Journal of Adolescent Health 72 (2023) 831–844

ELSEVIER

JOURNAL OF ADOLESCENT HEALTH

www.jahonline.org

Review article

Effects of Campus Sexual Assault Prevention Programs on Attitudes and Behaviors Among American College Students: A Systematic Review and Meta-Analysis

Heather Hensman Kettrey, Ph.D. [a,*], Martie P. Thompson, Ph.D. [b], Robert A. Marx, Ph.D. [c], and Alyssa J. Davis, M.S. [d]

[a] *Department of Sociology, Anthropology and Criminal Justice, Clemson University, Clemson, South Carolina*
[b] *Department of Public Health and Exercise Science, Appalachian State University, Boone, North Carolina*
[c] *San Jose State University, San Jose, California*
[d] *Department of Sociology, Vanderbilt University, Nashville, Tennessee*

Article history: Received October 25, 2022; Accepted February 15, 2023
Keywords: Sexual assault; Sexual violence; Prevention; College; Meta-analysis

A B S T R A C T

The US Campus Sexual Assault Violence Elimination (SaVE) Act of 2013 mandates that all higher education institutions receiving federal funds offer incoming students primary prevention and awareness programming addressing sexual violence. Yet, there is no thorough and up-to-date quantitative synthesis of the effects of campus sexual assault prevention programs on sexual assault attitudes/knowledge and behaviors. Thus, we conducted a systematic review of the literature and a meta-analysis of experimental and high-quality quasi-experimental research examining effects of college sexual assault prevention programs on sexual assault attitudes and behaviors. Our synthesis of 385 effect sizes from 80 eligible studies disseminated between 1991 and 2021 indicates campus sexual assault programs have a more pronounced effect on attitudes/knowledge than on violence. Effects on sexual assault victimization were significant but small ($g = 0.15$) and effects on sexual assault perpetration were nonsignificant. Moderator analyses indicate programs that use a risk reduction framework are associated with less favorable outcomes than programs that do not use a risk reduction framework. Considering the limited effect of campus sexual assault prevention programs on violence, we recommend programming efforts move beyond a focus on individuals and, instead, adopt an ecological perspective targeting individuals, social relationships, community factors, and societal factors.

IMPLICATIONS AND CONTRIBUTION

This systematic review and meta-analysis provides an up-to-date quantitative synthesis of high-quality research evaluating the effects of campus sexual assault prevention programs. Findings indicate that programs have a more pronounced effect on knowledge and attitudes than on violence outcomes.

Campus sexual assault is a prevalent problem with serious implications for the health of adolescents and young adults. Findings from campus climate surveys administered across the United States indicate that approximately 20%–25% of women and 7%–8% of men have experienced some form of unwanted sexual contact since entering college [1,2]. These rates are problematic, as sexual assault in young adulthood is associated with numerous adverse health outcomes, including risk of repeated victimization, depressive symptomology, heavy drinking, and suicidal ideation [3–5].

In an effort to combat this problem, the US Campus Sexual Assault Violence Elimination (SaVE) Act of 2013 mandates that all higher education institutions receiving federal funds offer primary prevention and awareness programming addressing sexual violence to incoming college students [6]. However, selecting the

Conflicts of interest: The authors have no conflicts of interest to declare.
This systematic review and meta-analysis was registered with PROSPERO (CRD42020191392).

* Address correspondence to: Heather Hensman Kettrey, Ph.D.,Clemson University, Sociology, Anthropology, and Criminal Justice, 132 Brackett Hall, Clemson, SC 29634.
E-mail address: hkettre@clemson.edu (H.H. Kettrey).

1054-139X/
https://doi.org/10.1016/j.jadohealth.2023.02.022

best prevention program for a specific campus can be daunting, as there is a wide array of sexual assault prevention programs available for implementation and different components of these programs may have differential effects. The difficulty of this task is compounded by the fact that there is no recent quantitative synthesis of high-quality research evaluating effects of the comprehensive realm of college sexual assault prevention programs. Although a number of narrative reviews of the literature on sexual assault prevention programs have been published in the last decade [7–11], almost two decades have passed since the publication of meta-analyses of such research [12–14].

Thus, the purpose of this study was to (1) determine the effects of campus sexual assault prevention programs on sexual assault attitudes and behaviors and (2) identify significant moderators of the effects of these programs. To that end, we conducted a systematic review of the literature and a meta-analysis of experimental and high-quality quasi-experimental research that examined the effects of college sexual assault prevention programs on sexual assault attitudes and behaviors among American college students.

Approaches to campus sexual assault prevention

The most frequent program components of campus sexual assault prevention programs can be classified into three main categories: risk reduction, rape awareness, and bystander intervention [15]. However, this categorization is not necessarily exhaustive or exclusive.

Risk reduction. Risk reduction programs focus on actions college students can take to decrease their risk of victimization. They tend to target potential victims (as opposed to targeting perpetrators) and include content on alcohol and drug use, refusal skills, and self-defense. Risk reduction programs have been criticized as putting too much responsibility for preventing violence on potential victims. However, proponents of such programs argue that other approaches assume only perpetrators can truly prevent sexual violence, but in reality, potential victims can be empowered to reduce their risk for assault by acting when they detect danger [16]. Importantly, some content of risk reduction programs has changed over time. Programs that target refusal skills have begun to shift toward an emphasis on affirmative consent [17]. Additionally, although self-defense strategies were once thought to foster victim-blaming, these strategies have demonstrated a recent resurgence bolstered by claims of their effectiveness [18,19].

Rape awareness. Rape awareness programs seek to educate participants about sexual assault (e.g., define assault, explain laws/policies), dispel rape myths, foster empathy/compassion for victims, and challenge gender and peer norms that are thought to encourage or minimize sexual assault. This approach to sexual assault prevention is arguably the most popular, as a comprehensive review of the literature suggests the aforementioned topics are among the most frequent components included in sexual assault prevention programs [8]. Yet, the emphasis on gender norms as a major contributor to sexual assault has made rape awareness programs susceptible to the criticism that they are inherently anti-male because they critique masculine norms and instill a sense of guilt among the men who participate in these programs [20].

Bystander intervention. Bystander intervention training is a newer approach to campus sexual assault prevention that may avoid the criticisms associated with risk reduction and rape awareness programs (i.e., that the former places too much responsibility on women victims and that the latter can be unappealing to men) [20]. Bystander programs encourage participants to intervene when witnessing incidents or warning signs of sexual assault (e.g., walking a friend home when they have had too much to drink, calling the police to report suspicious behavior). They seek to sensitize participants to warning signs of sexual assault, create attitudinal changes that foster bystander responsibility for intervening, and build requisite skills and knowledge of tactics for taking action [21–24]. By treating participants as potential allies in preventing sexual assault, bystander programs have the potential to be less threatening than traditional sexual assault prevention programs, which tend to approach participants as either potential perpetrators or victims of sexual violence [20,23,25]. The evidence base for bystander intervention training is promising, as systematic reviews and meta-analyses of studies evaluating these programs indicate they are effective at encouraging young people to take action when witnessing signs of sexual assault [26–28].

The current study

In this project, we evaluated the effectiveness of campus sexual assault prevention programs by conducting a systematic review and meta-analysis of the extant high-quality research. To be consistent with the parameters of the US Campus SaVE Act, which mandates that all higher education institutions receiving federal funds offer incoming students primary prevention and awareness programming addressing sexual violence, our meta-analysis focused on evaluations of programs that target individual students' attitudes and behaviors (as opposed to those that implement broad policies or target and measure campus-level cultural change). We preregistered our meta-analysis with PROSPERO and full methodological details can be found in the registration protocol (CRD42020191392).

Inclusion criteria

To be included in the review, eligible studies had to evaluate a campus sexual assault prevention program implemented with college students in the United States. Research reports could be disseminated in any year, but had to be written in English. Eligible studies also had to meet the criteria outlined below.

Intervention/program. Eligible studies must have assessed outcomes related to a sexual assault prevention program implemented with college students in the United States. Programs may have either addressed sexual assault exclusively or in conjunction with other topics (e.g., intimate partner violence, sexual health, gender, etc.), but they must have included content on sexual assault and reported at least one eligible outcome described below. Studies that reported eligible outcomes, but did not explicitly report that the program contained sexual assault content, were not eligible.

Outcomes. Eligible studies must have reported at least one outcome in one of the following domains: sexual assault attitudes/knowledge, sexual assault victimization, sexual assault perpetration, and bystander-related outcomes. Although our

main outcomes of interest were victimization and perpetration, past reviews of research on sexual assault prevention programs have indicated that attitudes and knowledge are measured with much greater frequency than violence outcomes [28–34]. This is because such programs often target violence-related attitudes/knowledge as causal mechanisms of violence and, thus, evaluations often measure attitudes/knowledge as proxies for violence [29,32,35]. In addition to including attitudes and knowledge, we also included bystander outcomes because many contemporary sexual assault prevention programs aim to foster bystander responsibility for preventing violence [21–24].

Sexual assault attitudes/knowledge included any measure of attitudes/perceptions (e.g., rape myth acceptance, victim empathy) or knowledge (e.g., definitions of sexual assault, scope or patterns of sexual assault, laws/policies concerning sexual assault). Sexual assault victimization included any measure of sexual assault victimization (i.e., any range of unwelcome sexual acts), whether self-reports or official reports. Sexual assault perpetration included measures of sexual assault perpetration (i.e., any range of unwelcome sexual acts). It included self-reports and official reports, but it must have represented actual behavior. Intentions to commit sexual assault did not qualify as measures of sexual assault perpetration in our study. Although the extant research has demonstrated a positive relationship between rape supportive attitudes and intentions to commit sexual assault, there is less consistent evidence of the validity of intentions to commit sexual assault as a predictor of future sexual assault behavior [36–39]. Bystander-related outcomes were relevant to bystander attitudes (e.g., intentions to intervene, bystander self-efficacy) or behaviors (e.g., actual bystander intervention).

Participants and setting. Eligible studies must have assessed programs implemented with a sample of college students attending colleges/universities in the United States (i.e., undergraduate populations). This included studies that reported on general samples of college students as well as studies that used specialized samples such as those primarily consisting of college athletes, fraternity/sorority members, or single-gender samples. Studies that reported findings for breakout groups (e.g., reported results separately for different gender groups, Greek members and nonmembers, etc.) were eligible only if findings were reported in such a way that breakout groups could be combined to calculate aggregate effect sizes. In order to ensure our results were representative of program effects among traditional college students, the mean age of samples could be no greater than 25 to be included in the review. However, in our screening process, no otherwise eligible studies were excluded based on this maximum age criterion.

Research design. To be eligible for inclusion, studies must have used the individual as the unit of analysis and implemented an experimental or controlled quasi-experimental research design to compare an intervention group (i.e., students assigned to a sexual assault prevention program) with a comparison group (e.g., students not assigned to a sexual assault prevention program). More specifically, the following designs were included: randomized controlled trials (i.e., RCTs using individual or cluster assignment), quasi-randomized controlled trials, and controlled quasi-experimental designs ([QEDs] i.e., studies that used a compassion group that was not assigned randomly or quasi-randomly). Eligible QED designs included regression discontinuity designs, matching, and studies where enough statistical information was reported to permit estimation of pretest effect sizes (treatment/comparison group equivalence) for at least one outcome measure.

Search strategy

We conducted an initial literature search in January 2020 and an updated search in June 2021. To minimize omission of relevant studies and capture a sample that was representative of both published studies (i.e., those that appeared in peer-reviewed journals and were cataloged in electronic bibliographic databases) and unpublished studies (i.e., dissertations, theses, conference papers, working papers, articles in-press), we conducted a comprehensive search of the literature following strategies suggested by Cooper [40]. This involved conducting literature searches in electronic databases as well as conducting a gray literature search for unpublished studies.

Electronic databases. We searched electronic bibliographic databases that cataloged research from a range of disciplines relevant to campus sexual assault including health, sociology, psychology, education, criminology, etc. This included the following databases: PsycINFO, Education Resources Information Central (ERIC), Sociological Index, ProQuest (including dissertations and theses), PubMed, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Criminal Justice Abstracts, PsycARTICLES, and SocIndex. We used search terms that were specific to both the target population and terms that captured sexual violence as well as more general terms that had the potential to identify studies that address physical and/or sexual violence. Specific search terms were as follows:

[(“intervention” OR “prevention” OR “program” OR “education” OR “training” OR “curriculum”) AND (“college” OR “university” OR “higher education”) AND (“sexual violence” OR “sexual assault” OR “sexual coercion” OR “sexual consent” OR “unwanted sex” OR “undesired sex” OR “forced sex” OR “forced intercourse” OR “rape” OR “sexual victimization” OR “sexual violence perpetration” OR “sexual perpetration” OR “intimate partner violence” OR “IPV” OR “dating violence” OR “dating aggression” OR “dating abuse” OR “partner abuse” OR “bystander” OR “gender violence” OR “gendered violence” OR “gender based violence” OR “gender-based violence”)]

Gray literature and other searches. In addition to searching electronic abstract databases, we searched sources that were likely to produce unpublished research as well as ongoing studies that had the potential to be finalized before our coding process was complete. This included searching and reviewing clincaltrials.gov, grant award listings from the National Institutes of Health and National Institute of Justice, and conference proceedings from relevant organizations (i.e., American Psychological Association, American Sociological Association, American Society of Criminology, Society for the Scientific Study of Sexuality). We also reviewed reference lists of all eligible reports and review articles, contacted authors of relevant studies to request copies of unpublished (e.g., in-press) studies, and reviewed tables of contents of research journals relevant to sexual assault.

Eligibility screening

After completing the comprehensive search, we double-screened abstracts of all candidate reports to eliminate any clearly ineligible studies such as those that did not assess campus

sexual assault prevention or single-group pretest–posttest studies. Then, we retrieved full-text versions of all remaining candidate reports. We based final eligibility decisions on readings of the full-text reports. In order to ensure reliability, two team members double-screened all candidate reports while adhering to a detailed codebook.

Study coding

We coded all eligible studies for candidate moderator variables that may influence program effects. These potential moderators included study design (e.g., RCT, quasi-experimental design, follow-up timing), program content (e.g., variables pertinent to risk reduction programs, rape awareness programs, and bystander intervention training programs), program implementation (e.g., group size, frequency of treatment contact, delivery format), and participant/setting characteristics (e.g., type of campus setting, proportion of men/women, average age, proportion of athletes, etc.). Two independent coders double-coded eligible studies while adhering to a detailed codebook. Coders entered data directly into a database and coding results were compared for discrepancies that were resolved by further discussion among the four-member research team. We made all reasonable attempts to collect complete data on variables identified in the coding manual. When key variables of interest could not be extracted from study reports, we contacted primary study authors to request this information. To minimize risk of bias, research team members recused themselves from screening/coding any reports that they had authored or coauthored.

Calculation of effect sizes

We extracted relevant summary statistics (e.g., means and standard deviations, proportions, observed sample sizes) to calculate effect sizes. We reported continuous measures of treatment effects using a standardized mean difference (SMD) effect size metric with a small sample correction (i.e., Hedges' g). For cases in which binary outcome measures were reported in eligible studies, we transformed log odds ratio effect sizes available from binary measures into standardized mean difference effect sizes by entering the observed proportions and sample sizes into Wilson's online effect size calculator [41]. We coded all standardized mean difference effect sizes such that positive values (i.e., greater than 0) indicate a beneficial outcome for the intervention group and negative values (i.e., less than 0) indicate an unfavorable outcome for the intervention group.

The unit of analysis was the individual (i.e., individual-level attitudes and behaviors). Some eligible studies used cluster randomized trial designs where participants were randomized into the intervention or comparison conditions at the group level (e.g., entire classes or athletic teams assigned to a single condition), but authors made inferences at the individual level. To correct for these unit of analysis errors, we followed procedures outlined in the Cochrane Handbook [42] to inflate the standard errors of the effect sizes from these studies by multiplying them by the square root of the design effect $[1 + (M - 1)\,ICC]$, where M is the average cluster size for a given study and ICC is the intracluster correlation coefficient for a given outcome. In cases where study authors did not report ICCs, we used a liberal assumed value of 0.10 [30,43].

Data analysis

Because the final sample included some dependent effect sizes (e.g., estimates from multiple follow-up waves or multiple treatment arms within a single study), we used the robust variance estimation (RVE) meta-analytic method with inverse variance weighting and a small sample adjustment using the robumeta package in R [44–48]. To minimize any potential bias in the meta-analysis results due to effect size outliers, we Winsorized all effect sizes that fell more than two standard deviations away from the mean of the effect size distribution by replacing them with the value that fell exactly two standard deviations from the mean of the distribution of effect sizes [49]. We conducted separate meta-analyses for each outcome, assessed heterogeneity using the I^2 and τ^2 statistics, and conducted bivariate moderator analyses by implementing metaregression using small-sample RVE estimators for candidate moderators reported by a minimum of 10 studies for a specific outcome. We conducted bivariate moderator analyses because many of the outcomes in our meta-analyses were reported by an insufficient number of studies to permit multivariate moderator analysis. A list of moderators reported by less than 10 studies for specific outcomes is available from the first author upon request.

Results

Literature search results

The PRISMA diagram in Figure 1 outlines the flow of studies through the search and screening process. Through both our initial search (January 2020) and updated search (June 2021), we identified 14,737 reports. After deleting duplicate reports (n = 4,856), reports that we deemed ineligible through the abstract screening process (n = 9,502), and reports that could not be located (n = 8), 371 reports for 297 independent studies were eligible for full-text screening. Of those studies, we deemed 178 to be ineligible. Additionally, we found that 13 otherwise eligible studies did not report sufficient information for effect size calculation (and our efforts to obtain this information from authors were unsuccessful), and 10 studies were ongoing/incomplete. In total, we coded 96 eligible studies relayed through 139 reports for this meta-analysis [50–188].

Sixteen of these 96 eligible studies reported disparate outcomes that were difficult to aggregate in a meaningful way across studies. These included outcomes that we classified as "other" attitudes/knowledge or skills, such as confidence in ability to refuse sex, attraction to sexual aggression, belief that a perpetrator was justified for rape in response to a vignette, etc. These outcomes were conceptually dissimilar from one another and/or were measured in such a disparate manner that synthesizing them would not provide a meaningful measure of program impact. Thus, we included 80 studies in the meta-analytic sample, each of which reported one or more of the following outcomes classified into three categories: attitude/knowledge outcomes (i.e., rape myth acceptance, victim empathy, knowledge of sexual assault, knowledge of consent, social norms about sexual assault attitudes, social norms about sexual assault behavior), bystander outcomes (i.e., bystander efficacy, bystander intentions, bystander intervention behavior), and violence outcomes (i.e., sexual assault perpetration, sexual assault victimization). Table 1 summarizes characteristics of the 80 studies included in the meta-analytic sample.

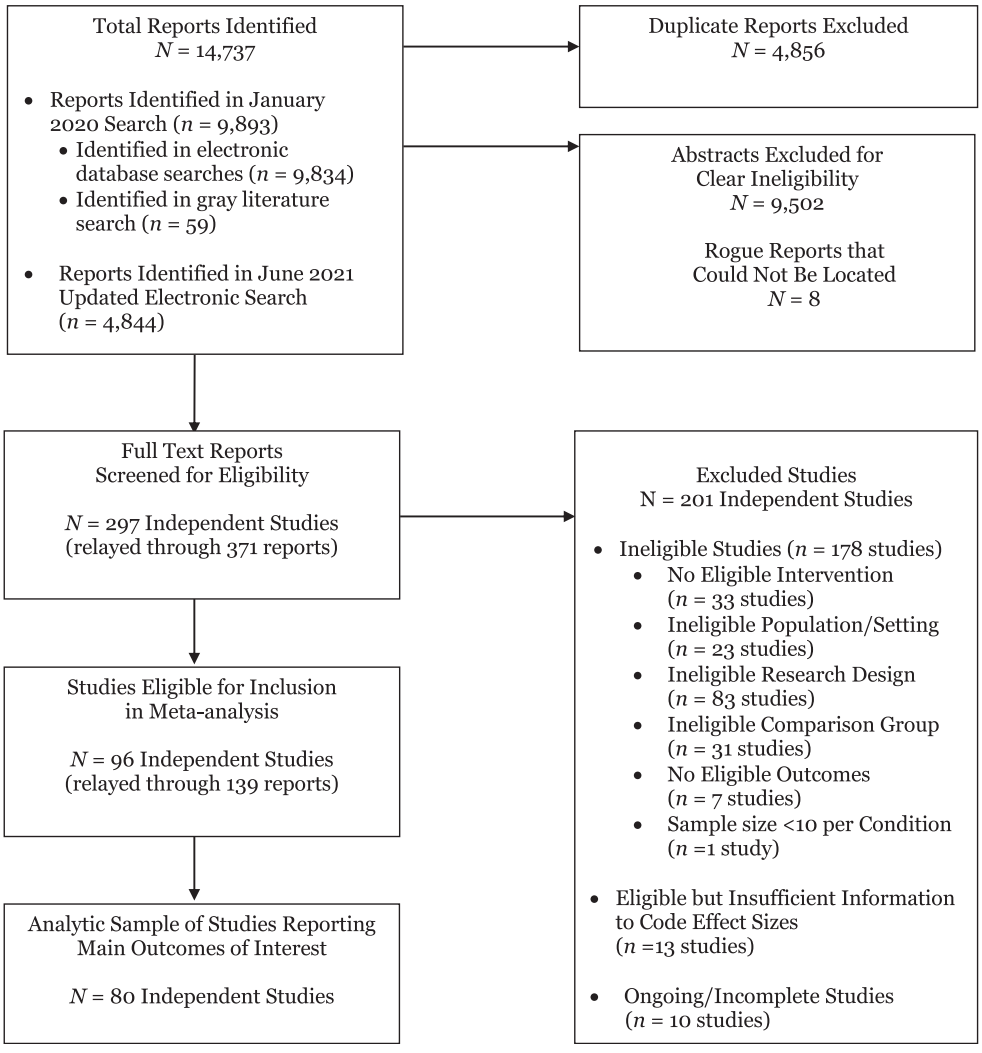

Figure 1. PRISMA Diagram Documenting Flow of Reports Through Systematic Review.

Meta-analysis results

We ran separate meta-analyses and, when appropriate, moderator analyses, for each individual outcome classified under each outcome category. Due to space constraints, we only include forest plots for the two violence outcomes: sexual assault victimization and sexual assault perpetration (see Figures 2 and 3). Forest plots for the remaining outcomes are available from the first author upon request.

Main effects. Main effects from our meta-analyses (including the Hedges *g*, 95% confidence interval [CI], τ^2, and I^{2f} for each model) are presented in Table 2. We found significant program effects on two attitude/knowledge outcomes, two bystander outcomes, and one violence outcome. Regarding attitude/knowledge outcomes, programs had a significant favorable effect on rape myth acceptance ($g = 0.31$, 95% CI [0.20, 0.42]) and a significant favorable effect on knowledge of sexual assault ($g = 1.07$, 95% CI [0.25, 1.89]). Pertinent to bystander outcomes, programs had a significant favorable effect on bystander efficacy ($g = 0.31$, 95% CI [0.02, 0.60]) and a significant favorable effect on bystander intentions ($g = 0.35$, 95% CI [0.07, 0.62]). Regarding violence outcomes, programs had a significant favorable effect on sexual assault victimization ($g = 0.15$, 95% CI [0.01, 0.30]).

Moderator effects. We coded candidate moderators classified into the following categories summarized in Table 1: study characteristics, rape awareness program content, risk reduction program content, bystander program content, program implementation, and participant characteristics. We discuss findings from moderator analyses below, organized by moderator category.

Study characteristics. The only study characteristic moderator that had a significant effect on at least one program outcome was study design. Studies that used quasi-experimental designs found significantly greater favorable effects on sexual assault perpetration compared to studies that used randomized controlled trial designs with individual assignment ($b = 0.26$, 95% CI [0.08, 0.45]).

Table 1
Characteristics of studies included in the meta-analytic sample

	Percent or mean (*SD*)	Valid No. Studies or effects
Study Characteristics		
Peer-Reviewed	72.50	80
Year of Dissemination[b] (range 1991–2021)	2021 (9.50)	80
Study Design		
Randomized Controlled Trial (RCT) - Individual	67.50	80
Randomized Controlled Trial (RCT) - Cluster	17.50	80
Quasiexperimental Design (QED)	15.00	80
Study Attrition		
% Attrition at first follow-up	17.75 (15.82)	74
% Attrition at last follow-up	31.70 (20.79)	43
Posttest Timing in Weeks	8.04 (11.26)	382[a]
Rape Awareness Program Content		
Rape Myths	35.53	76
Victim Empathy	39.47	76
Gender Norms	20.78	77
Victim Gender		
All or Mostly Women	77.42	62
Gender-Neutral	22.58	62
Perpetrator Gender		
All or Mostly Men	75.86	58
Gender-Neutral	24.14	58
Social Norms – Sexual Assault	6.25	80
Social Norms – Alcohol	11.39	79
Risk Reduction Program Content		
Personal Safety	28.00	75
Sexual Refusal	19.74	76
Sexual Consent	48.05	77
Self-Defense	7.79	77
Alcohol	57.14	77
Communication Skills	35.53	76
Bystander Training Program Content		
Bystander Intervention	49.32	73
Program Implementation		
Program Delivery Format		
In-Person	61.11	72
Web/Computer/Video	38.89	72
Group Composition		
Mixed Gender	31.25	80
Single Gender or Individual	68.75	80
Group Size		
Individual	34.72	72
Small Groups (<10)	8.33	72
Large Groups (10 or more)	56.94	72
Treatment Frequency		
Single-day program	83.78	74
Multiple-day program	16.22	74
Hours of Treatment Contact	2.46 (5.73)	66
Participant & Setting Characteristics		
Campus Setting		
Community or Technical College	0.00	71
Historically Black College or University (HBCU)	0.00	71
Public University (non-HBCU)	85.92	71
Private University (non-HBCU)	14.08	71
Mean % Men in Sample	41.18 (35.52)	78
Mean % White in Sample	76.41 (19.94)	64
Mean % LGBTQ+ in Sample	5.63 (6.16)	24
Mean Age of Sample	19.96 (1.31)	52
Mean % Greek Members in Sample	57.65 (38.67)	26
Mean % Athletes in Sample	50.33 (47.30)	9

[a] The N for posttest timing in weeks represents number of effect sizes. All other values represent number of studies (*k*).
[b] Mode is reported for Year of Dissemination.

Rape awareness program content. The following rape awareness moderators had a significant effect on at least one program outcome: social norms about sexual assault, social norms about alcohol, gender-neutral victim, and gender-neutral perpetrator. All of these variables moderated program effects on bystander efficacy. Programs that included content on social norms about sexual assault ($b = 0.39$, 95% CI [0.08, 0.70]) or social norms about alcohol ($b = 0.39$, 95% CI [0.08, 0.70]) had significantly greater

Table 2
Main effects of eligible campus sexual assault prevention programs by outcome

	No. Studies (k)	No. Effect sizes	Hedges g (95% CI)	τ^2	I^2
Attitude/Knowledge Outcomes					
Rape Myth Acceptance (RMA)	38	98	0.31 (0.20, 0.42)***	0.00	0.00
Victim Empathy	6	12	0.18 (−0.43, 0.79)	0.19	48.88
Knowledge of Sexual Assault	17	35	1.07 (0.25, 1.89)*	1.35	90.00
Knowledge of Consent	9	29	0.02 (−0.45, 0.49)	0.32	67.42
Social Norms – Sexual Assault Attitudes	3	11	0.33 (−0.25, 0.90)	0.00	0.00
Social Norms – Sexual Assault Behavior	2	5	0.00 (−0.54, 0.54)	0.00	0.00
Bystander Outcomes					
Bystander Efficacy	22	56	0.31 (0.02, 0.60)*	0.44	75.17
Bystander Intentions	21	55	0.35 (0.07, 0.62)*	0.30	65.68
Bystander Intervention Behavior	16	38	0.22 (−0.01, 0.44)	0.17	53.21
Violence Outcomes					
Sexual Assault Victimization	15	31	0.15 (0.01, 0.30)*	0.00	0.00
Sexual Assault Perpetration	11	15	0.16 (−0.08, 0.40)	0.00	0.00

*** = $p < .001$; ** = $p < .01$; * = $p < .05$.

favorable effects on bystander efficacy compared to programs that did not include content on social norms about sexual assault or social norms abut alcohol. However, it is important to note that social norms about sexual assault and social norms about alcohol were perfectly collinear with one another, meaning that programs either included content on both or neither of these.

Programs that portrayed victims in a gender-neutral manner ($b = 0.57$, 95% CI [0.16, 0.97]) or portrayed perpetrators in a gender-neutral manner ($b = 0.52$, 95% CI [0.15, 0.89]) had a significantly greater favorable effect on bystander efficacy compared to those that portrayed victims as all/mostly women or portrayed perpetrators as all/mostly men, respectively.

Risk reduction program content. The following risk reduction moderators had a significant effect on at least one program outcome: self-defense and personal safety. Programs that contained self-defense content had significantly less favorable effects on rape myth acceptance than programs that did not include self-defense content ($b = -0.41$, 95% CI [−0.53, −0.30]). A post hoc analysis indicated that the effect of self-defense content on rape myth acceptance remained significant and negative when controlling for program content critiquing rape myths ($b = -0.46$, 95% CI [−0.64, −0.27]).

Programs that included content on personal safety had significantly less favorable effects on bystander intervention behavior compared to programs that did not include content on personal safety ($b = -0.79$, 95% CI [−0.96, −0.61]). A post-hoc analysis indicated that the effect of personal safety content on bystander intervention remained significant and negative when controlling for bystander program content ($b = -0.83$, 95% CI [−1.10, −0.55]).

Bystander program content. Programs that contained content on bystander training had a significantly less favorable effect on sexual assault victimization compared to those that did not include bystander training content ($b = -0.06$, 95% CI [−0.10, −0.03]).

Program implementation. Two program implementation moderators had a significant effect on at least one program outcome: group composition (single gender) and group size (small group). Programs that were implemented with single gender groups or with individuals alone had a significantly greater favorable effect on sexual assault victimization compared to programs that were implemented in mixed gender settings ($b = 0.44$, 95% CI [0.31, 0.57]). Programs that were implemented with small groups (<10) had a significantly greater favorable effect on sexual assault victimization compared to programs that were implemented with individuals alone ($b = 0.38$, 95% CI [0.06, 0.71]). However, there was no significant difference in the effects on sexual assault victimization among programs that were implemented with large groups (10 or more) compared to programs implemented with individuals alone.

Participant and setting characteristics. The only participant or setting characteristic moderator that had a significant effect on at least one program outcome was proportion of men. Studies with a greater proportion of men in the sample demonstrated significantly less favorable effects on sexual assault victimization ($b = -0.96$, 95% CI [−1.44, −0.48]). No other participant or setting characteristics were significant moderators of program effects on any of the outcomes included in the meta-analysis. However, it is important to note that studies reported demographic and participant background information with such irregularity that we were not able to conduct moderator analyses for each participant characteristic and every outcome. For example, only 24 of the 80 included studies reported the proportion of LGBTQ+ participants in study samples.

Discussion

The overarching goal of this systematic review and meta-analysis was to provide a thorough and up-to-date evidence base that may assist college administrators as they select the appropriate sexual assault prevention programs to implement on their campuses in compliance with the US Campus SaVE Act. Before discussing implications of our results, it is important to note that the scope of our study poses a few limitations to our findings. First, by focusing on campus sexual assault prevention programs, our meta-analysis did not capture effects that general health, sexuality, or gender programs that do not explicitly address sexual assault may have on sexual assault outcomes. Second, by focusing on studies conducted in the US, our findings may not generalize to other national contexts. Finally, due to the dearth of studies reporting the sexual/gender identity of participants and/or evaluating the effects of campus sexual assault

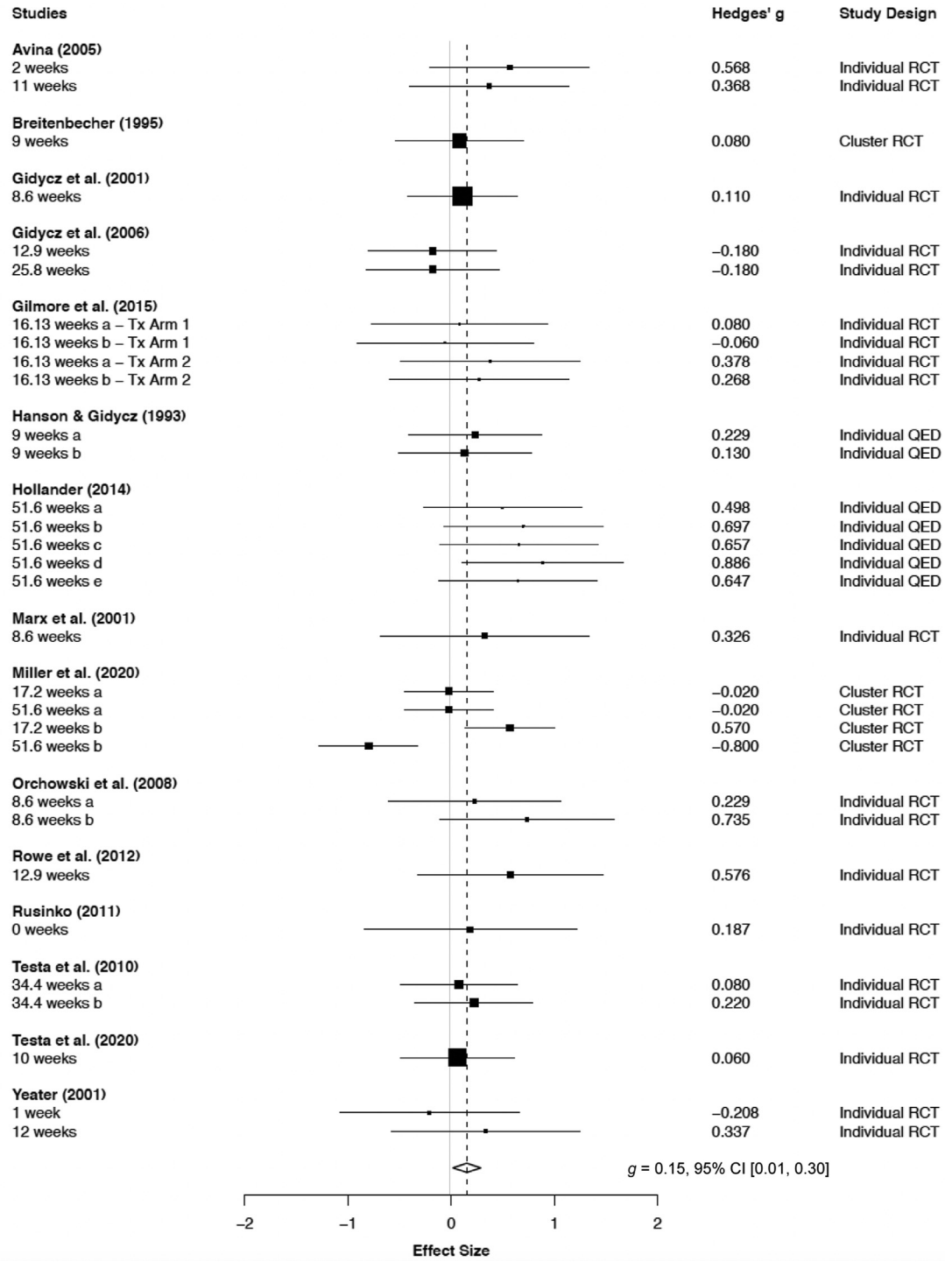

Figure 2. Forest Plot of Program Effects on Sexual Assault Victimization. *Note:* Solid line represented the null effect value. Broken line represents the standardized mean difference effect. Effect sizes that fall to the left of zero favor the comparison group and effect sizes that fall to the right of zero favor the treatment/program group.

prevention programs at Historically Black Colleges & Universities (HBCUs), our findings may not generalize to LGBTQ + students or students attending HBCUs. Future research should focus on these two student populations.

In general, our findings indicate that campus sexual assault prevention programs have a more pronounced effect on attitudes/knowledge than on violence outcomes. We also found that some program effects were significantly moderated by specific program components. For example, those programs that depicted victims and perpetrators in a gender-neutral manner had more favorable effects on bystander efficacy than programs that depicted victims as all or mostly women or perpetrators as

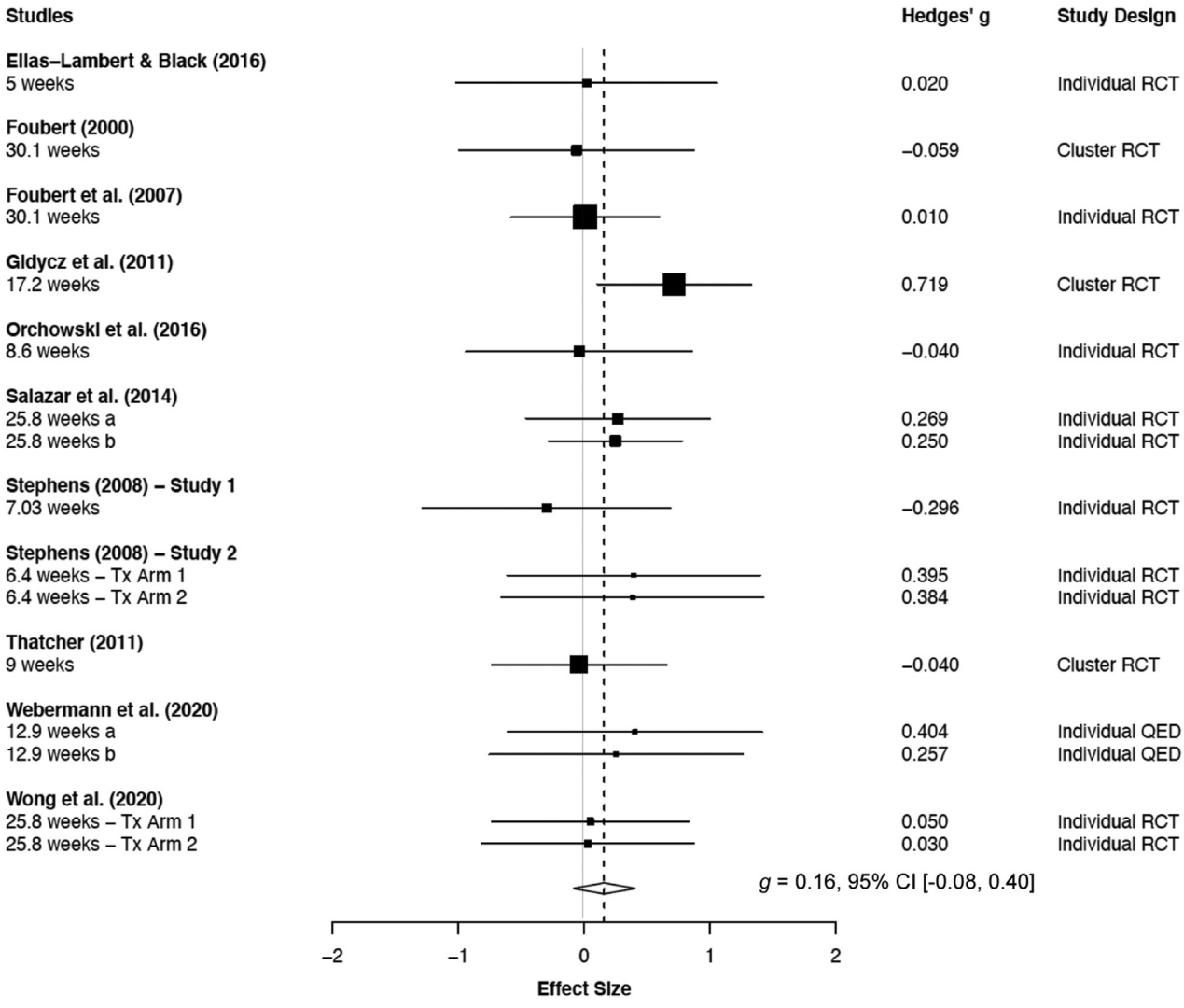

Figure 3. *Forest Plot of Program Effects on Sexual Assault Perpetration. Note:* Solid line represented the null effect value. Broken line represents the standardized mean difference effect. Effect sizes that fall to the left of zero favor the comparison group and effect sizes that fall to the right of zero favor the treatment/program group.

all or mostly men, respectively. This finding is noteworthy, as it indicates there may be benefits associated with the recent tendency of bystander programs to adopt a gender-neutral approach [20,189]. Scholars have noted that, while incurring the risk of minimizing the roles gender norms and power imbalances may play in fostering sexual violence, adopting a gender-neutral approach may deflect the criticism that sexual violence prevention programs are inherently antimale and, thus, may make these programs less threatening to the men who participate in them [20]. Our findings seem to lend support to this argument.

Additionally, our analysis suggests that risk reduction programs may be less effective than other approaches to campus sexual assault prevention. Specifically, programs that included two specific risk reduction components (i.e., self-defense and personal safety) were associated with less favorable effects on outcomes than programs that did not include these components.

Despite recent arguments that self-defense programs are the only programs with demonstrated effects on sexual assault victimization [19,190], our meta-analysis of high-quality studies found no evidence that self-defense programs are more effective than other programs at preventing sexual assault. Instead, we found college students who participated in campus sexual assault prevention programs that included self-defense content (e.g., training to defend oneself from a sexual assault) reported greater endorsement of rape myths than college students who participated in programs that did not include self-defense content. This is consistent with previous research that indicates a positive relationship between sexist attitudes (such as rape myth acceptance) and the belief that victims should be responsible for preventing sexual assault (such as through self-defense) [191].

Programs that included content on personal safety (e.g., advice to reduce risk of assault such as never leaving drinks unattended, walking with groups of friends, etc.) had a less favorable effect on bystander intervention compared to programs that did not include content on personal safety. This suggests that emphasizing the responsibility of potential victims

for preventing sexual assault may have an unintended consequence of discouraging third parties from taking action to prevent such violence.

Ultimately, we believe our most important finding is that the sexual assault prevention programs evaluated in our meta-analysis had a greater impact on attitudes/knowledge than on violence. Our meta-analysis revealed a favorable, but small, effect on sexual assault victimization and a nonsignificant effect on sexual assault perpetration. Importantly, program effects were not particularly disparate for these two outcomes. The effects on victimization and perpetration were similar in magnitude (victimization $g = 0.16$ and perpetration $g = 0.15$) and the effect on victimization barely demonstrated statistical significance [95% CI (0.01, 0.30)] whereas the effect on perpetration barely demonstrated statistical non-significance [95% CI (−0.08, 0.40)].

Importantly, any significant and favorable effect on sexual assault has substantive effects on the lives of college students. Thus, our findings indicate campus sexual assault prevention programs do have a meaningful impact on the health and safety of college students, as they produced favorable effects on victimization. Yet, the small magnitude of this effect suggests there is room for improvement. The small effect on violence could partially be explained by the fact that our meta-analysis was limited to studies that used the individual as the unit of analysis. This precluded the inclusion of programs that aim to foster larger cultural change, as opposed to individual change. For example, studies that assessed the effects of campus-wide resources or policies (e.g., creating spaces for dialogue about sexual assault on campus) on broad outcomes (e.g., campus-wide reports of sexual assault, the rate at which the student population accesses sexual assault services, etc.) were not eligible for inclusion. In fact, our systematic review of the literature indicated that evaluations of such programs are especially rare, as we only excluded a handful of studies that used a unit of analysis that was broader than the individual.

This tendency for the extant research to focus on individual attitudes and behaviors is potentially shortsighted, considering the fact that The World Health Organization emphasizes the importance of viewing violence from an ecological perspective [192]. Such a perspective entails recognizing the multifaceted nature of violence as a product of interactions between the individual, social relationships (e.g., peers, intimate partners, and family members), community factors (e.g., schools, workplaces, neighborhoods), and societal factors (e.g., cultural norms and attitudes). From an ecological perspective, programs/studies that target individual attitudes/knowledge and use the individual as the unit of analysis only examine the most basic unit and ignore broader influences on campus sexual assault. Thus, in order to identify more effective approaches to preventing campus sexual assault, future programs that focus on broader influences (i.e., social relationships, community factors, and societal factors) should be developed, implemented, and empirically evaluated using rigorous research designs. If such programs prove to be effective, then the Campus SaVE Act might have a greater impact on campus sexual assault if it expands its programming mandate to ensure that students are offered prevention services that target factors lying at each level of the ecological model.

Acknowledgments

The authors would like to thank Mary P. Koss for her expert consultation during the early phases of this project.

Funding Sources

This project was supported by Grant No. 2019-SI-AX-0004 awarded by the Office on Violence Against Women, U.S. Department of Justice. The opinions, findings, conclusions, and recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the U.S. Department of Justice.

References

[1] Cantor D, Fisher B, Chibnall S, et al. Report on the AAU campus climate survey on sexual assault and misconduct. Rockville, MD: The Association of American Universities; 2019.
[2] Krebs C, Lindquist C, Berzofsky M, et al. Campus climate survey validation study: final technical report. Washington, DC: BJS, Office of Justice Programs; 2016.
[3] Exner-Cortens D, Eckenrode J, Rothman E. Longitudinal associations between teen dating violence and adverse health outcomes. Pediatrics 2013;131:71–8.
[4] Cui M, Gordon G, Ueno K, et al. The continuation of intimate partner violence from adolescence to young adulthood. J Marriage Fam 2013;75:300–13.
[5] Halpern CT, Spriggs AL, Martin SL, et al. Patterns of intimate partner violence victimization from adolescence to young adulthood in a nationally representative sample. J Adolesc Health 2009;45:508–16.
[6] Violence against women Reauthorization act of 2013, Campus Sexual Violence Elimination [SaVE] Provisions. 2013:64. Pub. L. No. 113-4, §4, 127 Stat.
[7] Banyard V. Improving college campus-based prevention of violence against women: A strategic plan for research built on multipronged practices and policies. Trauma Violence Abuse 2014;15:339–51.
[8] DeGue S, Valle LA, Holt MK, et al. A systematic review of primary prevention strategies for sexual violence perpetration. Aggression Violent Behav 2014;19:346–62.
[9] Morrison S, Hardison J, Mathew A, et al. An evidence-based review of sexual assault prevention intervention programs. CD: Department of Justice; 2004.
[10] Newlands R, O'Donohue W. A critical review of sexual violence prevention programs on college campuses. Acta Psychopathologic 2016;2:1–13.
[11] Vladutiu CJ, Martin SL, Macy RJ. College- or university-based sexual assault prevention programs: A review of program outcomes, characteristics, and recommendations. Trauma Violence Abuse 2011;12:67–86.
[12] Anderson LA, Whiston SC. Sexual assault education programs: A meta-analytic examination of their effectiveness. Psychol Women Q 2005;29:374–88.
[13] Brecklin LR, Forde DR. A meta-analysis of rape education programs. Violence and Victims 2001;16:303–21.
[14] Hanson RK, Broom I. The utility of cumulative meta-analysis: Application to programs for reducing sexual violence. Sex Abuse 2005;17:357–73.
[15] Gibbons RE, Evans J. The evaluation of campus-based gender violence prevention programming: What we know about program effectiveness and implications for practitioners. Available at: https://vawnet.org/material/evaluation-campus-based-gender-violence-prevention-programming-what-we-know-about-program. Accessed March 24, 2023.
[16] Gidycz CA, Orchowski LM, Probst DR, et al. Concurrent administration of sexual assault prevention and risk reduction programming: Outcomes for women. Violence Against Women 2015;21:780–800.
[17] Jozkowski KN, Peterson ZD. College students and sexual consent: Unique insights. The J Sex Res 2013;50:517–23.
[18] Hollander JA. The importance of self-defense training for sexual violence prevention. Feminism & Psycholgy 2016;26:207–26.
[19] Hollander JA. Women's self-defense and sexual assault resistance: The state of the field. Sociol Compass 2018;12:e12597.
[20] Messner M. Bad men, good men, bystanders: Who is the rapist? Gend Soc 2016;30:57–66.
[21] Banyard VL. Who will help prevent sexual violence? Creating an ecological model of bystander intervention. Psychol Violence 2011;1:216–29.
[22] Banyard VL, Plante EG, Moynihan MM. Bystander education: Bringing a broader community perspective to sexual violence prevention. J Community Psychol 2004;32:61–79.
[23] Burn SM. A situational model of sexual assault prevention through bystander intervention. Sex Roles 2009;60:779–92.
[24] McMahon S, Banyard VL. When can I help? A conceptual framework for the prevention of sexual violence through bystander intervention. Trauma Violence Abuse 2021;13:3–14.
[25] Katz J. Reconstructing masculinity in the locker room: The Mentors in Violence Prevention project. Harv Educ Rev 1995;65:163–74.

[26] Jouriles EN, Krauss A, Vu NL, et al. Bystander programs addressing sexual violence on college campuses: A systematic review and meta-analysis of program outcomes and delivery methods. J Am Coll Health 2018;66:457–66.
[27] Katz J, Moore J. Bystander education training for campus sexual assault prevention: An initial meta-analysis. Violence Victims 2013;28:1054–67.
[28] Kettrey HH, Marx RA, Tanner-Smith E. Effects of bystander programs on the prevention of sexual assault among adolescents and college students: A systematic review. Campbell Syst Rev 2019;1:1–160.
[29] Cornelius TL, Resseguie N. Primary and secondary prevention programs for dating violence: A review of the literature. Aggression Violent Behav 2007;12:364–75.
[30] De La Rue L, Polanin JR, Espelage DL, Pigott TD. School-based interventions to reduce dating and sexual violence: A systematic review. Campbell Syst Rev 2014;10:1–110.
[31] De La Rue L, Polanin JR, Espelage DL, Pigott TD. Meta-analysis of school-based interventions aimed to prevent or reduce violence in teen dating relationships. Rev Educ Res 2017;87:7–34.
[32] Hickman LJ, Jaycox LH, Aronoff J. Dating violence among adolescents: Prevalence, gender distribution, and prevention program effectiveness. Trauma Violence Abuse 2004;5:123–42.
[33] Lee C, Wong JS. Examining the effects of teen dating violence prevention programs: A systematic review and meta-analysis. J Exp Criminology 2022;18:1–40.
[34] Russell KN, Voith LA, Lee H. Randomized controlled trials evaluating adolescent dating violence prevention programs with an outcome of reduced perpetration and/or victimization: A meta-analysis. J Adolescence 2021;87:6–14.
[35] Crooks CV, Jaffe P, Dunlop C, et al. Preventing gender-based violence among adolescents and young adults: Lessons from 25 years of program development and evaluation. Violence Against Women 2019;25:29–55.
[36] Bohner G, Jarvis C, Eyssel F, Siebler F. The causal impact of rape myth acceptance on men's rape proclivity: Comparing sexually coercive and noncoercive men. Eur J Social Psychol 2005;35:819–28.
[37] Bohner G, Reinhard MA, Rutz S, et al. Rape myths as neutralizing cognitions: Evidence for a causal impact of antivictim attitudes on men's self-reported likelihood of raping. Eur J Social Psychol 1998;28:257–68.
[38] Gidycz CA, Warkentin JB, Orchowski LM, Edwards KM. College men's perceived likelihood to perpetrate sexual aggression. J Aggression Maltreat Trauma 2011;20:260–79.
[39] Malamuth NM. Rape proclivity among males. J Social Issues 1981;37:138–57.
[40] Cooper HM. In: Research synthesis and meta-analysis. 4th ed. Los Angeles, CA: Sage; 2010.
[41] Wilson D.B. Practical meta-analysis effect size calculator Available at:. http://gemini.gmu.edu/cebcp/EffectSizeCalculator/index.html; 2013. Accessed July 15, 2022.
[42] Higgins JPT, Green S. Cochrane Handbook for systematic reviews of interventions. Hoboken, NJ: The Cochrane Collaboration; 2011.
[43] Hedges LV, Hedberg EC. Intraclass correlation values for planning group-randomized trials in education. Education Eval Policy Anal 2007;29:60–87.
[44] Fisher Z., Tipton E. robumeta: An R-package for robust variance estimation in meta-analysis Available at: http://arxiv.org/abs/1503.02220. 2015. Accessed August 15, 2022.
[45] Hedges LV, Tipton E, Johnson MC. Robust variance estimation in meta-regression with dependent effect size estimates. Res Synth Methods 2010;1:39–65.
[46] Tanner-Smith EE, Tipton E. Robust variance estimation with dependent effect sizes: Practical considerations including a software tutorial in Stata and SPSS. Res Synth Methods 2014;5:13–30.
[47] Tipton E. Small sample adjustments for robust variance estimation with meta-regression. Psychol Methods 2015;20:375–93.
[48] Tipton E. Robust variance estimation in meta-regression with binary dependent effects. Res Synth Methods 2013;4:169–87.
[49] Lipsey MW, Wilson DB. Practical meta-analyses. Los Angeles, CA: Sage Publications, Inc; 2001.
[50] Abebe KZ, Jones KA, Rofey D, et al. A cluster-randomized trial of a college health center-based alcohol and sexual violence intervention (GIFTSS): Design, rationale, and baseline sample. Contemp Clin Trials 2018;65:130–43.
[51] Addison WB. Embedding sexual assault bystander awareness education in a criminal justice course. Dissertation. New Castle, DE: Wilmington University; 2016.
[52] Anderson L, Stoelb MP, Duggan P, et al. The effectiveness of two types of rape prevention programs in changing the rape-supportive attitudes of college students. J Coll Student Development 1998;39:131–42.
[53] Avina C. An evaluation of a web-based sexual assault prevention program for college women. Dissertation. Reno, NV: The University of Nevada; 2005.
[54] Banyard VL, Moynihan MM, Plante EG. Sexual violence prevention through bystander education: An experimental evaluation. J Community Psychol 2007;35:463–81.
[55] Banyard VL, Plante EG, Moynihan MM. Rape prevention through bystander education: Final report to NIJ for grant 2002-WG-BX-0009. Washington, DC: National Criminal Justice Reference Service; 2005.
[56] Banyard V, Potter SJ, Cares AC, et al. Multiple sexual violence prevention tools: Doses and boosters. J Aggression Conflict Peace Res 2018;10:145–55.
[57] Borden LA, Karr SK, Caldwell-Colbert AT. Effects of a university rape prevention program on attitudes and empathy toward rape. J Coll Student Development 1988;29:132–6.
[58] Borges AM, Banyard VL, Moynihan MM. Clarifying consent: Primary prevention of sexual assault on a college campus. J Prev Interv Community 2008;36:75–88.
[59] Boulter C. Effects of an acquaintance rape prevention program on male college students' endorsements of rape myth beliefs and sexually coercive behaviors Dissertation. Pullman, WA: Washington State University; 1999.
[60] Bountress KE, Metzger IW, Maples-Keller JL, et al. Reducing sexual risk behaviors: Secondary analyses from a randomized controlled trial of a brief web-based alcohol intervention for underage, heavy episodic drinking college women. Addict Res Theor 2017;25:302–9.
[61] Breitenbecher KH. An empirical evaluation of a sexual assault prevention program addressing the issue of multiple victimization. Dissertation. Athens, OH: Ohio University; 1995.
[62] Breitenbecher KH, Gidycz CA. An empirical evaluation of a program designed to reduce the risk of multiple sexual victimization. J Interpersonal Violence 1998;13:472–88.
[63] Breitenbecher KH, Scarce M. A longitudinal evaluation of the effectiveness of a sexual assault education program. J Interpersonal Violence 1999;14:459–78.
[64] Brokenshire SJ. Evaluating bystander intervention training: Creating awareness on college campuses. Master's thesis. Flagstaff, AZ: Northern Arizona University; 2015.
[65] Cares AC, Banyard VL, Moynihan MM, et al. Changing attitudes about being a bystander to violence: Translating an in-person sexual violence prevention program to a new campus. Violence Against Women 2015;21:165–87. https://doi.org/10.1177/1077801214564681.
[66] Chiriboga X. A text message intervention to increase awareness of sexual assault on campus Master's thesis. Kingstown, RI: South; 2016.
[67] Currier DM, Carlson JH. Creating attitudinal change through teaching: How a course on 'women and violence' changes students' attitudes about violence against women. J Interpersonal Violence 2009;24:1735–54.
[68] Davis TL. The effectiveness of a sex role socialization-focused date rape prevention program in reducing rape-supportive attitudes in college fraternity men. Dissertation. Iowa City, IA: The University of Iowa; 1997.
[69] Davis TL, Liddell DL. Getting inside the house: The effectiveness of a rape prevention program for college fraternity men. J Coll Student Development 2002;43:35–50.
[70] Davis JL. Effectiveness of a sexual assault education and prevention program for victims and nonvictims of sexual abuse. Dissertation. Fayetteville, AR: The University of Arkansas; 1999.
[71] Davis JL, Demaio CM, Fricker-Elhai AE. Sexual assault prevention targeting involvement in risky behaviors. J Trauma Pract 2006;3:1–22.
[72] Echols KL. Dating relationships and sexual victimization: An intervention program with college freshman males Dissertation. Tuscaloosa, AL: The University of Alabama; 1999.
[73] Edison BR. Sexual consent self-efficacy and sexual health communication for STI/HIV prevention among college students. Master's thesis. Pittsburgh, PA: The University of Pittsburgh; 2019.
[74] Elias-Lambert N. Bystander sexual violence prevention program: Outcomes for high- and low-risk university men. Dissertation: Arlington, TX: The University of Texas at Arlington; 2013.
[75] Elias-Lambert N, Black BM. Bystander sexual violence prevention program: Outcomes for high- and low-risk university men. J Interpersonal Violence 2016;31:3211–35.
[76] Exner-Cortens D, Cummings N. Bystander-based sexual violence prevention with college athletes: A pilot randomized trial. J Interpersonal Violence 2017;36:NP188–211.
[77] Feldwisch RP. Safe Sisters evaluation: A randomized controlled trial of a bystander intervention program to prevent sexual assault. Dissertation. Bloomington, IN: Indiana University; 2017.
[78] Fischer GJ. College student attitudes toward forcible date rape: Changes after taking a human sexuality course. J Sex Educ Ther 1986;12:42–6.
[79] Forst LS. The effects of two acquaintance rape prevention education programs on rape-supportive beliefs among college students. Dissertation. Boca Raton, FL: Florida Atlantic University; 1993.
[80] Forst L. Effects of two acquaintance rape prevention programs on rape-supportive beliefs among college students Academically Speaking, Criminal Justice Related Research by Florida's Doctoral Candidates. Washington, DC: U.S. Department of Justice; 1994:47–59.

[81] Foubert JD. Men's Program: How to successfully lower men's likelihood of raping. Holmes Beach, FL: Learning Publications; 1998.
[82] Foubert JD. The longitudinal effects of a rape-prevention program on fraternity men's attitudes, behavioral intent, and behavior. J Am Coll Health 2000;48:158–63.
[83] Foubert JD, Marriot KA. Effects of a sexual assault peer education program on men's belief in rape myths. Sex Roles 1997;36:259–68.
[84] Foubert JD, McEwen MK. An all-male rape prevention peer education program: Decreasing fraternity men's behavioral intent to rape. J Coll Student Development 1998;39:548–56.
[85] Foubert J, Newberry J, Tatum J. Behavior differences Seven Months later: Effects of a rape prevention program. NASPA J 2007;44:728–9.
[86] Frazier P. An evaluation of a rape prevention program. Conference presentation at: The Convention of the American Psychological Association; August 20-24. 1993. Toronto.
[87] Frazier P, Valtinson G, Candell S. Evaluation of a coeducational interactive rape prevention program. J Couns Development 1994;73:153–8.
[88] Gidycz CA, Lynn SJ, Rich CL. The evaluation of a sexual assault risk reduction program: A multisite investigation. J Consulting Clin Psychol 2001;69:1073–8.
[89] Gidycz CA, Orchowski LM, Berkowitz AD. Preventing sexual aggression among college men: An evaluation of a social norms and bystander intervention program. Violence Against Women 2011;17:720–42.
[90] Gidycz CA, Rich CL, Orchowski L, et al. The evaluation of a sexual assault self-defense and risk-reduction program for college women: A prospective study. Psychol Women Q 2008;30:173–86.
[91] Gilbert BJ. Changing sexual aggression-supportive attitudes and beliefs: A preventive intervention for men Dissertation. Carbondale, IL: Southern Illinois University at Carbondale; 1998.
[92] Gilbert BJ, Heesacker M, Gannon LJ. Changing the sexual aggression-supportive attitudes of men: A psychoeducational intervention. J Couns Psychol 1991;38:197–203.
[93] Gilmore AK. Reducing sexual assault and re-assault on college campuses. Dissertation. Seattle, WA: University of Washington; 2015.
[94] Gilmore A. Alcohol and violence prevention for college students. The National Institutes Health. NIH Project No. 1R34AA025691-01A1. Available at: https://reporter.nih.gov/search/l4Pi-QUlqU-QLeqyzoo5Lw/project-details/9456111#similar-Projects; 2018. Accessed August 17, 2021.
[95] Gilmore A. Alcohol and violence prevention for college students. Clinicaltrails.gov Identifier NCT04089137. Available at: https://clinicaltrials.gov/ct2/show/NCT04089137; 2019. Accessed August 20, 2021.
[96] Gilmore AK, Bountress KE. Reducing drinking to cope among college women: Secondary outcomes of a web-based alcohol use and sexual assault risk reduction intervention. Conference abstract presented at: Alcoholism: Clinical and Experimental Research, Research Society on Alcoholism; n.d.
[97] Gilmore AK, Bountress KE. Reducing drinking to cope among heavy episodic drinking college women: Secondary outcomes of a web-based combined alcohol use and sexual assault risk reduction intervention. Addict Behaviors 2018;61:104–11.
[98] Gilmore AK, Bountress KE, Selmanoff M, et al. Reducing heavy episodic drinking, incapacitation, and alcohol induced blackouts: Secondary outcomes of a web-based combined alcohol use and sexual assault risk reduction intervention. Violence Against Women 2018;24:1299–313.
[99] Gilmore AK, Lewis MA, George WH. A combined alcohol use and sexual assault risk reduction program for college women. Conference abstract presented at: the Research Society on Alcoholism; n.d.
[100] Gilmore AK, Lewis MA, George WH. A randomized controlled trial targeting alcohol use and sexual assault risk among college women at high risk for victimization. Behav Res Ther 2015;74:38–49.
[101] Gilmore A, Reidy D, Leone RM., et al. A pilot randomized controlled trial of +Change: An integrated alcohol and sexual assault prevention program tailored by gender and sexual orientation. Unpublished Manuscript. Georgia State University; n.d.
[102] Haikalis M. Engaging male bystanders to reduce sexual aggression: The effects of online training and bystander alcohol intoxication Dissertation. Lincoln: NB: The University of Nebraska-Lincoln; 2019.
[103] Haikalis M. Engaging male bystanders to reduce sexual aggression: The effects of online training and bystander alcohol intoxication. In: Conference abstract number 931A. Alcoholism: Clinical and Experimental Research. Hoboken, NJ: Wiley-Blackwell. 2019.
[104] Hanson KA, Gidzycz CA. Evaluation of a sexual assault prevention program. J Couns Clin Psychol 1993;61:1046–52.
[105] Harrison PJ, Downs J, Williams MD. (1991). Date and acquaintance rape: Perceptions and attitude change strategies. J Coll Student Development 1991;32:131–9.
[106] Heppner MJ, Humphrey CF, Hillenbrand-Gunn TL, et al. The differential effects of rape prevention programming on attitudes, behavior, and knowledge. J Couns Psychol 1995;42:508–18.
[107] Holcomb DR, Sarvela PD, Sondag KA, et al. An evaluation of a mixed-gender date rape prevention workshop. J Am Coll Health 1993;41:159–64.
[108] Holcomb DR, Savage MP, Seehafer R, et al. A mixed-gender date rape prevention intervention targeting freshman college athletes. Coll Student J 2002;36:165–80.
[109] Holcomb DR, Sondag KA, Holcob LCH. Heathy dating: A mixed-gender date rape workshop. J Am Coll Health 1993;41:155–7.
[110] Hollander JA. Does self-defense training prevent sexual violence against women? Violence Against Women 2014;20:252–69.
[111] Hust SJT, Adams PM, Willoughby JF, et al. The entertainment-education strategy in sexual assault prevention: A comparison of theoretical foundations and a test of effectiveness in a college campus setting. J Health Commun 2017;22:721–31.
[112] Jaffe AE, Bountress KE, Metzger IW, et al. Student engagement and comfort during a web-based personalized feedback intervention for alcohol and sexual assault. Addict Behaviors 2018;82:23–7.
[113] Jensen LA. College students' attitudes toward acquaintance rape: The effects of a prevention intervention using cognitive dissonance theory Dissertation. Tuscaloosa, AL: The University of Alabama; 1993.
[114] Johnson PJR. The effects of rape education on male attitudes toward rape and women. Dissertation. Denton, TX: Texas Woman's University; 1978.
[115] Johnson KM, Lederer AM, Liddell JL, et al. Teaching to impact sexual violence? The evaluation of a curricular intervention for first-year college students. Am J Health Promotion 2021;35:438–41.
[116] Jordon JB. Examining the effects of two sexual assault/date rape interventions in a population of college freshmen. Dissertation. College Park, MD: The University of Maryland; 2011.
[117] Jouriles EN, McDonald R, Rosenfield D, et al. TakeCARE, a video bystander program to help prevent sexual violence on college campuses: Results of two randomized, controlled trials. Psychol Violence 2015;6:410–20.
[118] Jouriles EN, Sargent KS, Salis KL, et al. TakeCARE, a video to promote bystander behavior on college campuses: Replication and extension. J Interpersonal Violence 2020;35:5652–75.
[119] Kleinsasser A, Jouriles EN, McDonald R, et al. An online bystander intervention program for the prevention of sexual violence. Psychol Violence 2015;5:227–35.
[120] Kuffel SW, Katz J. Preventing physical, psychological, and sexual aggression in college dating relationships. J Prim Prev 2022;22:361–74.
[121] Lanier CA. Evaluation of a date rape prevention program for new students in a university. Dissertation. Houston, TX: The University of Texas School of Public Health; 1995.
[122] Lanier CA, Elliott MN, Martin DW, et al. Evaluation of intervention to change attitudes toward date rape. J Am Coll Health 1998;46:177–80.
[123] Lenihan GO. Gender differences in rape supportive attitudes before and after a date rape education intervention. J Coll Student Development 1992;33:331–8.
[124] Lydiard AM. Evaluation of a rape-prevention program: Effects on attitudes toward rape and beliefs in rape myths among freshmen dorm residents at the University of Montana. Master's thesis. Missoula, MT: The University Montana; 2001.
[125] Marx BP, Calhoun KS, Wilson AE, et al. Sexual revictimization prevention: An outcome evaluation. J Consulting Clin Psychol 2001;69:25–32.
[126] Maulupe SM. Sexual assault education on rape myth acceptance. Master's thesis. Warrensberg, MO: Central Missouri State University; 2005.
[127] McCauley HL, Jones KA, Rofey DL, et al. Sexual assault, alcohol use, and gender of sexual partners among cisgender women seeking care at US college health centers, 2015-2018. Am J Public Health 2020;110:850–6.
[128] Miller M. College health center-based alcohol and sexual violence intervention (GIFTSS) Clinicaltrials.gov Identifier NCT02355470. Updated 2018. Available at: https://clinicaltrials.gov/ct2/show/NCT02355470. Accessed July 3, 2020.
[129] Miller E, Jones KA, McCauley HL, et al. Cluster randomized trial of a college health center sexual violence intervention. Am J Prev Med 2020;59:98–108.
[130] Moynihan MM, Banyard V. Educating bystanders helps prevent sexual violence and reduce backlash. Fam Intimate Partner Violence Q 2011;3:293–304.
[131] Moynihan MM, Banyard VL, Arnold JS, et al. Engaging intercollegiate athletes in preventing and intervening in sexual and intimate partner violence. J Am Coll Health 2010;59:197–204.
[132] Moynihan MM, Banyard VL, Arnold JS, et al. Sisterhood may be powerful for reducing sexual and intimate partner violence: An evaluation of the bringing in the bystander in-person program with sorority members. Violence Against Women 2011;17:703–19.
[133] Moynihan MM, Banyard VL, Cares AC, et al. Encouraging responses in sexual and relationship violence prevention: What program effects remain 1 year later? J Interpersonal Violence 2015;30:110–32.

[134] Newins AR, White SW. A brief computer-based sexual assault risk reduction program: A feasibility, acceptability, and preliminary efficacy pilot study. J Interpersonal Violence 2021;36:4854–75.
[135] Nichols RA. The impact of two types of rape education programs on college students' attitudes. Dissertation. Columbia, MO: The University of Missouri-Columbia; 1991.
[136] O'Brien KM, Sauber EW, Kearney MS, et al. Evaluating the effectiveness of an online intervention to educate college students about dating violence and bystander responses. J Interpersonal Violence 2019. Advance online publication.
[137] Orchowski LM, Barnett N, Borsari B, et al. Integrated alcohol and sexual assault prevention for heavy drinking college men: Short term findings from a randomized pilot trial. Conference abstract number 279A. Alcoholism: Clinical and Experimental Research. Hoboken, NJ: Wiley-Blackwell; 2015.
[138] Orchowski LM, Barnett N, Borsari B, et al. Integrated alcohol and sexual assault prevention for heavy drinking college men: Short term findings from a randomized pilot trial. PowerPoint slides. Alpert Medical School. Providence, RI: Brown University; 2015.
[139] Orchowski LM, Barnett N, Borsari B, et al. Randomized pilot trial of an integrated alcohol and sexual assault prevention program for heavy drinking college men: Six month outcomes.. Conference abstract number 253A. Alcoholism: Clinical and Experimental Research Hoboken, NJ: Wiley-Blackwell; 2016.
[140] Orchowski LM, Barnett N, Borsari B, et al. Randomized pilot trial of an integrated alcohol and sexual assault prevention program for heavy drinking college men: Six month findings. PowerPoint slides. Providence, RI: Alpert Medical School; 2016.
[141] Orchowski LM, Barnett N, Borsari B, et al. Proximal effects of an integrated alcohol and sexual assault prevention program for heavy drinking college men.. Conference abstract number 290A. Alcoholism: Clinical and Experimental Research Hoboken, NJ: Wiley-Blackwell; 2017.
[142] Orchowski LM, Barnett N, Borsari B, et al. Proximal effects of an integrated alcohol and sexual assault prevention program for heavy drinking college men. PowerPoint slides. Alpert Medical School. Providence, RI: Brown University; 2017.
[143] Orchowski LM, Gidycz CA, Raffle H. Evaluation of a sexual assault risk reduction and self-defense program: A prospective analysis of a revised protocol. Psychol Women Q 2008;32:204–18.
[144] Ostrowski MJ. Incidence and attitudes involving sexual assault during courtship in an undergraduate college sample: The effects of education and empathy training. Dissertation. Vermillion, SD: The University of South Dakota; 1991.
[145] Peterson KA. An evaluation of two dating violence prevention programs on a college campus. Dissertation. Baltimore, MD: Johns Hopkins University; 2014.
[146] Peterson K, Sharps P, Banyard V, et al. An evaluation of two dating violence prevention programs on a college campus. J Interpersonal Violence 2018;33:630–3655.
[147] Pinzone HA. Acquaintance rape awareness program: Effects on attitudes and perceptions Dissertation. Athens, OH: Ohio University; 1995.
[148] Pinzone-Glover HA, Gidycz CA, Jacobs CD. An acquaintance rape prevention program. Psychol Women Q 1998;22:605–21.
[149] Potter SJ. Adaptation and evaluation of video games to reduce sexual violence on campus. Washington, DC; National Institute of Justice; 2018.
[150] Potter SJ, Demers JM, Flanagan M, et al. Can video games help prevent violence? An evaluation of games promoting bystander intervention to combat sexual violence on college campuses. Psychol Violence 2021;11:199.
[151] Potter SJ, Flanagan M, Seidman M, et al. Developing and piloting video games to increase college and university students' awareness and efficacy of the bystander role in incidents of sexual violence. Games Health J 2019;8:24–34.
[152] Potter SJ, Stapleton JG, Moynihan MM. Designing, implementing, and evaluating a media campaign illustrating the bystander role. J Prev Intervention Community 2008;36:39–55.
[153] Rosenthal E. Changing the rape-supportive attitudes of traditional and nontraditional males and females. Dissertation. Gainesville, FL: The University of Florida; 1994.
[154] Rosenthal EH, Heesacker M, Neimeyerr GJ. Changing the rape-supportive attitudes of traditional and nontraditional male and female college. J Couns Psychol 1995;42:171–7.
[155] Rothman EF, Paruk J, Banyard V. The escalation dating abuse workshop for college students: Results of an efficacy RCT. J Am Coll Health 2018;66:519–28.
[156] Rowe LS, Jouriles EN, McDonald R, et al. Enhancing women's resistance to sexual coercion: A randomized controlled trial of the DATE program. J Am Coll Health 2012;60:211–8.
[157] Rusinko HM. The efficacy of verbal assertiveness training on reducing risk of sexual assault. Dissertation. Grand Forks, ND: The University of North Dakota; 2011.
[158] Saberi D. Acquaintance rape prevention: Changing rape-Supportive attitudes of college students Dissertation. Tempe, AZ: Arizona State University; 1999.
[159] Salazar L. Preventing violence against women: A web-based approach Clinicaltrials.gov Identifier NCT01903876. Updated 2013. Available at: https://clinicaltrials.gov/ct2/show/NCT01903876. Accessed May 12, 2020.
[160] Salazar LF, Vivolo-Kantor A, Hardin J, et al. A web-based sexual violence bystander intervention for male college students: Randomized controlled trial. J Med Internet Res 2014;16:1–16.
[161] Salazar L, Vivolo-Kantor A, Schipani-McLaughlin AM. Theoretical mediators of RealConsent: A web-based sexual violence prevention and bystander education program. Health Education Behav 2019;46:79–88.
[162] Santacrose LB, Laurita AC, Marchell TC. Intervene: Modeling pro-social bystander behavior in college students through online video. Health Commun 2019;35:397–409.
[163] Scheew PA. Victim empathy and rape outcome expectancies: Testing a model-based rape prevention program. Dissertation. DeKalb, IL: Northern Illinois University; 2019.
[164] Schewe PA, O'Donohue W. Rape prevention with high-risk males: Short-term outcome of two interventions. Arch Sex Behav 1996;25:455–71.
[165] Schewe PA, O'Donohue W. Rape prevention with high-risk males: Short-term outcomes of two interventions [Research Summary]. The Can J Hum Sex 1997;6:45.
[166] Schipani-McLaughlin AM, Salazar LF, Vivolo-Kantor AM. The relationship between binge drinking and prosocial bystander behavior among college men. J Am Coll Health 2019;68:570–4.
[167] Schry AR. Behavioral responses and risk detection in sexual encounters: A study on the effects of social anxiety and a brief intervention. Dissertation. Blacksburg, VA: Virginia Polytechnic Institute and State University; 2013.
[168] Shaw J, Janulis P. Re-Evaluating sexual violence prevention through bystander education: A latent growth curve approach. J Interpersonal Violence 2016;31:2729–50.
[169] Smith DR. A program evaluation: The effects of women's self-defense training upon efficacy expectancies, behaviors, and personality variables. Dissertation. East Lansing, MI: Michigan State University; 1983.
[170] Steinmetz SE, Gray MJ, Raymond EM. Reducing rape-related attitudes Utilizing a Cognitive Dissonance Paradigm. Violence Against Women 2019;25:1739–58.
[171] Stephens KA. Rape prevention with Asian/Pacific Islander and Caucasian college men: The roles of culture and risk status Dissertation. Seattle, WA: University of Washington; 2008.
[172] Stephens KA, George WH. Rape prevention with college men: Evaluating risk status. J Interpersonal Violence 2009;24:996–1013.
[173] Steward JM. Building upon bystander intervention: A multi-component prevention programming approach for university sorority members. Dissertation. Tulsa, OK: The University of Tulsa; 2017.
[174] Tanner AE, Guastaferro KM, Rulison KL, et al. A hybrid evaluation-optimization trial to evaluate an intervention targeting the intersection of alcohol and sex in college students and simultaneously test an additional component aimed at preventing sexual violence. Ann Behav Med 2021;55:1184–7.
[175] Testa M, Hoffman JH, Livingston JA, et al. Preventing college women's sexual victimization through parent-based intervention: A randomized controlled trial. Prev Sci 2010;11:308–18.
[176] Testa M, Livingston JA, Wang W, et al. Preventing college sexual victimization by reducing hookups: A randomized controlled trial of a personalized normative feedback intervention. Prev Sci 2020;21:388–97.
[177] Thatcher WG. Preliminary evaluation of the 'Playing the Game' sexual assault prevention theatre program. Int Electron J Health Educ 2011;14:109–21.
[178] Thompson MP, Zinzow HM, Kingree JB, et al. Pilot trial of an online sexual violence prevention program for college athletes. Psychol violence 2021;11:92.
[179] Webermann AR, Murphy CM, Singh R, et al. Preventing relationship abuse among college students: A controlled trial of the skills for Healthy Adult relationships (SHARe) program. J interpersonal Violence 2020;37. Advance online publication.
[180] Whitlock ER. Assessing changes in bystander intervention: The impact of an undergraduate educational program on peer sexual harassment. Dissertation. Amherst, MA: The University of Massachusetts Amherst; 2002.
[181] Wolford MJ. The effects of educational programs about rape on the attitudes of first year urban university students. Dissertation. Norfolk, VA: Old Dominion University; 1993.
[182] Wong YJ, McDermott RC, Zounlome NO, et al. Self-persuasion: An experimental evaluation of a sexual aggression preventive intervention for US college men. J interpers Violence 2020;37:2037–61. Advance online publication.

[183] Woodhouse J. An evaluation of date rape and sexual violence prevention and awareness for men and women: Risk factors and myths. Dissertation. Denver, CO: The University of the Rockies; 2012.
[184] Wyandt MA. A comparison of peer education and lecture strategies for changing college freshmen's perceptions about rape. Dissertation. University Park, PA: Pennsylvania State University; 1991.
[185] Yeater EA. An evaluation of a sexual assault prevention program for female college students. Master's thesis. Reno, NV: The University of Nevada; 2000.
[186] Yeater EA. An evaluation of skills-based bibliotherapy approach for the prevention of sexual assault among college-aged women Dissertation. Reno, NV: The University of Nevada; 2001.
[187] Yeater EA, Miltenberger P, Laden RM, et al. Collaborating with academic affairs on the development of a sexual assault prevention and counseling program within an academic department. J Student Aff Res Pract 2001;38:438–50.
[188] Yeater EA, Naugle AE, O'Donohue W, et al. Sexual assault prevention with college-aged women: A bibliotherapy approach. Violence and Victims 2004;19:117–36.
[189] Katz J, Heisterkamp HA, Fleming WM. The social justice roots of the Mentors in violence prevention model and its application in a high school setting. Violence Against Women 2011;17:684–702.
[190] Cremele J, McCaughey M. Self-defense as an effective and neglected form of sexual assault prevention: A commentary and overdue correction to the literature. Sex Roles 2022;86:493–503.
[191] Brownhalls J, Duffy A, Eriksson L, et al. Make it safe at night or teach women to fight? Sexism predicts views on men's and women's responsibility to reduce violence toward women. Sex Roles 2021;84:183–95.
[192] Krug EG, Dahlberg LL, Mercy JA, et al. World report on violence and health. Geneva, CH: World Health Organization; 2002.