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This study extends past research by examining factors associated with changes in attitudes, knowledge, and intended behaviors related to sexual assault. This study included 1,182 participants from four unique multiple-session school-based sexual violence interventions. Implementation and participant factors examined include single- versus mixed-gender groups, group setting versus classroom lecture setting, and participant gender. Participants completed self-administered, paper-and-pencil pre- and postsurveys. A significant desired overall effect was found on participants' reports of positive attitudes, beliefs, and behavior regarding sexual harassment and personal boundaries and positive dating relationship norms (from pretest to posttest). There were steeper increases over time in both measures, with larger mixed-gender/single-gender differences among boys than among girls. Differences in the impact of participating in mixed- versus single-gender groups depended on classroom versus small group settings. The implications of these findings are discussed for sexual assault prevention programs.

Keywords: *sexual violence; prevention program; adolescents*

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Sexual violence is a persistent major public health and social problem. Early efforts to address the perpetration of rape focused on secondary and tertiary prevention interventions for men who had already exhibited sexually violent behavior. Over the past decade, however, efforts have shifted from interventions following sexual violence to prevention of first-time male perpetration. Although the effectiveness of prevention interventions has been shown to be influenced by mode of delivery, audience, length of intervention, and other programmatic components (Anderson, Cooper, & Okamura, 1997; Brecklin & Forde, 2001; Flores & Hartlaub, 1998), no study to date has examined how these program delivery characteristics interact or how combinations of program delivery characteristics affect sexual violence–related outcomes across time. This study will begin to address questions concerning the most effective program delivery modes to reach youths and how program delivery factors interact to affect program effectiveness.

BACKGROUND AND LITERATURE REVIEW

Youth Sexual Assault Interventions

Over the past 20 years, several studies have evaluated sexual assault interventions; however, evidence supporting

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program effectiveness—specifically, the factors affecting effectiveness—remains weak and at times contradictory. Intervention strategies range from skill building for youths and families, to programs that work with men to change concepts of masculinity, to in-school programs that promote equitable gender relations. In a recent study, the World Health Organization (2002) found that whereas some sexual assault prevention strategies are promising, few interventions have been thoroughly evaluated.

Sexual violence prevention efforts have focused primarily on middle school and high school populations. Because adolescence is a critical time for the development of early romantic relationships, it is an opportune stage to address skills and knowledge that can provide a foundation for understanding the facets of healthy romantic relationships (Collins & Sroufe, 1999). Many of the intervention programs focus on increasing knowledge and changing attitudes and beliefs; as such, they stem from interpersonal aggression theories developed with adults that show the importance of attitudes and beliefs (e.g., Foshee et al., 2001) and the development of conflict resolution skills (Holtzworth-Munroe, 1992) in reducing the perpetration of violence. In an intervention with adolescents with histories of child maltreatment, Wolfe et al. (1993) found that focusing on these types of skills and attitudes resulted in reductions in incidents of emotional and physical abuse perpetration and victimization over time.

As with other types of prevention efforts, middle school and high school settings often provide the most convenient milieu to reach large numbers of youths. The literature indicates that school programs use a range of sexual violence intervention activities. In a review of existing sexual assault prevention interventions, Morrison, Hardison, Mathew, and O'Neil (2004) found that commonly used intervention components focus on teaching students to examine societal portrayals of male and female roles, find alternative nonviolent conflict-resolution tactics, recognize the early warning signs of violence, avoid and disengage from such relationships, and correctly identify and interpret aggression.

Changes in attitude and knowledge continue to be the most frequent measure of effectiveness for dating violence prevention programs targeting adolescents, whereas assessments of behaviors and behavioral intentions are less common. Wekerle and Wolfe (1999) reviewed six adolescent dating violence programs and found significant program effects on changes over time in attitudinal and behavioral measures within community- and school-based programs, including dating aggression, knowledge of myths about abuse of women, and behavioral intentions. However, little attention has been given to factors such as programmatic delivery characteristics that may affect program outcomes (O'Leary, Woodin, & Fritz, 2006). Thus, evaluations are needed of interventions with younger populations—which afford the best opportunity for primary prevention—with a focus on programmatic factors that can affect program effectiveness.

Factors Affecting Program Effectiveness

Sexual violence interventions typically address a range of topics, from information on acquaintance/date rape to characteristics of offenders. Such interventions commonly utilize more than one mode of presentation, such as didactic instruction, discussion (including structured discussion), interactive role-play, and videotapes. Empirical literature that exists on factors affecting the effectiveness of sexual violence interventions has primarily focused on college-age populations. The limited research findings with adolescents suggest that the most effective programs focus more on smaller groups in less formal settings, with multimedia presentations, role-playing,

and other interactive methods (Pacifici, Stoolmiller, & Nelson, 2001; Weisz & Black, 2001), and less on didactic formats in classroom settings. Current evaluation findings with college students indicate that interactive programs that are led by peers, that target single-gender audiences, and that consist of multiple sessions are effective at changing attitudes and beliefs (Brecklin & Forde, 2001; Earle, 1996).

Current findings primarily among college populations suggest that the roles of gender and presentation format and their effects on program success need to be explored further, particularly with younger populations. Many programs promote gender-specific programming; however, Bachar and Koss (2001) noted a lack of empirical support for programs targeting male-only audiences because of a lack of clarity regarding whether this approach allows for rape prevention and rape avoidance/resistance education. In a review of 43 evaluation studies of rape education programs for college students, Brecklin and Forde (2001) found that male and female participants in mixed-gender groups experienced less attitudinal change than did men in single-gender groups; however, male-only interventions had varying levels of success in addressing outcomes, such as rape-supportive attitudes, rape-myth acceptance, and rape empathy.

When compared with programs that target other populations, such as college students, programs that focus on adolescents have not been evaluated as extensively and have not focused on the effects of programmatic delivery characteristics (Pacifici et al., 2001). Barriers to such evaluations are heightened by a lack of standardized instruments to assess sexual violence–related outcomes with adolescents and the delivery methods for such outcomes, as well as the limitations often imposed by school systems on capturing this type of sensitive information. Thus, there remains a lack of evidence concerning which intervention elements are most useful in effecting change. This study attempts to shed some light on this important issue.

Study Aims and Hypotheses

This study aims to identify how differences between the implementation approaches and participant factors of four sexual violence prevention interventions affect changes over time on three factors that are related to interpersonal sexual aggression: recognition of sexual harassment and personal boundaries (SHPB), understanding of positive dating relationship norms (PDRN), and resistance to sexual coercion (SC). The implementation factors examined are as follows: single-gender versus mixed-gender groups, small group setting versus classroom lecture setting, and program length. Participant factors included gender and school type (middle school versus high school).

Overall, we anticipated that participation in any of the programs would result in a significant increase in student scores on the factors of interest (SHPB, PDRN, SC) from pre- to posttest. We also hypothesized that program- and participant-specific components would have differential effects on outcomes. As noted, research has shown conflicting findings regarding the effectiveness of mixed-gender versus single-gender groups and group settings versus classroom settings, although no study has examined these factors in combination. However, given prior findings with college students, in these exploratory analyses we hypothesized that single-gender group settings would produce the greatest change on outcomes, with boys showing the steepest increases over time (Brecklin & Forde, 2001). Whereas examination of the effects of the presenter's gender would be desirable, the necessary variability on this domain was not present across and within all sites. The findings from this study are intended to inform professionals who are engaged in developing and implementing health promotion and disease prevention programs—namely, about the effectiveness of sexual violence interventions with adolescents.

METHOD

Participants

Surveys were completed by 1,182 students from Grades 6 through 12. The lack of pretest differences on key outcomes between middle schools and high schools ($p > .25$) provided the justification for combining school types in this study. Participants were drawn from prevention interventions offered by four organizations: the Expect Respect Program at SafePlace (Austin, Texas), Men of Strength Clubs at Men Can Stop Rape (Washington, DC), the Students Upholding Respect and Gender Equity Program at Ga Du Gi SafeCenter (Lawrence, Kansas), and the Teen Exchange Program at the Metropolitan Organization to Counter Sexual Assault (Kansas City, Missouri). Each program was selected through a competitive application process based on curriculum, implementation quality, participant diversity, staff capacity, and other criteria for participation in an empowerment evaluation study (for full description, see Goodman & Noonan, 2009).

TABLE 1
Site and Program Characteristics

Program	*Grades*	*Program Length*	*Program Format*	*Gender Makeup of Group*	*Part of Existing Class*
MOST	10–12	16 sessions, 50 min each	Small group	Single gender	Mixed: Met during health class or after school
Safe Place	6–12	24 total sessions, 50–55 min each	Small group	Single gender	No, students excused from class to attend groups
SURGE	7–9	12 lessons, with more than 1 session for some lessons; 45 min for each session	Small group	Mixed gender	Met during health class and in small groups after school
MOCSA	6–8	6 sessions, 42 min each	Classroom, didactic	Single and mixed gender (one school each)	Yes, met during gym class

NOTE: MOST = Men of Strength; SURGE = Students Upholding Respect and Gender Equity; MOCSA = Metropolitan Organization to Counter Sexual Assault.

Expect Respect provides gender-separate support groups for adolescents who have been victims or perpetrators of violence or who are at risk for violence. This program is grounded in the premise that primary prevention programs should address bullying and sexual harassment as precursors to dating and sexual violence. Its approach is based on the work of Dan Olweus (1994) and a multilevel approach that includes classroom curricula developed by Nan Stein at the Wellesley College Center for Research on Women (Stein, Sjostrom, NEA Women and Girls Center for Change, & Wellesley College Center for Research on Women, 1994). Men of Strength Clubs provide after-school gender-separate small groups for males who self-select into the programs. The Strength Training Program is grounded in an environmental change model that provides the blueprint for moving individuals and groups from the passive role of bystander to the active role of social change agent. The Students Upholding Respect and Gender Equity Program provides mixed-gender small groups for junior high school students who self-select for participation. This program uses grade-specific programming to reduce the incidence of all forms of gender violence and bullying behavior. It is grounded in behavior change theory and cognitive learning theory. The Teen Exchange Program provides single- and mixed-gender didactic presentations for all students in selected classrooms. The program was developed utilizing a comprehensive literature review on prevention programming for guidance, and it involves open dialogue with youths on such topics as sex, sexual assault, and intimacy. It aims to combat the perpetuation of myths and negative perceptions about sexual violence as they affect healthy and unhealthy relationships. These programs vary in length, number of sessions, format, and setting in which information is presented (Table 1). However, each factor is controlled for in analysis, as described in the statistical approach section.

In addition to assessing program delivery issues, we assessed the extent to which variation in the components of the sexual violence curriculum within each site accounted for variability in changes over time on key outcomes; we also assessed the intensity of those components as measured by minutes covering each topic area. However, out of the nine domains covered across the curricula within each site, the measures of component intensity were highly collinear. Out of 35 possible correlations between components, 16 correlations exceeded .63 (with 13 exceeding .80). Because of concerns about multicollinearity among measures of program component variation and intensity, the study focused on variation in the approaches to program delivery. This relative lack of variability does, however, support our premise of comparability across programs in terms of the types of sexual violence prevention topics covered.

The participant pool was ethnically and racially diverse. Among students reporting race (n = 800), 32% reported White as their race (n = 256); 31%, Hispanic (n = 248); 17%, African American (n = 136); 2%, American Indian (n = 16); 2%, Asian (n = 16); and 16%, other (including multiracial; n = 128). The sample was evenly divided between males and females. The largest number of middle school students were in the seventh grade (n = 424), with remaining middle school students split fairly evenly between the sixth grade (n = 230) and the eighth grade (n = 237). Among high school students, the majority of were in the 9th grade (n = 94), followed by the 10th grade (n = 82), the 11th grade (n = 58), and the 12th grade (n = 52), with 5 students not reporting a grade level.

Procedure

Two waves of data were collected from a sample of students enrolled in 20 middle schools (or junior high schools) and high schools during the 2004–2005 academic year. Sites varied in their approaches to obtaining consent; however, all evaluation procedures were reviewed by an institutional review board for the data utilized. In 2004 (fall), 1,182 students had some level of participation in one of the four programs. Of these 1,182 students, 679 (57%) completed pretests and posttests, 371 (31%) completed pretests only, and 132 students (11%) completed posttests only. The data from all students were included in the analyses (see section on statistical approach for modeling of missing data).

TABLE 2
Baseline and Follow-Up Means for Predictor and Outcome Variables

Variable	*Baseline* (SD)	*Follow-Up* (SD)
Sexual harassment and personal boundaries	3.34 (0.458)	3.39 (.462)
Positive dating relationship norms	3.01 (0.516)	3.05 (.615)
Sexual coercion	3.39 (0.713)	3.49 (.765)
Gender (%)		
Girls	54.05	
Boys	45.95	
School type (%)		
Middle school	75.89	
High school	24.11	
Program length (%)		
Six sessions	65.06	
Semester	4.40	
Year long	30.54	
Program type (%)		
Single gender	77.66	
Mixed gender	22.34	
Delivery type (%)		
Group	34.94	
Classroom	65.06	

Measures

Across all sites, participants were asked common items on knowledge, attitudes, and intended behaviors related to sexual violence. Exploratory factor analysis was used to determine item loadings, and such analysis resulted in three factors (SHPB, PDRN, SC). Table 2 provides baseline and follow-up means for each outcome measure, as well as the implementation factors examined: single-gender versus mixed-gender groups, group setting versus classroom lecture setting, and differences in changes over time across participant gender. As noted, the lack of pretest differences on key outcomes between middle schools and high schools ($p > .25$) provided the justification for combining school types in this study.

SHPB. This factor comprises seven items that captured students' attitudes and beliefs about appropriate behavior regarding situations that could violate one's own or another's personal space and desires; the Cronbach's coefficient alpha was .78. The factor included the following items (and factor loadings):

If you are just joking, it is okay to touch or grab someone in a sexual way without their permission. (.71)
If someone is making out with you, it is okay to pressure them to have sex or do other sexual things. (.66)
If someone pays for a date, they have the right to expect sex from their date. (.61)
It is okay to pressure someone to have sex with you when they are drunk or high. (.51)
It is okay to brag about having sex with someone that you are dating. (.50)
If a girl dresses in sexy clothes, it means she wants to have sex. (.47)
Girls often lie about rape to get back at someone. (.30)

PDRN. This factor comprises seven items and captured students' attitudes and beliefs regarding good dating relationships; the Cronbach's coefficient alpha was .65. It included the following items:

A good dating relationship includes being able to have a different opinion than the person you are dating. (.60)

A good dating relationship includes talking openly about feelings. (.60)
A good dating relationship includes listening to the person you date, even when you disagree. (.57)
A good dating relationship includes controlling your temper when you are feeling extremely jealous. (.55)
If you threaten or physically hurt someone you are going out with, that person should break up with you. (.28)
If your friends found out that you threatened or physically hurt someone you were dating, they would be upset with you. (.23)
You feel confident that you can do something to prevent sexual violence. (.32)

SC. This factor, as identified by exploratory factor analysis, included two items that dealt with the appropriateness of coercive sexual behavior in dating relationships; the Cronbach's coefficient alpha was .72. The factor included the following items:

A good dating relationship includes having sex or doing other sexual things even when you don't want to. (.86)
A good dating relationship includes pressuring the person you are dating to have sex or do other sexual things, even if she/he doesn't want to. (.66)

RESULTS

Statistical Approach

The approach used in these analyses was a modification of the standard multivariate longitudinal growth model (MacCallum, Kim, Malarkey, & Kiecolt-Glaser, 1997), which typically requires at least three waves of data to run the analysis and thus ensure true assessment of linear functional form (Rogosa, Brandt, & Zimowski, 1982; Singer & Willett, 1991). Because this study only has two data waves, the additional constraint of zero residual variance among this set of repeated measures is required for identification of the model. In the case of having only two data waves, there would be no discrepancy between the individual's actual score and the estimated score based on the predicted linear trajectory; hence, there would be no residual term. This structure is analogous to using the observed difference score (i.e., $PDRN_{posttest} - PDRN_{pretest}$). Again, it is not possible to test the linearity of the outcome trajectories with only two data waves (Singer & Willett, 1991). Figure 1 depicts the general structure of the analytic model.

First, the multivariate repeated-measures structure is constructed for two waves of measurement for SHPB ($SHPB_1$, $SHPB_2$), PDRN ($PDRN_1$, $PDRN_2$), and SC (SC_1, SC_2). This is done by specifying two latent variables for each set of repeated measures corresponding to the intercept (e.g., $PDRN_\alpha$, the score on PDRN at time equals zero or pretest) and slope (e.g., $PDRN_\beta$, the difference score on PDRN from pretest to posttest); these scores vary across individuals. Variability across individuals in both baseline levels of the outcome variables of interest and the levels of change from pretest to posttest can then be accounted for by predictors of change (e.g., gender, as shown in Figure 1). These predictors were simultaneously included in the model so that (a) each serves as a corresponding statistical control for the other and (b) unique effects of any predictor (above and beyond all others) are estimated. These analyses also accounted for nonindependence because of site-level clustering (Muthén & Muthén, 2002). For adjustment of estimates due to missing data, full information maximum likelihood estimation was used. Models estimated under full information maximum likelihood handle missing data under the assumption that the probability of missingness may depend on data that are observed but do not depend on the data that are missing (i.e., missing at random; Schafer & Graham, 2002) and thus make adjustments for differences between cases with complete data and incomplete data.

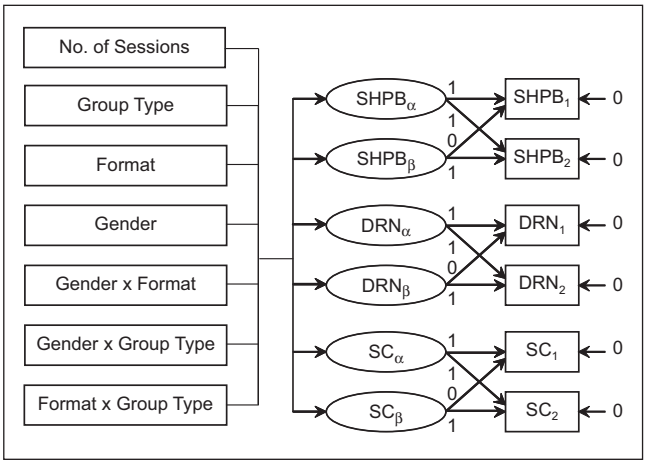

FIGURE 1 Structure for Analytic Model

NOTE: SHPB = sexual harassment and personal boundaries; PDRN = positive dating relationship norms; SC = sexual coercion.

Overall Changes Over Time

Significant overall increases were observed for SHPB, $b = .068$ (.023), $t = 3.006$, $p < .001$, $R^2 = .007$, and PDRN, $b = .068$ (.026), $t = 2.662$, $p < .01$, $R^2 = .006$. Overall changes in SC over time were nonsignificant, $b = .105$ (.055), $t = 1.899$, $p = .057$. However, because these results

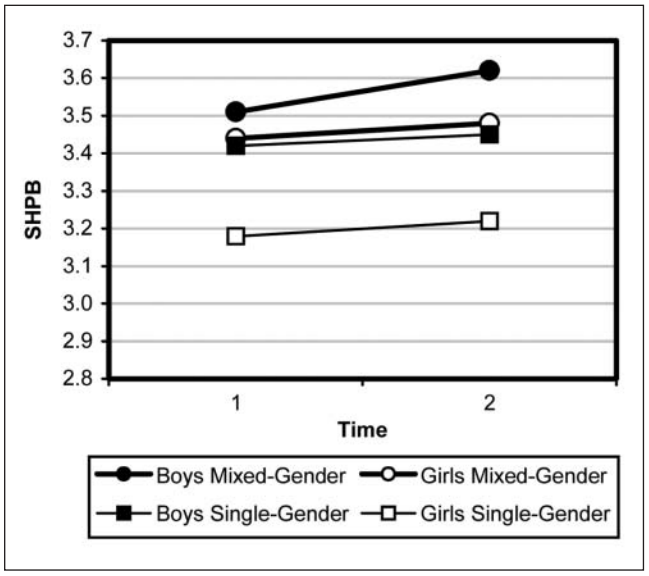

FIGURE 2 Gender × Group Type × Time Interaction: Sexual Harassment and Personal Boundaries (SHPB)

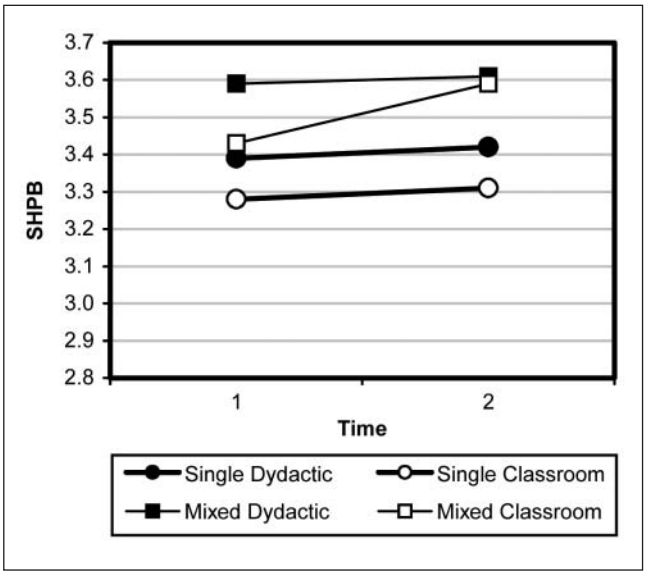

FIGURE 3 Group Type × Format × Time Interaction: Sexual Harassment and Personal Boundaries (SHPB)

reflect the average levels of change over time, certain subgroups may have had significant improvement above and beyond other subgroups, even in cases where the average levels of change are nonsignificant (these effects are discussed below). We assessed differences for gender, school type (high school and middle school), program length, program gender composition, and delivery type (small group versus classroom). Significant findings are presented, controlling for any potential pretest differences on the outcomes of interest.

SHPB

For SHPB, there was a Group Type × Gender interaction on changes over time, $b = -.022$ (.005), $t = -3.941$, $p < .001$, $R^2 = .013$. Boys in single-gender groups did not show changes in SHPB, whereas boys in mixed-gender groups showed increases in SHPB. Girls, however, showed equivalent increases in SHPB in single- and mixed-gender groups (Figure 2).

There was also a Format × Group Type effect on changes over time in SHPB, $b = .04$ (.016), $t = 2.467$, $p < .01$, $R^2 = .005$ (Figure 3). Among mixed-gender groups, steeper improvement over time was observed with the classroom delivery type (although the mixed-gender/group combination started at higher levels at pretest on SHPB). Among single-gender groups, students who were exposed to classroom delivery type and small group formats improved at the same rates.

Dating Relationship Norms

The Format × Group Type interaction effect on changes over time in PDRN was significant, $b = .035$ (.018), $t = 1.971$, $p < .05$, $R^2 = .003$ (Figure 4). Among mixed-gender groups, steeper improvement was observed with classroom delivery (although the mixed-gender/small-group combination started at higher levels at pretest on PDRN). Among single-gender groups, students who were exposed to the small group format showed steeper improvement than did students in the single-gender/classroom combination.

SC

No differences were observed in change over time on SC.

DISCUSSION

The study sample comprised a diverse group of middle school and high school students who participated in one of four interventions designed to prevent sexual violence. Students had significant overall increases from pretest to posttest on SHPB and PDRN, supporting the hypothesis that involvement in any of the programs would increase scores on knowledge related to these constructs, regardless of implementation and participant factors. SHPB consisted of items that would likely be considered definitive in terms of what society in general deems as right or

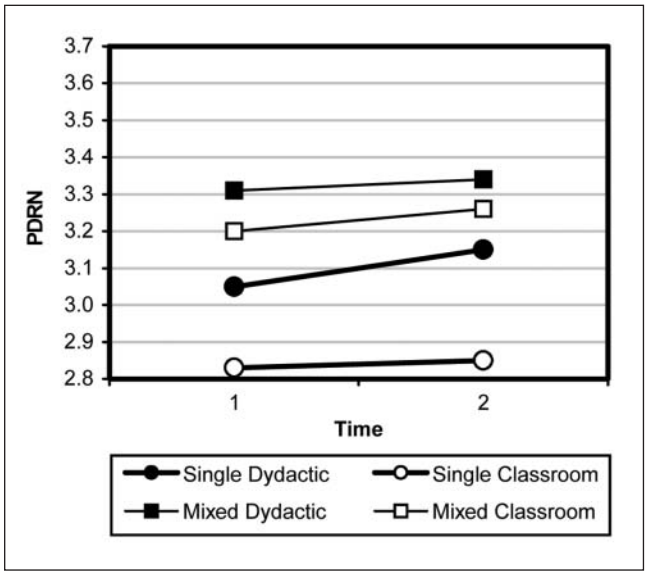

FIGURE 4 Group Type × Format × Time Interaction: Positive Dating Relationship Norms (PDRN)

wrong; it also consisted of items that could be shaped by attitudes or beliefs, as well as an increase in factual knowledge. However, PDRN tapped into attitudes, beliefs, and intended behavior related to dating relationships, which could primarily be subjective and shaped by peers, parents, school/community culture, and other factors. The increase in scores on both of these constructs lends some support for the effectiveness of participation in programming, irrespective of the attitudinal or educational focus of the construct and program characteristics. However, further analysis did yield interesting findings on differences in change over time based on different program characteristics.

Contrary to our hypothesis, mixed-gender groups had greater rates of increase on SHPB when compared with single-gender groups. This raises the issue of whether exposure to opposite-gender participants might positively contribute to changes on outcomes. The finding that boys in mixed-gender groups have steeper increases on SHPB than do boys in single-gender groups, combined with the absence of differences for girls in different gender composition groups, indicates that this effect was isolated to males for this sample. As noted earlier, there have been conflicting findings on this particular program delivery issue. However, this finding supports the idea that exposure to the opposite sex may heighten the acquisition of fact-based knowledge with issues pertaining to SHPB while also affecting attitudes about what is acceptable in terms of one's dating partner and peer group. Thus, it could be theorized that the mechanism for this change is influenced by the induction of higher empathy levels when boys are interacting with girls who have been or could be affected by a lack of knowledge or by shifts in attitudes regarding SHPB. These interactions may in turn affect outcomes for boys.

For mixed-gender groups, being in a classroom setting rather than a small group format resulted in higher scores for both SHPB and PDRN. This may speak to the best venue for delivery of programming for these grade levels when mixing girls and boys. As many middle school and high school teachers might attest, lack of structure in a classroom can fuel a chaotic learning environment, which might be compounded when dealing with sensitive topics such as sexual violence. Thus, for a mixed-gender group, a classroom setting may establish a dynamic that allows for more control by the presenter and for less deviation to unrelated topics that what would occur in a less structured format.

For single-gender groups, respondents reported comparable changes over time for SHPB among classroom and small group settings; however, for PDRN, students in the small group format showed significantly greater change over time as compared with students in the classroom setting. The comparable performance on SHPB across settings may speak to a lack of variability that might be expected with more fact-based questions, such as legal definitions of rape and consent, whereas a small group may have a more positive effect on attitudinal and belief-driven constructs such as PDRN because small groups provide a venue for more discussion and for more challenges to beliefs and norms.

Overall, the strongest and most consistent change was found with SHPB and for mixed-gender groups for both SHPB and PDRN, particularly for boys within these groups. These findings suggest that the gender composition of sexual violence intervention programs may indeed affect outcomes related to sexual harassment and dating relationships. Although this is not intended to detract from the value of single-gender activities, it does indicate the importance of incorporating activities that would enable participants in single-gender formatted programs to have some dialogue with the opposite sex.

As indicated in the results section, the effect sizes for the impact of variation in program delivery on outcomes were generally small, with only one effect (Gender × Group Type interaction effects on SHPB) exceeding an R^2 of .01. However, these small effects for the impact on program delivery are not so different from the small effects typically observed for program content in universal rape prevention programs; many overall effect sizes for program content do not exceed a Cohen's d of .20 (which translates to an R^2 of .01; see Brecklin & Forde, 2001; Pacifici et al., 2001). This is likely due to the fact

that in universal interventions, a nontrivial number of participants have no room for improvement (because they are already high functioning) and thus cannot improve as a function of intervention (Brecklin & Forde, 2001). So, whereas the impact of program delivery is small, it is not much smaller than what has been observed in the published literature for program content in universal interventions in general and sexual violence prevention interventions in particular.

The present study provides useful insights into implementation approaches and how they affect important knowledge and attitudinal sexual violence prevention intervention outcomes. The study includes findings from four unique programs that although varying in delivery mode and curricula, still have significant overlap in commonly utilized substantive topics, program components, and desired outcomes in the area of sexual violence prevention. The analytic approach used allows for comparison between these unique interventions because it controls for variability in programmatic characteristics, such as the type of school in which the progam is implemented and the duration of the program.

The study also has important implications for practitioners and researchers who are conducting evaluations. If evaluation results continually indicate a lack of findings, evaluators may erroneously conclude that the substantive content of the program itself is ineffective rather than examine the potential impact of program implementation characteristics. The study highlights several key aspects that should be considered with any assessment of program effectiveness, including gender composition of the participants and delivery format (small group versus classroom).

Although it is not a randomized controlled trial, this study fills a gap in the adolescent sexual violence literature by showing that there are effective ways of delivering multicomponent interventions where differences in delivery methods and modalities had not been previously studied under any design (e.g., randomized controlled trial, quasi-experimental, observational). The study provides information that should be considered for future randomized controlled trials in the area of adolescent sexual violence prevention, such as randomization of delivery modality as part of the intervention protocol.

Limitations

Several limitations should be considered with this study. One notable limitation of the design is the lack of control groups, without which there is the possibility that the change experienced by students was a natural progression not related to programming. However, in spite of this limitation, this study provides much-needed information on the interactions of multiple program delivery characteristics, and it adds to the sparse literature in this area, in which there are no other randomized trials. As noted in the model limitations section, analyses were undertaken to assess the impact of delivery intensity for the various components delivered across the four programs; however, because of a lack of variability, we were unable to include variables that could adequately assess this impact. In addition, although we could account for differences that may have been affected by various program components, we recognize that one key aspect of programs that is more challenging to operationalize involves the effect of the presenter.

Because programs potentially varied in quality, content, length, number of sessions, format, and setting in which information was presented, caution should be taken with interpretation of findings. However, as noted, each factor (except quality) was controlled for in analysis or assessed for differences outside the model, with no significant differences found, as described in the methods section. Although programs did vary in terms of curriculum, numbers of sessions, and settings, these differences are noted and controlled for in the analytic approach. In regard to program quality, each program was selected through a competitive application process based on several elements, including implementation quality for participation in an empowerment evaluation study; however, consistent measures of quality were not available across the sites for use in this article.

Although the collective group of study participants is fairly diverse, these interventions were all school based, which may limit the accessibility of youths who are most at risk, such as those who have dropped out of school. The school setting also limits the types of questions that could be asked on a survey. In addition, students' pretest scores were high for some groups, which did not allow for a large amount of movement from pretest to posttest.

The outcome expected to be affected by these interventions (i.e., sexual violence/harassment perpetration) is difficult to measure in a school setting and with youths. Thus, proxy measures (e.g., attitudes, beliefs, and intended behavior) have to be used without a clear assessment of how they correspond to behavior. Attention to the measurement tools used for such assessments is critical and so remains a dire need in the evaluation of sexual violence prevention programs. Moreover, a longer follow-up period with multiple points would allow for complex statistical analyses and provide a better assessment of whether the observed changes over time increased, remained, or declined.

Conclusion

The study findings indicate that outcomes can be affected by format (classroom or small group), group type (single gender or mixed gender), and gender, as well as by combinations of these characteristics. It is important that

program providers consider how these programmatic characteristics can influence the level of participants' observed change across time. This study suggests that topical areas that pertain to fact-based information may be presented effectively in classroom and small group settings. However, material focusing on attitudinal and behavioral change, which can be susceptible to external influences (such as peers), may be more effective in small group settings. This pattern is further complicated by participant gender, with some unique findings occurring with single-gender versus mixed-gender groups.

Overall, this study reinforces the need for sexual violence prevention programming that is tailored to the participants and that uses a combination of presentation styles and formats depending on the topical area. Sexual violence prevention programs would benefit by providing opportunities for single- and mixed-gender dialogue and by considering the appropriateness of more small group versus didactic classroom styles based on the topics covered.

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