college campuses has increased drastically as reflected by the hundreds of institutions under Title IX investigation by the US Department of Education for their handling of sexual assault cases and the proliferation of campus initiatives to prevent sexual violence, provide support for survivors, and hold perpetrators accountable. Prevention efforts take a multitude of forms, and many campuses implement multiple approaches as they seek to maximize positive change in their campus community. Research on effectiveness of these prevention efforts can be used to help institutions select best practices. However, to date research has almost exclusively evaluated the impact of individual prevention efforts in isolation. This study represents one of the first explorations comparing the combined impact of two different bystander prevention efforts on student attitudes.

Background

Bystander approaches focus on the role members of the community play before, during, and after sexual violence to change community norms about sexual violence, intervene safely in risky

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situations, and support survivors. This contrasts with prevention models that approached males as potential perpetrators and females as potential victims – instead giving all community members a prosocial role to play in preventing sexual violence (Katz *et al.*, 2011). The bystander approach is grounded in research that identifies causes of sexual violence as stemming in part from community attitudes and norms that support coercion in relationships (Schwartz *et al.*, 2001). Bystander approaches are informed by intervention theories in which risk for violence decreases when the number of helpful informal guardians increases (Schwartz *et al.*, 2001).

Bystander programs for preventing sexual violence on college campuses have been delivered via small educational workshops (e.g. Banyard *et al.*, 2007; Gidycz *et al.*, 2011), interactive theater (Ahrens *et al.*, 2011), large group motivational speakers (Coker *et al.*, 2011), online programs (Jouriles *et al.*, 2016; Kleinsasser *et al.*, 2015), and social marketing campaigns (SMCs) (Potter, 2012; Potter *et al.*, 2011). Research on such efforts in isolation has revealed positive change in attitudes and behaviors (e.g. Banyard *et al.*, 2007; Coker *et al.*, 2011; Jouriles *et al.*, 2016). However, lacking is research on multiple bystander prevention tools working together. Prevention research notes that increased doses of an intervention lead to enhanced outcomes (Nation *et al.*, 2003), combinations of interventions increase effectiveness (Taylor *et al.*, 2013), and additional prevention education sessions, or boosters, can yield additional benefit (Bundy *et al.*, 2011). Dosage can mean number of program sessions, length of sessions, and period of time over which prevention activities take place. To that end, longer versions of in-person sexual violence prevention programs have been more effective than shorter ones (Anderson and Whiston, 2005). Studies of programs with booster sessions have generally not included the booster as an object of inquiry (e.g. Banyard *et al.*, 2007; Gidycz *et al.*, 2011). This is the aim of the current study – to assess the separate and combined impact of two different bystander based sexual violence prevention tools. In doing this, we aimed to model a method for researching how different types of prevention strategies may be combined to create booster effects to maximize prevention effectiveness for participants.

Current study

The study was part of a two campus multi-year program evaluation of sexual and relationship violence prevention among entering college students. One university was where the prevention tools were originally developed (U1). U1 is a mid-sized public, primarily residential, rural campus in the northeast. The university has its own on-campus crisis center and a long history of providing services related to sexual and relationship violence. The second university (U2) is also a mid-sized public university in the northeast, but in an urban center and with more commuter students and more racial and ethnic diversity. U2 offered few resources related to sexual and relationship violence. There were no differences in the gender of participants by campus or retention rates by campus (see Cares *et al.*, 2015).

At each university first semester students were recruited and randomly assigned (stratified by gender) to receive the in-person prevention program or be part of a control group. In the second semester, both universities exposed participants to an SMC featuring prosocial bystander messages. For program participants this SMC acted as a booster (“booster” group). For control group participants (those who did not receive the prevention program), the SMC was a stand-alone prevention tool (“SMC only” group). At U1 one cohort of participants was recruited for program participation and not exposed to the SMC until after completion of one of the follow-up surveys. This resulted in two additional quasi-experimental groups: a true control group not exposed to any prevention tools (“no prevention” group) and a group who received the prevention program without the SMC (“program only” group). This quasi-experiment permitted examination of the synergy between the program and SMC. An overview of the two-study design is presented in Table I.

Bystander in-person program

The Bringing in the Bystander® In-Person Program is grounded in foundational work on bystander-focused prevention (Katz *et al.*, 2011). The curriculum approaches women and men as potential bystanders or witnesses to risky behaviors related to sexual and relationship violence and teaches positive, safe ways to intervene. The model for the content was based on Latané and Darley’s situational model of bystander intervention (see Banyard, 2011). Program design was

Table 1 Overview of two-study design

Study	Groups for comparison		Outcome measures	Hypotheses
Study one U1	Booster SMC Only Program Only	No Prevention	Bystander attitudes readiness to help – no awareness Readiness to help – taking responsibility Bystander efficacy Intent to help a friend Intent to help a stranger Own legitimacy of bystander behavior friend legitimacy of bystander behavior Noticing the social marketing campaign	Groups receiving one prevention dose (program only and SMC only groups) would have more positive attitude change than the no prevention group. The group receiving two doses of prevention (booster group) would have greater positive attitude change than the one prevention does group
Study two U2	Booster SMC only		Social self-identification image impact	The SMC would have greater impact on the group with prior prevention exposure (booster group)

informed by best practices in prevention education including active learning exercises and timing the prevention to a particularly at-risk developmental moment (Nation *et al.*, 2003) – the ages of 16 to 24 are at highest risk for experiencing and perpetrating sexual and relationship violence (Rennison and Welchans, 2000). The 4.5 hour program was conducted over two sessions in single-gender groups with co-facilitators composed of one male and one female student.

Bystander social marketing campaign

Wandersman and Florin (2003) recommended the use of SMCs to reach full communities with primary prevention messages. SMC designers have two major goals: to increase the amount of public knowledge on a given topic and use this to provide members of the public specific directions for changing behaviors (Randolph and Viswanath, 2004). The Know Your Power® Bystander SMC was designed to raise awareness about sexual and relationship violence and stalking. The campaign uses images of college students modeling active bystander behaviors in situations where there is risk for sexual and relationship violence and stalking (Potter, 2012; Potter *et al.*, 2011). Both campuses received SMCs with the same tag lines. However, images differed to reflect community differences in settings and language (Potter and Stapleton, 2011).

Study part one

We first examined the impact of the in-person program and SMC on first year undergraduate students using data from U1. We hypothesized that while the SMC only and program only groups would have more positive attitude change than the no prevention group, participants who received two doses of prevention messages (the in-person program and then the SMC booster – the booster group) would show the largest improvements in attitudes. (For results of impact of each tool alone and overall when combined see Cares *et al.*, 2015; Moynihan *et al.*, 2015).

Methods

Participants

Recruitment took place at the start of three consecutive fall semesters. First year students were recruited to participate in a “project on community and relationship problems” via recruitment tables set up at strategic points on campus (e.g. in front of dining halls during mealtimes). Recruited students were randomized separately by gender into the in-person program group or control group. Students who could not attend the program due to scheduling constraints were offered the opportunity to be in the control group. Control and program group comparisons revealed they were similar on demographics and initial attitudes, suggesting reassignment did not undermine the random assignment goal of creating equivalent groups.

Across the three cohorts at U1, 711 students were recruited, and 550 entered the study by completing the pretest (excluding 15 participants who were under 18 years old). Of these 550 students, 348 were recruited during cohorts 1 and 2 (these participants, who were exposed to the SMC, will be described below) while 202 were recruited from cohort 3 (this cohort was not exposed to the SMC). While there were comparable numbers of men and women in the study overall, cohort one had significantly fewer men. To achieve a balanced gender design overall, men were oversampled in cohorts two and three, so analyses that used exclusively cohort three had a higher percentage of male participants.

In the U1 pretest sample, 54.4 percent were men, 98.4 percent lived on campus, and 89.9 percent were White, non-Hispanic. This is similar to institutional research data for U1 undergraduates during the study (43 percent male, 87 percent White). Participants were distributed across four research conditions: both program and SMC ("booster" group, $n = 205$), SMC only ($n = 143$), program only ($n = 71$), and control group ("no prevention group"; $n = 131$). There were significant gender differences across groups ($\chi^2 = 39.90$, $p < 0.001$). The no prevention group was 29.8 percent female, SMC only was 64.3 percent female, program only was 31 percent female, and the booster group was 47.5 percent female, so gender was included in the analyses as a covariate.

Procedures

In the fall, two weeks before the in-person program study participants were invited to complete a pretest survey (cohort one completed surveys in classrooms while the other two cohorts completed them online). Participants in cohorts one and two at U1 were also exposed to the Know Your Power Bystander SMC which was administered on campus for six weeks from early to mid-spring semester. Campaign images were printed on eight different versions of 11" by 17" posters that were displayed throughout the campus community (e.g. academic buildings, recreation facilities, student apartments, local businesses, residence hall lobbies, and inside the doors of bathroom stalls). Images were printed on full side wraps for six continuously running on-campus buses. The images were on table tent holders on every table in campus dining facilities. Bookmarks featuring the images were distributed in campus libraries and campus and local bookstores. The images were on the login screen of the 650 campus student use computers (Potter, 2012). All cohort one and two students received a campaign water bottle, carabineer keychain, and button with the campaign logo. At the end the six-week period all campaign materials were removed and then (approximately five months post program) cohort one and two students who participated in the program and control groups were invited to participate in an online survey. Cohort three participants received identical procedures except the SMC was not launched until after the five month follow-up survey. Thus, the third cohort either received the in-person program or not – their surveys do not reflect any exposure to the SMC. Participants were paid \$10 for each completed survey and those who completed all four surveys in the broader study were entered into a lottery for a \$50 gift card. Program participants were paid \$40 for the 4.5 hours they spent attending the program.

Two hundred fifty participants (a 45 percent retention rate from pretest) returned to take the 5-month follow-up survey during the spring semester. There were no differences in retention by gender or intervention group (control vs program groups). A series of one-way analyses of variance (ANOVA) were computed to compare the four groups at pretest on each of the seven attitude outcomes used in the current paper (see Measures section below). There were no differences except for efficacy, with the no prevention and booster groups reporting lower pretest efficacy than the other two groups.

Measures

Readiness to help (Banyard *et al.*, 2014). This scale is composed of 30 items, divided into three subscales with adequate reliability and validity (Banyard *et al.*, 2014). The subscales capture the stages of change an individual must pass through to be ready to intervene as a bystander. For the current analyses, the first two subscales were used. Given these were first year students, it was only expected that the prevention efforts would increase their awareness

("No Awareness," the first scale) and get them to see that they have a responsibility to help ("Taking Responsibility," the second scale), but not also move them to actual action to help (the third scale). "No Awareness" consisted of 12 items which indicated lack of awareness of the problems of sexual and relationship violence and no sense the individual needs to consider these issues (higher scores indicated lesser awareness). For example, "I don't think stalking is a problem on this campus." "Taking Responsibility" included nine items. For example, "Sometimes I think I should learn more about sexual violence." Participants responded on a five-point scale (1 = not at all true to 5 = very much true) to indicate how much each of the statements was true of them. Scores for each subscale were created by taking the mean across items. Descriptive statistics at pretest for those who were included in the current analyses were: no awareness ($M = 2.52$, $SD = 0.67$); taking responsibility ($M = 2.71$, $SD = 0.81$).

Bystander efficacy (Banyard, 2008; Banyard and Moynihan, 2011). This scale includes 18 statements that assess the participant's confidence in performing bystander behaviors. Previous research with different samples of participants has established the validity of this measure (Banyard, 2008). A participant rates their confidence to perform the behaviors on a scale from 0 (can't do) to 100 (very certain that he or she can do). For example, "Ask a friend if they need to be walked home from a party." The mean across all 18 items was used. For the current analyses the pretest mean score was 73.34 ($SD = 17.25$).

Intent to help a friend (Banyard et al., 2014). This scale includes 38 items that assess participants' self-reported likelihood to engage in certain helpful bystander behaviors with someone they know and has demonstrated high reliability and validity. Each participant rated his or her likelihood to perform the behaviors using a five-point scale (1 = not at all likely through 5 = extremely likely). For example, "I talk to people I know to make sure we don't leave an intoxicated friend behind at a party." Scores were calculated based of the mean of all items. Higher scores indicate the participant would be more likely to perform the behavior listed. For the current sample the pretest mean was 3.82 ($SD = 0.71$).

Intent to help a stranger (Banyard et al., 2014). This scale includes 41 items that assess participants' self-reported likelihood to engage in certain helpful bystander behaviors with someone they do not know. Each participant rated his or her likelihood to perform the behaviors using a five-point scale (1 = not at all likely to 5 = extremely likely). For example, "I express disagreement with someone I don't know who says having sex with someone who is passed out or very intoxicated is okay." Scores were calculated based of the mean of all items (pretest $M = 3.05$, $SD = 0.87$). Higher scores indicate the participant would be more likely to perform the behavior listed.

Legitimacy of bystander behavior. Two questions asked participants on scale of 1 (not at all legitimate/valid) to 5 (very legitimate/valid), how legitimate they perceived it was to be an active bystander related to sexual violence ("own legitimacy") and how much they felt their friends saw being an active bystander as legitimate ("friend legitimacy"). At pretest the current sample had a mean of 2.50 ($SD = 1.47$) for own legitimacy and 2.52 ($SD = 1.31$) for friend legitimacy. The first cohort of participants did not receive these questions, reducing the N to 391 for these two questions.

Composite measure. Given the researchers were interested in examining if bystander attitudes were impacted by dosage and booster of bystander prevention efforts, our first step was to look at overall impact on bystander attitudes. To do so, we created a composite measure of the seven bystander attitudes measures to use as an outcome. The composite measure was created by calculated and summing z-scores for the component items, as the scoring metrics differed across component measures. Theory and past research with these data at pretest (Banyard et al., 2014) indicated these measures were sufficiently correlated to justify inclusion in a composite variable. In addition to providing an overall test of differences relevant to our research question, composite measures offer the advantage of increased reliability and validity over individual measures (Shwartz et al., 2015). At pretest, Cronbach's alpha for the composite was 0.74 and the mean was -0.04 ($SD = 4.06$, range = -11.47 - 13.55).

Noticing the social marketing campaign (Potter and Stapleton, 2012). Participants were asked to answer yes or no if they noticed the SMC bystander images on the campaign table tents, bus wraps, computer screens, webpage icon, and website, and whether they received a water bottle and/or a bookmark. The number of yes responses was summed as an indicator of SMC exposure (i.e. dosage). These questions were relevant only for the 179 participants (in cohorts 1 and 2) exposed to the SMC prior to the 5-month follow-up survey. The mean for this subgroup was 3.57 (SD = 1.40).

Data analysis

The custom repeated measures ANOVA procedure was used to examine change over time for attitudes controlling for gender. Main effects of exposure to the in-person education program, the SMC, and their interaction were examined. Next, ANOVAs examined differences by each of the four groups (no prevention, SMC only, program only, booster) on individual attitudinal measures. Given power issues with the small sample size simple contrasts were performed comparing each group that received at least one dose of prevention with the no prevention group.

Results

The repeated measures ANOVA, including gender and exposure to SMC and program prevention tools, for the attitudes composite showed a significant main effect of time ($F(1, 252) = 7.33, p = 0.007$, Wilks' $\lambda = 0.97$, partial $\eta^2 = 0.03$, a small to medium effect). It also showed a significant time by SMC interaction ($F(1, 252) = 5.66, p = 0.02$, Wilks' $\lambda = 0.98$, partial $\eta^2 = 0.02$, a small effect), time by program interaction ($F(1, 252) = 16.36, p < 0.001$, Wilks' $\lambda = 0.94$, partial $\eta^2 = 0.06$, a medium effect size) and time by gender interaction ($F(1, 252) = 9.65, p = 0.002$, Wilks' $\lambda = 0.96$, partial $\eta^2 = 0.04$, a small to medium effect). There was not a significant time by program by SMC interaction. There were differences over time between participants who were and were not exposed to the SMC and those who did and did not participate in the program for bystander attitudes overall and differences by gender. The main message from this analysis is that there were effects of exposure to program and/or SMC five months post program and several weeks after the SMC concluded. This provided a rationale for exploring effects of the prevention tools in more detail in follow-up univariate analyses.

A series of ANOVAs were performed predicting difference scores between five month and pretest scores. Pretest scores on each variable were subtracted from the corresponding five month follow-up score. Gender was used as a control variable. Table II presents means of difference

Table II One-way ANOVAs with simple contrasts to examine group differences on difference scores for attitudes at five months controlling for gender

Variable	No prevention				F for group	Partial η^2
	Booster M (SD)	SMC only M (SD)	Program only M (SD)	M (SD)		
Intent to help friends	-0.09 (0.79) ^a	-0.37 (0.81) ^b	-0.07 (0.74) ^a	-0.43 (0.98)	3.21*	0.04
Intent to help strangers	0.18 (0.92) ^b	0.07 (0.83)	-0.15 (0.67)	-0.30 (1.02)	2.04	0.02
Efficacy	4.10 (19.49)	-2.50 (17.53) ^b	-3.50 (9.39) ^a	1.45 (16.67)	2.62****	0.03
No awareness	-0.41 (0.76) ^c	0.06 (0.72) ^c	-0.10 (0.69) ^a	0.31 (0.91)	10.71***	0.11
Taking responsibility	0.25 (0.85)	0.13 (0.78)	0.28 (0.83)	0.06 (1.10)	0.71	0.01
Own legitimacy	0.69 (1.64) ^b	0.10 (1.78)	0.20 (1.61)	-0.39 (1.97)	2.90*	0.05
Friend legitimacy	0.46 (1.64) ^b	0.10 (1.54)	0.04 (1.49) ^a	-0.58 (1.71)	3.10*	0.06

Notes: Superscript indicates group was significantly different from no prevention group using one-tailed test: ^a $p < 0.05$, ^b $p < 0.01$, ^c $p < 0.001$; Subscript indicates group was significantly different from the booster group using one-tailed test: _a $p < 0.05$, _b $p < 0.01$, _c $p < 0.001$; booster $n = 105-107$, SMC only $n = 78$, program only $n = 25$, No Prevention $n = 46/47$ (except legitimacy variables which were only assessed for two cohorts (Booster $n = 44/59$, SMC Only $n = 29$, program only $n = 25$, no prevention $n = 44/45$). * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; **** $p = 0.05$

scores for each group at five month follow-up. Due to small sample sizes in these exploratory analyses, a custom model ANOVA was specified. Simple contrasts, comparing each prevention exposed group with the no prevention group and contrasts comparing each single prevention dose group with the booster group were performed.

There were significant differences across nearly all individual attitude measures except taking responsibility and intent to help strangers (Table II shows univariate F 's for attitude variables; the overall F 's were not significant for these two variables although for intent to help strangers mean no prevention group difference scores decreased and were significantly different from booster group scores, which increased). The single prevention dose groups' efficacy scores decreased and were significantly different from the booster group scores, which increased. Given that the no prevention and booster groups started at lower efficacy levels, differences may be an artifact of regression to the mean. For intent to help friends, the program only and booster groups had scores that essentially stayed the same over time while the SMC only and no prevention groups showed decreases over time. For no awareness, the program only and booster groups showed decreases over time, and these groups were significantly different than the no prevention group (whose scores increased). For own legitimacy and friend legitimacy, the booster group had significantly higher scores compared to the no prevention group. The booster group showed increased Legitimacy scores while this perception went down for the no prevention group.

To see if greater dose exposure was related to better outcome scores, we looked within the subgroups exposed to the SMC. Correlations were examined between readiness to help, legitimacy of bystander behavior, and noticing the SMC (a dose measure operationalized as the number of different campaign mediums to which participants reported exposure). Only the program only group had any relationship between SMC dose and attitudes, with higher exposure scores related to higher taking responsibility scores ($r = 0.23, p < 0.05$), and greater legitimacy perceptions (own legitimacy $r = 0.24$ and friend legitimacy $r = 0.26, p < 0.05$). There were no significant differences between the two groups (SMC only and booster) on noticing the SMC.

Study part 2

We investigated the impact of prior program exposure on participants' attitudes towards the SMC using data from U2. We hypothesized that participants with prior exposure to the program would express greater identification with the SMC images, and greater impact of the SMC on their motivation to get involved in violence prevention.

Method

Participants. At U2, while approximately 60 percent of first year students live on campus, the majority of undergraduate students (60 percent) are commuters. Thus much of the social life occurs off campus. At U2, 535 students were recruited across two cohorts of first year students (at the start of consecutive fall semesters) for a study of "community and relationship problems." At recruitment participants were randomly assigned to the in-person prevention program or control group. In all, 398 students completed the pretest. Of this sample, 48 percent were male, 75.8 percent were white, mean age was 18, and, in spite of creative strategies to recruit commuters (e.g. recruiting tables in commuter parking lots), 22.4 percent lived off campus. Our sample differs some from the overall first year student demographics which were 36 percent female, 70 percent non-Hispanic white, 8 percent Hispanic, 9 percent Asian and 4 percent African-American. Between 36 and 41 percent lived off campus, depending upon the cohort year.

In total, 176 participants completed the follow-up survey during the spring semester of their first year in college (approximately five months after the in-person program), a retention rate (44 percent) comparable to U1. Compared to those who did not return for this follow-up, the returnees group had a greater percentage of women (59.8 percent of returnees vs 45 percent of non-returnees) and control group participants (58 percent of returnees vs 47.7 percent of non-returnees). Participants were paid \$10 for each completed survey and those who completed all surveys in the broader study were entered into a lottery for an \$150 gift card. Program participants were paid \$40 for the 4.5 hours they spent attending the program.

Procedures

Procedures were identical to Study 1 described above except there were only two cohorts. Both cohorts included participants who received the program during the fall semester and that did not. Both groups and cohorts were exposed to an adapted version of the Know Your Power Bystander SMC described above, creating booster (previously referred to as the program group) and SMC only (previously referred to as the control group) groups. The images included in the campaign were selected from the U1 images and modified to reflect the demographics and environment of U2. However, the tag line was identical. In the first year four images were used and in the second year, six images were used. The images were displayed on table tents in dining halls, bookmarks in the libraries, retractable vertical displays in various campus buildings, and 11 x 17 posters hung in academic buildings, dining halls, residence halls, the recreation center, student centers, and other campus buildings. First year students also received products that displayed the campaign logo and directed students to a Know Your Power website.

Measures

Social self-identification (Potter *et al.*, 2011; Potter and Stapleton, 2012). Four items from Potter's social self-identification scale were used in the 5-month follow-up survey. Participants were asked on a five-point scale (strongly disagree through undecided to strongly agree) how much they agreed with the following statements: "The images attracted my attention," "I took a second look at the images," "The images depict realistic situations," and "The people in the images look like people I am likely to see." Cronbach's α for the four items was 0.83. A summed score was calculated.

Image impact (Potter *et al.*, 2015). These items were created for this study to examine participants' perceptions of the SMC. The items were modeled on questions used in the public health field that assess if participants notice the particular campaign (e.g. Shive and Morris, 2006) and if noticing the campaign encourages participation in the highlighted health behavior (e.g. Palmer *et al.*, 2006). Six items assessed participants' perceptions of the impact of the SMC. Again, they responded using a five-point scale with undecided scored in the middle as "3." Sample items included, "The images' slogans attracted my attention," and "The images motivated me to get involved in community efforts to end sexual abuse." Cronbach's α was 0.90 and a total score was created by summing the items.

Results

We hypothesized that the booster group would score higher than the SMC only group on social self-identification and image impact. Two paired sample *t*-tests (using one-tailed significance tests) compared SMC only to booster group participants. The *t*-test for social self-identification was not significant $t(162) = -0.74$ (booster $M = 15.47$, $SD = 3.75$; SMC only $M = 15.06$, $SD = 3.36$). However, the image impact analysis approached significance $t(161) = -1.57$, $p = 0.059$ for a one-tailed test (booster $M = 19.49$, $SD = 5.87$; SMC only $M = 18.12$, $SD = 5.25$). Booster group participants reported slightly greater SMC image impact following the campaign in the spring. This suggests program participation may have primed participants to be more sensitized to aspects of the SMC – another dimension of how these tools may work together.

Discussion

This paper reports the results of a two campus study of the impact of two bystander based sexual violence prevention tools – an in-person education program and SMC. More specifically, it investigated if being exposed to two prevention tools was better than one in terms of improving attitudes as well as if greater exposure to a prevention tool (in this case, an SMC) was related to better outcomes. In doing so, this study starts building a foundation of knowledge regarding dosage and boosters for bystander sexual violence prevention efforts on college campuses. This knowledge is important to guide administrators in making evidenced-based decisions about what bystander programs to implement and how in order to insure that they maximize impact while minimizing use of resources.

There is evidence in this preliminary study that the SMC served as an effective booster to attitude change among in-person prevention program participants. Participants who received greater prevention dosage through combined exposure to the in-person program and then the SMC as a booster showed increased intent to help strangers and friends, and viewed acting as an active bystander as more valid or legitimate. There is also evidence that prior exposure to the prevention program primed participants to attend to SMC messages and may have boosted SMC effects. That is, for those who first took the program, greater exposure or dosage of SMC produced better attitudes while there was not a significant relationship between outcomes and exposure for those who were not in the program. This suggests perhaps a threshold effect or tipping point; there may need to first be a certain base rate of prevention message exposure before incremental dose differences as one might see in this exposure variable can have an impact on attitudes.

This study represents a first step and as such, has a number of limitations to be addressed in future research. Due to the challenges of recruiting, program and campaign implementation, and retention of participants in longitudinal research, the sample size within subgroups was not large (particularly the program only and no prevention groups), which impacted what analyses could be run and the statistical power of the analyses undertaken. However, these challenges also point to the importance of this research – once designed SMCs are cost effective and can reach more participants than in-person programs, so hold the potential of being a more attractive booster to an in-person program than follow-up in-person education booster sessions. Additional research can help determine if that is the case. The limited sample sizes also meant that important questions about if some groups, such as men vs women, are differentially impacted by dosage and boosters, could not be addressed. The low retention rate also raises the possibility of a selection bias – that students differentially dropped out of the study. However, as noted above the only significant pretest differences between those retained at 5 months and those not was on the measure of bystander efficacy. Future evaluations may want to explore new and additional methods of increasing retention, perhaps including texting reminders to students and insuring that follow-up surveys are easy to take on mobile phones, to help avoid this issue. Generalizability of the findings is limited as the study was of first year students and both institutions were mid-sized public universities in the northeast. These questions should be investigated with full undergraduate populations and on a greater diversity of campuses.

As researchers design future evaluations of dosage and boosters, further research is needed on the timing of booster sessions (Hennessy *et al.*, 1999). Assessing when to best time exposure to different prevention tools, such as the best time for a booster, would help focus resources where they are most needed. For example, perhaps it is more effective to begin with exposure to the SMC to motivate participants to take part in small group prevention skill workshops. Coker *et al.* (2011) describe a campus effort which begins with large group exposure to a motivational speaker which serves as recruitment site for participants to join a more intensive skill-building training. Further, future studies should move beyond attitude assessment to an examination of how different prevention tools work together to impact behavior, including bystander behavior and sexual violence perpetration. However, measuring attitudes was an important first step, as research with college populations has identified correlations between attitudes towards sexual violence and bystander behavior related to sexual violence (e.g. Banyard, 2008; Banyard and Moynihan, 2011; Hoxmeier *et al.*, 2016). At least one study shows evidence that a program increased bystander behavior by first improving bystander attitudes (McMahon *et al.*, 2015).

The current study is the first of its kind in the bystander-focused violence prevention field to examine the synergy between two popular prevention tools – an SMC and in-person education program. We found support for the use of SMCs as a booster to effects of the bystander skill building that was offered in the small group format. We also found that the program seemed to have a priming effect for participants who then saw the SMC. Campuses should continue to work to design a variety of prevention tools related to sexual violence in tandem with one another to maximize these synergistic effects. In addition, though exploratory, the current study showcases a useful method for using quasi-experimental methods to unpack the effects of different prevention tools on attitudes related to sexual and relationship violence prevention. Future studies

using this method could, for example, unpack ordering effects for prevention tools, investigating questions such as the effect of showing the SMC first, followed by smaller educational/skill-building workshops.

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Corresponding author

Alison C. Cares can be contacted at: a.cares@assumption.edu

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