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Diffusion effects of a sexual violence prevention program leveraging youth–adult partnerships

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Abstract

The purpose of the current study was to examine the diffusion effects of a youth-led sexual violence prevention program (i.e., Youth Voices in Prevention [Youth VIP]). Specifically, social network analysis was used to measure the extent to which Youth VIP changed behaviors for 1172 middle and high school youth who did not attend program events but were friends with Youth VIP participants and completed the first and final survey (approximately 2 years apart). Findings suggest that there was considerable interpersonal communication about Youth VIP among the students generated by program participation. Specifically, youth with friends who participated in Youth VIP were more likely to report hearing their friends talk about Youth VIP and reported talking to their friends about Youth VIP compared with those not connected to Youth VIP participants. However, there were no diffusion effects found for behavioral outcomes (i.e., bystander intervention behavior, violence victimization, and perpetration). Given the mixed findings, further research is needed to determine the extent to which youth-led sexual violence prevention initiatives lead to changes in broader community-wide changes in youths' behaviors.

Keywords

diffusion; prevention; sexual assault; sexual violence; social network; youth-led

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INTRODUCTION

Sexual violence, which includes unwanted sexual contact, sexual coercion, and attempted and completed rape, is a public health crisis that disproportionately impacts youth (Basile et al., 2020; Centers for Disease Control and Prevention, 2020). Indeed, 15% of high school girls and 4% of high school boys will experience sexual violence victimization in a 1-year period (Centers for Disease Control and Prevention, 2020). Sexual violence frequently co-occurs with other forms of violence such as sexual harassment and bullying (Hamby & Grych, 2013; Sessarego et al., 2019), and bullying perpetration in early adolescence predicts sexual violence perpetration in later adolescence (Espelage et al., 2018).

The high rates and deleterious outcomes of sexual and related forms of violence underscore the critical need for comprehensive, primary prevention efforts. Unfortunately, few programs to date have demonstrated reductions in sexual and related forms of violence among youth (Basile et al., 2016a; De La Rue et al., 2017; Yeager et al., 2015). Exceptions include programs (e.g., Green Dot, Shifting Boundaries, Safe Dates, Dating Matters) that include evidence-based prevention components including bystander intervention, social norms, and healthy relationship skills (Basile et al., 2016b; Coker et al., 2017; Debnam & Temple, 2021; Foshee et al., 2000; Taylor et al., 2013). Of note, bystanders are third parties who have opportunities to react to help diminish risk for violence or increase support for survivors and bystander behaviors are actions or words that promote safety and intolerance for violence. Several programs with documented success in reducing sexual and related forms of violence include youth-leadership components, such as Green Dot, a bystander-focused prevention program that trains youth popular opinion leaders (POLs; influential individuals within a community who have the ability to change attitudes and behaviors of their peers) to share and encourage social norms and behaviors that violence is unacceptable. Evaluations of this program demonstrated that high school students in treatment schools, compared with students in control schools, showed reductions over time in sexual and related forms of violence (Coker et al., 2017). Research found specifically that 3–4 years was needed for diffusion (i.e., prevention messages and skills to spread throughout a network or community) to take hold and affect program impacts (Coker et al., 2019). In the Coker et al. evaluation of Green Dot, however, social network analysis was not used to select POLs; rather, school personnel identified student leaders within each school. Further, data were not linked at the individual level in this study, which only allowed researchers to examine change at the school level. Indeed, research of implementation effects, and in particular the diffusion of prevention messages to peers by youth participating in prevention activities, is understudied. Two promising innovations included in the current study are the involvement of youth in sexual violence prevention design and the use of social network analysis to better understand program diffusion effects (i.e., the extent to which youth not directly involved in prevention programming demonstrate changes in attitudes and behaviors given their connection to POLs).

Researchers have suggested that one way to potentially improve the impact of prevention programs aimed at reducing sexual and related forms of violence is to include youth in the development and implementation of prevention efforts (Edwards et al., 2016; Larson et al., 2015; Ramey et al., 2017). Youth-led refers to youth taking responsibility for creating

change and in prevention includes youth as leaders, or co-leaders, in the development, implementation, and/or evaluation of programming, or other initiatives, seeking to prevent a specific health behavior or behaviors such as preventing violence (Ho et al., 2015; Weisz & Black, 2009). It also involves adults as co-learners who share power during the prevention processes. Youth leadership in prevention varies and ranges from serving on an advisory board to developing and/or delivering prevention education content (via peer educators with support from adults) (Ramey et al., 2017; Weisz & Black, 2009). Youth-led prevention could impact the youth who are directly involved in prevention efforts, and in addition, could impact a broader circle of peers via diffusion of prevention messages and skills (Rogers, 2002). Diffusion of innovation theory seeks to explain the how, why, and the rate at which new ideas and practices are spread, or diffused, throughout a group or community (Rogers, 2002). Diffusion theory posits that people change their knowledge, attitudes, and practices through interpersonal communication with peers (Valente, 1995). These network effects among adolescents are well established in many areas including tobacco use (Valente et al., 2003; Valente, 2012), obesity (De la Haye et al., 2010), bullying (Neal, 2007), and so on; but to our knowledge not for sexual violence.

Despite the promise of diffusion of innovation theory and specifically identification of youth leaders, or POLs, via social network analysis, no such efforts have been applied to date to the prevention of sexual violence among youth. However, adult POLs have successfully implemented intimate partner violence and child abuse prevention efforts in East Africa (Cluver et al., 2016; Stern et al., 2021), and promising effects were found for a youth-led program to prevent bullying, sexual harassment, and dating violence among middle school students in Canada (Connolly et al., 2015). Further, youth-led prevention has been implemented in other health-behavior fields, such as substance abuse and sexual health, with findings about the effectiveness of these efforts showing mixed results emanating from studies demonstrating variability in rigor (Cuijpers, 2002; Georgie et al., 2016; Mellanby et al., 2000; Nation et al., 2003; Sun et al., 2018). Nevertheless, a few promising approaches have been identified. For example, tobacco use prevention interventions have employed POLs, students named frequently as a friend, to promote antitobacco attitudes. The ASSIST program in the United Kingdom involved a large randomized controlled trial which demonstrated that adolescent POLs were effective at slowing the uptake of tobacco among youth (Campbell et al., 2008). More recently, Wyman et al. (2021) pilot-tested the POL approach to reduce vaping in three schools and showed that the approach was effective at reducing both actual vape use and intentions to vape (Wyman et al., 2021). These studies focused on using social network analysis and other strategies to identify youth influencers who could deliver program content.

Less explored is the use of social network analysis to examine the diffusion of sexual violence prevention program effects after programming. These effects can include rates of violence victimization and perpetration, and helpful bystander behaviors Grounded in diffusion of innovation theory (Rogers, 2010; Valente & Davis, 1999), the purpose of this study was to examine the extent to which a youth-led sexual violence prevention program (i.e., Youth Voices in Prevention [Youth VIP]) led to changes in behaviors among middle and high school youth who did not attend Youth VIP programming, but were friends with middle and high school youth leaders who did. Although there is limited research on youth-

led and POL approaches to the prevention of sexual violence, we expected that youth in the implementation community (not directly involved with Youth VIP) would learn about sexual violence and its prevention through conversations with peers directly involved with youth. Thus, youth discussions of prevention messages and skills from Youth VIP may multiply its impacts beyond those directly involved with Youth VIP.

Youth VIP is a program for middle and high school youth developed in a small city in the northern Great Plains region of the United States. Through retreats and afterschool activities, POLs were taught skills specific to bystander intervention (i.e., how to intervene to prevent instances of sexual violence), social norms (i.e., how to change norms to be intolerant of sexual violence), and managing strong emotions/healthy relationship skills. Given the large presence of Native American youth (largely Lakota) in the small city where this study took place, Lakota history, values, traditions, and language were integrated in Youth VIP activities. For example, programming events often included prayer and smudging, and all youth (including non-indigenous youth) were invited to participate in cultural activities. Youth leaders were also trained in diffusion skills (i.e., how to talk to their peers about prevention messages and skills), especially in program events that took place during the last year of program implementation, to promote community-wide change. Different strategies were used to train youth in diffusion skills. For example, one strategy was to have youth write elevator pitches (e.g., that sexual violence is a problem in the community, why they care about preventing sexual violence, and specific asks from their peers to be allies in the prevention of sexual violence) and practice the elevator pitches with other POLs and adult mentors. Another strategy was for youth to outline several specific social media posts they intended to post/share specific to sexual violence prevention (e.g., tips for how to be an effective bystander).

The project was founded on local knowledge generation from adults and youth and an advisory board where adults and young people came together to discuss sexual violence and prevention in their local community. Whereas retreats were initially adult led (both content and delivery), over time, youth had increasing roles and responsibility in creating and delivering the prevention education materials and over time more co-learning among adults and youth unfolded as working groups adapted knowledge about sexual violence prevention to the specific community contexts of the project. Further, youth took the prevention information and skills that they learned from adults at retreats and used that information to create, with support from adults, additional Youth VIP activities that happened after school that were youth-led (with support of adult mentors). Youth leaders also engaged in informal conversations with their peers about prevention messages and skills that were not part of formalized Youth VIP activities (measured in this paper via diffusion). Given the potential for iatrogenic effects, it was not deemed appropriate for youth to fully lead sexual violence prevention efforts without support/supervision from adults with expertise in sexual violence prevention. Of note, during the implementation of this project, there were no school-based sexual violence prevention efforts taking place.

For findings regarding the impact that Youth VIP had on youth directly involved in programming, see (Banyard et al., 2022; Edwards, Banyard, et al., 2022). In general, findings suggested that youth directly involved with Youth VIP reported more positive

bystander behaviors compared with youth not directly exposed to Youth VIP (Banyard et al., 2022; Edwards, Banyard, et al., 2022). Further, whereas the first large kick-off event (i.e., overnight retreat) led to increases in some forms of perpetration (which may have been spurious or due to the large group size and/or lack of training for adult mentors; see Edwards, Banyard, et al. (2022) participation in subsequent youth VIP events (where more youth-adult collaboration and co-learning took place) was related to lower rates of perpetration (Banyard et al., 2022; Edwards, Banyard, et al., 2022). Finally, youth directly involved with Youth VIP reported subsequent increases in victimization (Banyard et al., 2022; Edwards, Banyard, et al., 2022). We attributed this finding to the fact that Youth VIP programming activities encourage youth with histories of victimization to disclose these experiences to others, which may have rendered these youth more likely to subsequently report victimization experiences on the surveys. Overall, approximately 8% of eligible middle and high school youth in the district participated in at least one Youth VIP event (there were 132 events total), with most youth participating in just one event.

In this paper, we tested whether non-participants with friends participating in Youth VIP reported (1) hearing about Youth VIP and (2) changes in behaviors. Specifically, we hypothesized that nonparticipating youth with friends who participated in Youth VIP, compared with those without such friends, would be (1) more likely to report hearing about Youth VIP program activities; (2) more likely to report more positive bystander intervention to prevent sexual violence; (3) less likely to report sexual violence, sexual harassment, bullying, and overall perpetration; and (4) more likely to report victimization experiences.

METHODS

Research design and setting

These data are part of a larger multiple baseline study to evaluate a youth-led sexual violence prevention project (Banyard et al., 2022; Edwards, Banyard, et al., 2022). Data collection occurred over 3 years in five waves: Fall 2017 (W1), Spring 2018 (W2), Fall 2018 (W3), Spring 2019 (W4), and Fall 2019 (W5). Data from W1 and W5 were used in the current analyses because they represent the baseline and final impact measures, respectively. The average number of days from W1 to W5 was 733. This study was reviewed and approved by the University of New Hampshire's Institutional Review Board.

Participants

Participants were 1172 youth who completed both W1 and W5 surveys and did not participate in any Youth VIP activities. At W1, they were in grades 7–10, and the mean age was 13.7 (SD = 1.2, range = 12 or under to 18 or over) years. The sample was 52.8% female (n = 619) and 47.2% male (n = 553). Participants could identify as more than one race or ethnicity; the majority, 81.0% (n = 949), identified as White; 21.0% (n = 246) as Native American; 5.3% (n = 62) as Black/African American; 3.2% (n = 38) as Asian; and 2.4% (n = 28) as Hawaiian/Pacific Islander. Moreover, 12.4% (n = 145) identified their ethnicity as Hispanic/Latinx. Regarding sexual orientation, 9.6% (n = 113) identified as a sexual minority (e.g., bisexual, lesbian, gay).

Procedures

Written parental consent and student assent were required for youth to complete the survey (i.e., active consent). We invited all school district middle school and high school students in grades 7–10 (n = 4172) at the beginning of the Fall 2017 semester to enroll in the study; the first survey occurred between October 2017 and December 2017. We used intensive recruitment procedures such that the consent forms were sent to parents in multiple ways (i.e., via their students from school, mailings, email) and we called and conducted home visits to households in which consent forms had not been returned. We also had multiple ways in which the consent forms could be returned (e.g., email, text, in person). At study initiation, of the 4172 eligible students, the majority (n = 3257; 78.1%) of youth returned the consent forms, and of those that returned the forms the majority (n = 2667; 81.9%) of guardians gave permission for their student to take the survey. Most students (n = 2232; 83.7%) with guardian permission took the survey. In the current paper, we included students (n = 1303) who took both the first and final survey. Of note, 2232 of the students who took the first survey (W1), 58.4% (n = 1303) were retained at W5. Participants who took part in Youth VIP activities were excluded from the current paper resulting in a final sample size of 1172.

The survey was administered on computers in school by trained research staff. All students had unique logins that were created in part so that students only with parental permission could access the survey. Students received a small incentive (e.g., fruit snack, pencil) and were entered to win one of twenty $100 gift cards which increased by $50 at each of the five subsequent surveys. There was an additional incentive drawing of five large prizes approximately equal to $1000 (e.g., tablets, pizza party) for completing all surveys for which students were eligible. Students who missed the in-school survey had the option of taking it on their own at a time and location of their choosing.

We conducted a series of χ^2 and t test analyses to understand patterns in attrition based on demographics and key study variables. We compared, among participants who completed W1, participants who completed each subsequent wave to participants who did not complete that subsequent wave. In general, younger students and White students were more likely to complete subsequent surveys than were other students, whereas male students, students of color, and students who reported some form of perpetration and victimization were less likely to take subsequent surveys than were other students. See Banyard et al. (2022) and Edwards, Banyard, et al. (2022) for study protocol details, eligibility, and participation by wave, as well as detailed participation attrition analysis.

Measures

Bystander behaviors (proactive)—The two proactive bystander behavior questions, how much students “talked during the past 6 months with their friends or parents, teacher, minister, elder, etc. about things you all could do that might help stop sexual assault,” and a second question that inquired about the “use of social media (like Facebook, Twitter, etc.) or texting to show that sexual assault is not okay” used the following response options for each of the items: 0 = *0 times*, 1 = *1–2 times*, 3 = *3–5 times*, 6 = *6–9 times*, or 10 = *10 or more times*. All students potentially had the opportunity to complete these items and thus

these items were scored as collected on the survey as individual continuous variables that did not require transforming. The two items were combined into one variable for the current analyses.

Bystander behaviors (reactive)—Four questions asked students about behaviors in which sexual harassment or sexual violence were about to happen or had already happened. These were based upon recent work on high school students (Coker et al., 2011; Edwards et al., 2018). The items included: "Saw or heard about a student (1) … grabbing or touching another student sexually (like on their butt or breasts)"; (2) "… using physical force or alcohol or drugs to make/force another student to have sex"; (3) "… sending a naked photo of another student without that person's permission"; and (4) "… spreading sexual rumors about another student." Among youth who reported the opportunity to intervene, they were scored 1 = *yes* (intervened) or 0 = *no* (did not intervene). Only students who reported witnessing these behaviors could receive a score on the corresponding bystander action item; other students were coded as missing for bystander action.

For each of the four reactive behavior items in which participants responded affirmatively with the opportunity to take action, we asked participants how they responded. Participants were presented with the following types of behavior and asked to select all of the things they did in response to witnessing the experience: (a) "Did nothing/ignored what was happening"; (b) "Laughed, took a video, or showed that you did not think what was happening was a big deal"; (c) "Tried to make the situation stop by using distraction, such as dropping something to make a noise; starting a random conversation"; (d) "Get help from another teen, parent, and/or adult"; (e) "Said something or tried to stop the person doing the hurtful behavior"; (f) "Said something or tried to help or support the person who was being hurt." Scores were created to represent the degree to which, in each situation, participants acted positively. A point was subtracted from the score if participants acted negatively (behaviors a and b) and added to the score if participants acted positively (behaviors c–f). Thus, final scores for each situation ranged from −2 to 4.

Violence perpetration and victimization—Four items assessing sexual assault were drawn from Cook-Craig et al. (2014) measure that assessed for sexual coercion (e.g., "You had sexual activities with someone because you either threatened to end your friendship or romantic relationship if they didn't or because you pressured the other person by arguing or begging?"), physically-forced sex (e.g., "You had sexual activities with someone by threatening to use or using physical force [twisting their arm, holding them down, etc.]?"), and incapacitated sex (e.g., "You had sexual activities with someone because she or he was drunk or on drugs?"). Four items from the YRBS were used to assess physically forced sexual contact (e.g., You forced someone to do sexual things that she or he did not want to do [count such things as kissing, touching, or physically forcing someone to have sexual intercourse]?"), sexual dating violence (e.g., "You forced someone you were dating or going out with to do sexual things that they did not want to do [count such things as kissing, touching, or physically forcing someone to have sexual intercourse]?"), bullying on school property (e.g., "You bullied another person on school property?"), and electronic bullying (i.e., "You bullied another person electronically (count bullying through texting, Instagram,

Facebook, or other social media)?") (Centers for Disease Control and Prevention, 2014). We used three items from the American Association of University Women to assess for homophobic teasing and sexual harassment (i.e., sexual comments [e.g., "You made sexual comments, jokes, gestures, or looks about/to a person?"], and sexual rumors [e.g., "You spread sexual rumors about a person?"]). Lastly, two items assessed homophobic bullying (e.g., You said a person was gay or a lesbian, as an insult [as a put down or to make fun of someone]?") and racial bullying (e.g., "You bullied another person or were mean to another person because of the other person's race/ethnicity/skin color?"). We used several measures to assess for a wide range of sexual and related forms of violence experienced during the past 6 months, all with response options 1 = *yes* or 0= *no*. Participants received a total of four dummy variable scores for perpetration and victimization (1 = *yes*; 0 = *no*): any perpetration/victimization any sexual violence perpetration/victimization, bullying perpetration/victimization, and sexual harassment perpetration/victimization. Given the low base rates of physical dating violence, models would not converge and thus in the current paper, we did not include that variable in analyses.

Social network nominations—Youth were asked to list up to seven best friends in grades 7–10 (at W1) and 9–12 (at W5) in the school district. We chose the best friend wording given research suggesting youth identified as best friends have the most influence on behavior (Valente et al., 2013). Nominations for youth were limited to seven based on practical limitations, participant burden, and past work showing most people maintain a small group of close friends (Burt, 1984). If a student entered a best friend's name that did not automatically generate a match from the roster, the survey was programmed so that it would record a text entry of the student nomination, which was later matched to the roster when possible. Students named an average of 4.92 friends at W1 and 5.65 friends at W5 though not all of those named completed surveys. For example, W5 of the 5.65 named, 2.90 completed the W5 survey. In selecting POLs, we ranked ordered students on in-degree centrality (i.e., the count of incoming nominations) and then sorted on betweenness (i.e., the number of times a node lies on the shortest path between other nodes) to account for ties (Edwards, Hopfauf, et al., 2022).

Youth VIP participation—Youth VIP included overnight and day retreats as well as other small prevention-oriented events held in the community such as theater events, ice skating, award ceremonies, game nights, and project groups. We tracked attendance at retreats and events by collecting students' names via sign-in sheets at each Youth VIP event, and this data was later matched to student survey data. The friendship network data were used to calculate whether an individual was friends with someone who had attended any Youth VIP events. Only events offered in the year before the last survey measure were included for two reasons: (1) participants were trained how to communicate prevention messages and skills more intensively during later Youth VIP events than earlier Youth VIP events, and (2) we expected more recent Youth VIP to be more salient than distal events.

Youth VIP communication—Students were asked "Have you heard other students talking about Youth VIP (not including the surveys). So, talking about things like camp, reunites, working groups, etc.?" They were also asked "Have you ever talked with anyone

about Youth VIP?" with one option being having talked to "friends/other students." In addition, they were asked "In the past 6 months, have you talked with anyone about Youth VIP?" with one option being having talked to "friends/other students." These three variables were created to determine if students with at least one friend who participated in an event were more likely to report hearing about Youth VIP and/or talking about Youth VIP with friends.

Program diffusion—Measures of intervention diffusion or spillover effects were derived from social network friendship nominations and information on who attended Youth VIP events. Friendship nominations from W5 were used to calculate the number of friends each student had who attended an event. Attendance at Youth VIP events in the last year ($n = 130$) was calculated using event tracking data collected by research staff.

The rate of program diffusion was calculated by creating an N x N adjacency matrix, A_{ij}, from the friendship nominations in which a 0 represents non-friendship and a 1 indicates student i named student j as a friend. This matrix was multiplied by the two N x 1 vectors in which a 0 indicated nonattendance and a 1 indicated the student attended at least one event in the past year (Carrington et al., 2005; Valente, 2010).

Having a friend who attended a Youth VIP event ranged from 0 (no friends participated) to 3 ($M = 0.33$; $SD = 0.59$). Given the skewed distributions, the measure was dichotomized such that a 1 indicates that the student had at least one friend who attended a Youth VIP event. For both measures (dichotomous and count), sexual minorities were more likely to have participated, and boys were less likely than girls to have participated. Finally, Hispanic/Latinx youth were less likely to report participation compared with youth who were not Hispanic/Latinx.

Data analyses

Four sets of outcomes (1) Youth VIP communication, (2) proactive bystander behaviors, (3) reactive behaviors, and (4) interpersonal violence were regressed on the demographic characteristics along with program diffusion (i.e., dichotomized variable having a friend who attended a Youth VIP event). Given that program effects for those directly involved with Youth VIP have been reported elsewhere (Banyard et al., 2022; Edwards, Banyard, et al., 2022), we remove those students who reported having participated in any Youth VIP event when calculating the models. Outcome regression models are lagged such that the values from W1 are included thus results indicate changes in outcomes as a function of demographics and program exposure for non-participants.

RESULTS

Table 1 reports regression of interpersonal communication about Youth VIP on demographics and having a friend who attended a Youth VIP event. Girls, compared with boys, had greater odds of hearing students discuss Youth VIP (adjusted odds ratio [AOR] = 1.74, $p < .01$); ever talking with someone about Youth VIP ($AOR = 1.74$, $p < .01$); and talking to anyone about Youth VIP in the past 6 months ($AOR = 1.63$, $p < .01$). No other demographic variable was associated with discussing Youth VIP with friends.

Program diffusion (i.e., friend attended a Youth VIP event) was associated with interpersonal communication about Youth VIP. Friends' attendance was associated with hearing other students discuss Youth VIP (*AOR* = 1.73, $p < .05$); ever talking with someone else about Youth VIP (*AOR* = 2.06, $p < .01$); and talking with someone about Youth VIP in the past 6 months (*AOR* = 1.95, $p < .05$).

As Table 2 shows, program diffusion was not associated with changes in proactive bystander behaviors ($\beta = 0.03$ ns). Table 2 also shows that program diffusion was not associated with changes in reactive bystander behaviors, with all betas in the low single digits and not significant.

Table 3 reports logistic regressions on the violence outcomes of victimization and perpetration. Having a friend who attended a Youth VIP event was unrelated to victimization and perpetration.

DISCUSSION

The purpose of this study was to examine diffusion effects associated with a youth-led sexual violence prevention initiative. Findings documented that there was considerable interpersonal communication about Youth VIP among the students generated by program participation. Youth with friends who participated in Youth VIP were more likely to report hearing their friends talk about it and reported talking to their friends about it compared with youth not connected to youth who participated in Youth VIP. Although this finding is promising and suggests that Youth VIP spurred conversations among middle and high school students in the participating district, there are notable limitations to our measurement and thus these findings should be interpreted with caution. The way in which the questions were asked did not allow us to get at the quality or impact of conversations. For example, conversations may have been merely informational (e.g., ''I attended Youth VIP last night'') more so than conversations about prevention messages and skills (and details about frequency, duration, etc.).

Some youth may have even discussed aspects of Youth VIP that they did not like, although the overall intervention was deemed as highly acceptable by youth and their caregivers (Edwards, Hopfauf, et al., 2022; Waterman, Edwards, et al., 2021). Nevertheless, future research is needed to ascertain the types of conversations that youth are having about Youth VIP and how the nature of these conversations relates to outcomes among both POLs and youth indirectly exposed to Youth VIP via POLs.

Indeed, one reason we may not have found diffusion effects for behavioral outcomes could be due to our measurement. That is, we would not expect youth who heard information such as ''I went to a Youth VIP event last night'' to demonstrate changes in attitudes and behaviors, whereas youth who heard from POLs about specific prevention messages and skills (who spoke about them positively/enthusiastically) may have demonstrated changes. Unfortunately, our measurement did not allow for this nuanced analysis. It may be that initial diffusion effects are more on acceptability and readiness for prevention that might make a young person more open to later prevention messages, rather than that diffusion

itself would initially change behavior. Indeed, diffusion studies are often retrospective given the long-time window between learning about an idea, adopting it, and incorporating into everyday activities. We are perhaps at the very earliest stage of the diffusion of violence prevention behaviors among this cohort. A longer longitudinal design measuring prevention readiness and attitudes would be needed to model and test such effects. Indeed, it is also possible that our diffusion effects may take longer than the window of time that was included in our follow-up survey. For example, in an evaluation of Green Dot with high school students, results documented that it took 3–4 years for diffusion to take hold and affect program impacts (Coker et al., 2019).

It is also possible that youth who were part of Youth VIP events were not adequately trained in how to effectively diffuse prevention messages and skills to their peers. More specifically, at earlier Youth VIP events, youth were merely told to talk to their friends about what they learned, and it was only toward the end of program implementation that specific strategies were implemented to allow youth to practice how they could share prevention messages and skills with their peers. Further, while the importance of youth engagement in prevention work has been established, a growing literature documents the complexities of how to implement it and the range of ways that adults and youth may work together to actualize partnerships, co-learning, and collaboration (Larson et al., 2015; Ramey et al., 2017). In the current study youth, as members of an advisory board, provided important voices in how sexual violence was defined as a problem for the community. Further, youth-led prevention and civic engagement activities were already being led by youth in the community and Youth VIP created partnerships with those already existing efforts. However, the current study did not specifically measure aspects of youth–adult partnership implementation. Variables related to this aspect of the project would be important components of next steps in the evaluation of Youth VIP.

What is more, our measure of attendance at a Youth VIP event was dichotomized such that someone who participated in a single, 1-h event would be coded the same as a participant who was highly engaged with Youth VIP (i.e., attended multiple events). However, given the small number of youth who attended a Youth VIP event and the skewed distribution of that variable, we were not able to explore in a more nuanced way how dosage of youths' attendance impacted their friends' behaviors, which is an important avenue for future research. It is important to note that in analyses comparing the likelihood of violence among students who were in 8th, 9th, and 10th grade before the programming to the likelihood of violence among students who were in 8th, 9th, and 10th after the programming, results showed that later cohorts were less likely to report violence, suggesting that the Youth VIP may have led to reductions in violence overtime at the district level, although these findings were not reflected in diffusion analyses (Waterman, Edwards, et al., 2021).

It is also possible that the diffusion aspect of Youth VIP could have had a "boomerang" effect such that for some peer leaders who despite sharing information they learned enthusiastically and/or prolifically might have been met by peers who were not interested or in a stage of readiness to learn about sexual violence prevention messages and skills. Given that we did not measure perceptions of peer leaders' effectiveness in delivering sexual violence prevention messages and skills, it is hard to pinpoint the specific mechanisms by

which diffusion did not occur or if it did in some contexts and not others. Relatedly, we also did not examine the extent to which peer leaders were personally motivated and/or possessed the confidence to speak to their peers about sexual violence prevention-related skills, another critical area for future research.

Several limitations should be noted. First, despite the large overall sample, the sample of youth who attended Youth VIP events and those who heard about Youth VIP programming activities were relatively small. As previously noted, we also did not collect data on the ways in which youth who attended Youth VIP talked to their friends about their participation in Youth VIP. In other words, the extent to which students described their experiences with events as positive, negative, and/or neutral is unknown. In general, students found the Youth VIP events engaging and helpful; however, a few participants did report negative experiences like inappropriate peer behavior (Waterman, Hutchison, et al., 2021). Also, despite the longitudinal nature of the data, youth were not followed for an extensive period. This is a limitation given that most of the more effective components of Youth VIP were delivered later in the project period and we know from previous research that diffusion often takes time (Coker et al., 2017). Also, there were less than ideal retention rates that could have impacted the study findings. Future studies are needed that measure aspects (e.g., what they heard, how they heard about it [e.g., conversation, social media post], frequency/duration/emotional valence/perceptions of impact of conversations) of diffusion and prevention conversations among youth in more detail. Prevention work in areas like tobacco use find that peer diffusion of prevention messages is complex and influenced by an array of possible third variables including the quality of friendships within different networks and support from parents and family members as models for communicating about challenging prevention topics. The extent to which the impact of youth-led sexual violence prevention efforts, and diffusion efforts specifically, are influenced by other school- and community-based prevention and larger positive youth development initiatives also warrants future investigation.

Despite the limitations, the current study has several important implications for practice. First, despite some of the mixed findings, these data do suggest that there could be utility to training youth leaders in how to spread prevention messages and skills to their peers. Indeed, growing literature highlights the importance of youth–adult partnerships but also discusses challenges in their implementation and enhancements that might improve effects (Nalani et al., 2021). However, youth need to be trained in specific ways to go about sharing information and skills they acquired so that they can talk with their friends in ways that will be impactful and not harmful (e.g., reifying myths). Further, adults need training and expertise about how to share power and work with youth collaboratively in this type of model (Zeldin et al., 2014) and measuring such implementation issues as a moderating variable for youth–adult partnership program efficacy is an important direction for future research. Indeed, it was only at Youth VIP events that happened later in the project period during which youth were given specific skills and opportunities to practice their diffusion skills (e.g., conversations with peers). Without such practice and mentorship from adults, the impact of diffusion could be iatrogenic, which could help to explain the increased sexual perpetration rates in our study among friends of youth involved in Youth VIP. The current study suggests that social network analysis be used not only to understand risk behavior

and to identify potential peer educators but also as a tool for measuring program evaluation effects. Understanding how peer influence, particularly if that peer is a POL, operates within a peer network is important for prevention efforts. Further understanding of social network analysis related to program effects may reveal key economic advantages of identifying the ideal number of participants to maintain program effects while influencing the social network itself. Research on the extent to which youth leaders can make impactful change without the use of social network analysis is also needed given that sustaining a prevention program that requires social network to select POLs may be unrealistic and unfeasible for some communities especially in the absence of funding.

The findings of the current study expand our understanding of prevention impact beyond how programs change the individual attitudes and behaviors of youth who attend them. The findings make clear that prevention strategies unfold in contexts, and for youth, peers are a key context. Future research on sexual violence prevention may benefit from regularly including study designs that incorporate examination of diffusion effects within and across social networks.

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Highlights

- Sexual violence is a public health crisis in the United States among youth.
- Youth-led sexual violence prevention programs have promise in preventing sexual violence.
- Youth who were part of a sexual violence initiative talked to their friends about the initiative.
- Friends of friends in the program did not demonstrate changes in their own attitudes and behaviors.

TABLE 1

Interpersonal communication about Youth VIP as a function of having a friend attend a Youth VIP event (controlling for sex, ethnicity, sexual orientation, and age; $N = 1172$)

	Heard students discuss Youth VIP (35.4%) ***AORs*** **[95% CIs]**	**Ever talked about Youth VIP with friends (24.0%)** ***AORs*** **[95% CIs]**	**Talked about Youth VIP with friends past 6 months (19.3%)** ***AORs*** **[95% CIs]**
Girls (vs. boys)	1.74** [1.35, 2.34]	1.74** [1.31, 2.31]	1.63** [1.20, 2.22]
Hispanic/Latinx youth (vs. non-Hispanic/ Latinx)	1.01 [0.69, 1.49]	1.13 [0.75, 1.71]	1.23 [0.80, 1.90]
White youth (vs. non-White)	1.12 [0.80, 1.56]	0.94 [0.66, 1.35]	1.02 [0.69, 1.50]
Sexual minority youth (vs. heterosexual)	1.10 [0.81, 1.50]	0.98 [0.70, 1.37]	1.15 [0.81, 1.64]
Age at W1	1.00 [0.89, 1.11]	0.95 [0.84, 1.07]	0.94 [0.83, 1.07]
Friend attended Youth VIP event	1.73* [1.32, 2.27]	2.06** [1.54, 2.75]	1.95** [1.43, 2.65]

Note: W1 refers to Wave 1 of data collection which occurred in fall 2017. Sexual gender minority youth includes bisexual, lesbian, and gay youth. Age is a continuous measure.

Abbreviations: *AOR*, adjusted odds ratio; CI, confidence intervals; Youth VIP, Youth Voices in Prevention.

* $p < .05$

** $p < .01$.

TABLE 2

Bystander behavior as a function of having a friend attend a Youth VIP event (controlling for sex, ethnicity, sexual orientation, and age; $n = 1170$)

		Reactive bystander behaviors			
	Proactive bystander readiness *B* (*SE*)	**Unwanted touching *B* (*SE*)**	**Sexual violence *B* (*SE*)**	**Photo sharing *B* (*SE*)**	**Sexual rumors *B* (*SE*)**
Behavior at W1	0.20** (0.03)	0.19** (0.03)	0.08** (0.03)	0.11* (0.03)	0.18** (0.03)
Girls (vs. boys)	0.06 (0.08)	0.12** (0.06)	0.05 (0.04)	0.03 (0.05)	0.08** (0.06)
Hispanic/Latinx youth (vs. non-Hispanic/Latinx)	−0.09** (0.12)	−0.02 (0.10)	0.03 (0.06)	0.04 (0.07)	0.04 (0.09)
White youth (vs. non-White)	−0.05 (0.10)	−0.02 (0.08)	0.01 (0.05)	−0.03 (0.06)	0.01 (0.07)
Sexual minority youth (vs. heterosexual)	0.09** (0.10)	0.02 (0.08)	−0.05 (0.05)	0.02 (0.06)	0.02 (0.07)
Age at W1	0.05 (0.03)	0.03 (0.03)	0.04 (0.02)	−0.03 (0.02)	0.02 (0.02)
Friend attended Youth VIP event	0.03 (0.09)	0.05 (0.07)	0.02 (0.04)	−0.05 (0.05)	0.02 (0.06)
Adjusted R^2	0.07	0.05	0.01	0.01	0.04

Note: W1 refers to Wave 1 of data collection which occurred in Fall 2017. Sexual gender minority youth includes bisexual, lesbian, and gay youth. Age is a continuous measure.

Abbreviation: Youth VIP, Youth Voices in Prevention.

*$p < .05$

**$p < .01$.

TABLE 3

Victimization and perpetration as a function of having a friend attend a Youth VIP event (sex, ethnicity, sexual orientation, and age; $N = 1172$)

	Victimization				Perpetration			
	Sexual ***AORs*** **[95% CIs]**	**Bullying** ***AORs*** **[95% CIs]**	**Harassment** ***AORs*** **[95% CIs]**	**Any** ***AORs*** **[95% CIs]**	**Sexual** ***AORs*** **[95% CIs]**	**Bullying** ***AORs*** **[95% CIs]**	**Harassment** ***AORs*** **[95% CIs]**	**Any** ***AORs*** **[95% CIs]**
Behavior at W	3.62** [1.86, 7.06]	4.69* [3.33, 6.60]	4.18** [3.12, 5.61]	4.11** [3.16, 5.34]	5.55** [1.97, 15.6]	5.33** [3.05, 9.29]	3.93** [2.76, 5.61]	4.04** [2.98, 5.46]
Girls	2.57** [1.52, 4.34]	0.95 [0.67, 1.34]	1.12 [0.84, 1.49]	1.00 [0.77, 1.31]	1.44 [0.77, 2.71]	0.32 [0.19, 0.53]	0.47 [0.34, 0.65]	0.39** [0.29, 0.52]
Hispanic/Latinx youth	1.90* [1.04, 3.48]	1.26 [0.76, 2.07]	0.94 [0.61, 1.46]	1.09 [0.73, 1.63]	1.10* [0.44, 2.74]	1.96* [1.04, 3.68]	1.03 [0.63, 1.70]	1.04 [0.67, 1.61]
White youth	2.21* [1.08, 4.51]	1.36 [0.85, 2.17	1.39 [0.94, 2.06]	1.39 [0.98, 1.96]	1.18 [0.51, 2.76]	1.17 [0.63, 2.17]	1.57 [1.00, 2.49]	1.63* [1.11, 2.39]
Sexual minority youth	2.02** [1.25, 3.26]	2.56** [1.75, 3.73]	2.05** [1.47, 2.85]	2.23** [1.61, 3.09]	1.32 [0.66, 2.65]	2.22** [1.30, 3.78]	2.02** [1.39, 2.95]	1.64** [1.17, 2.32]
Age at T1	0.93 [0.76, 1.24]	0.90 [0.77, 1.04]	0.90 [0.80, 1.02]	0.90 [0.80, 1.00]	0.87 [0.66, 1.14]	0.79 [0.64, 0.98]	0.89 [0.77, 1.02]	0.84 [0.74, 0.95]
Friend attended Youth VIP event	1.13 [0.69, 1.83]	0.98 [0.67, 1.43]	1.35 [0.99, 1.84]	1.32 [0.99, 1.76]	1.43 [0.76, 2.70]	0.82 [0.47, 1.42]	1.41 [0.99, 1.99]	1.17 [0.86, 1.60]

Note: W1 refers to Wave 1 of data collection which occurred in Fall 2017. Sexual gender minority youth includes bisexual, lesbian, and gay youth. Age is a continuous measure.

Abbreviations: *AOR*, adjusted odds ratio; CI, confidence intervals; Youth VIP, Youth Voices in Prevention.

* $p < .05$

** $p < .01$.