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A Critical Review of Sexual Violence Prevention on College Campuses

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Abstract

Background: In 2013 the United States Congress established an act requiring all federally funded universities to provide primary prevention for sexual-violence and awareness training to all incoming students and employees. In order to comply with federal mandates and to protect students from sexual violence, only those prevention programs that empirically demonstrate decreased rates of sexual violence should be employed.

Methods: To assist administrators in adopting the most efficacious prevention programs, an extensive review of sexual-violence interventions examining perpetration and victimization as outcomes with U.S college students was conducted.

Conclusions: Based on the findings, recommendations are provided for administrators and researchers. Specifically, we recommend using separate gender programs, as those targeting alcohol use and self-defense have shown the most promise for women and those addressing consent have shown the most promise with men.

Keywords: Rape; Sex offenses; Prevention; College students; Review literature

Abbreviations: PBI: Parent Based Intervention; IR: Incapacitated Rape; MI: Motivational Interviewing; FB: Feedback only; MIFB: Motivational Interviewing with feedback; C: Control; SEEDS: Students Educating and Empowering to Develop Safety; POLs: Peer Opinion Leaders

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Introduction

Sexual assault and rape on college campuses have received a great deal of public attention in recent years, particularly from the White House and popular media. Part of the increased focus has been on the mishandling of some well-known cases; from the now infamous 2007 Duke lacrosse players' trial [1] to the countless harrowing stories of the indignities and injustices suffered by the victims of sexual violence [2]. Nearly 20% of college women in the United States have experienced rape or an attempted rape [3]. The aftermath of sexual victimization is often severe and far-reaching. The National Intimate Partner and Sexual Violence Survey [4] found that, compared with their non-victimized counterparts, victims of sexual violence were significantly more likely to report adverse physiological health outcomes and mental-health issues (including, but not limited to, chronic pain, IBS, diabetes, and PTSD). In addition to the physiological and psychological impacts, sexual violence also imposes a substantial financial cost; indirectly and directly, sexual assaults cost an average of $151,423 per rape [5]. While it is important to note that men also experience rape and sexual assault, men account for just 9% of victims while women comprise 91% of all rape and sexual-assault victims [6]. Given this ten-fold disparity, this review will focus on the sexual victimization of women.

Universities Legal Obligations

Since the 1990s, the adjudication of rape and sexual-assault cases on college campuses has fallen increasingly under the jurisdiction university administrators, instead of under the criminal justice system [4,7]. Sexual assault and rape on university campuses is a serious problem, in terms of the consequences suffered by the victims and by those universities that fail to comply with the law regarding the handling of such cases [4]. As of 2013, Congress established the Campus Sexual Violence Elimination Act [8],

which requires all incoming students and employees to undergo training for sexual-violence awareness and prevention. Many campuses struggle to comply with this mandate, partly because little guidance has been provided to universities regarding the implementation of prevention programs and the adjudication of reported cases. For instance, in 2014 the Obama administration's Sexual Assault Response Team created a checklist to aid in creating campus-wide sexual-miscommunication policies [9]. Unfortunately, the guidelines provided by the campus checklist provide little information about how to implement the suggested policies, and the checklist does not supply clear definitions of key concepts – such as what constitutes "sexual assault" or "rape." Another aspect of the difficulty many universities face in complying with federal mandates is that currently no "gold star" risk-reduction or prevention interventions exist, leaving universities in precarious legal and ethical positions. To protect students, and to safeguard the institution from failing to comply with Title IX [10], universities must employ the best available interventions. (Note: In this review, the terms "prevention programs" and "interventions" are used as umbrella terms for any interventions with the aim of preventing sexual violence; such programs include: risk-reduction programs, community-level prevention, and primary prevention for potential perpetrators.)

A recent review by Amar et al. [11] of university-provided sexual-violence services revealed that, while many campuses (85%) reported holding some kind of training on sexual assault, these typically brief trainings occurred at freshmen orientation [7]. Amar, Strout, Simpson, Cardiello and Beckford (2014) posited that "new students do not have relevant contextual knowledge of the institution and campus social culture to be able to effectively apply and use the training they receive". The review by Amar, Strout, Simpson, Cardiello and Beckford provided no information regarding what percentage of the reviewed sample had implemented evidence-based prevention programs – for example, programs tested for effectiveness in randomized controlled trials. The Amar et al. [11] review leaves important research questions to be answered, including: To what extend do sexual violence prevention efforts on college campuses represent a thorough commitment to providing the highest quality sexual-violence services? The fear is that insufficient concern has been expressed about the quality of sexual-violence prevention programming.

What Is Evidence-Based Sexual-Violence Prevention?

This review examines the question "What is evidence-based sexual-violence prevention?". This question should guide practical decisions about which sexual-violence prevention approach universities and similar institutions ought to adopt. In addressing this question, this review explores issues related to effect sizes, dosage, generalization of effects over time, manualization, understanding of mechanisms of change, program cost, and other practical considerations. Although the question of what constitutes "evidence-based practice" has raised some controversies, some agreement exists regarding the importance of randomized controlled trials [12], manualization (so programs can be faithfully disseminated) [13], independent replications [14], and clinically significant effect sizes, preferably on indices of sexual-assault rates [15].

Currently, significant heterogeneity exists across U.S. college campuses regarding the prevention approach taken [16]. This variability can be due to a variety of factors, including: 1) varying philosophical commitments to evidence-based practice; 2) differential judgments concerning what the evidence-based practice entails; 3) constraints provided by limited budgets or limited access to students; 4) persuasive impacts of fads or "the new" approach; 5) theoretical commitments regarding sexual assault, especially political ones [9]; and 6) inertia (i.e., doing what simply has been done in the past, typically with no program-evaluation data). A more ideal situation would be one that 1) uses prevention approaches with the best evidence for the largest impact on actual rates of sexual violence; and 2) incorporates a quality-improvement orientation in which data on stakeholder satisfaction and outcomes are constantly collected and evaluated. A data-based approach to improving outcomes is one that collects and evaluates data, such as reductions in mediating variables (e.g., acceptance of rape myths) and ultimate measures, such as decreased rates of sexual violence.

Every college administrator must consider the following question: "What is the evidence that the proposed prevention program is the most effective at decreasing sexual violence on our campus?" In addition, administrators need to be concerned with a second question, "What general outcomes are produced at our campus when this rape-prevention program is implemented here?" This review will aid in answering these critical and practical questions. The general outcomes question is more nuanced, as suggested by Gordon Paul in the psychotherapy literature: "What treatment, by whom, is most effective for this individual, with that specific problem, and under what specific set of circumstances?" [17].

Methods

A computerized literature search of the databases PsychINFO and Web of Science was conducted using multiple combinations of various search terms including "intervention" or "prevention" and "sexual assault," "sexual aggression," "sexual violence," or "rape." Additionally, the reference sections of relevant articles were examined to identify and find other studies that might be appropriate for inclusion. Only studies conducted with U.S. college populations and which examined actual impact on sexual-violence rates met inclusion criteria. One hundred and fifty eight studies were initially identified; after further analysis, 130 studies were excluded due to lack of quantitative measures, use of non-collegiate U.S. samples, lack of behavioral outcomes, or lack of follow-up periods, leaving 28 studies.

Given the many barriers to the empirical investigation of rape prevention, these 28 studies were organized and evaluated on the following criteria:

1. Effect sizes – to better understand the magnitude of the intervention's impact on sexual assaults.
2. Length of follow-ups – to examine the durability of these effects.
3. Whether mediational analyses were conducted – to identify actual pathways for change.

4. Whether dosage was examined (programs vary from one-time very brief presentations to more prolonged multi-session formats) – to determine what dosage is sufficient.
5. Whether (and to what extent) program implementer variables (e.g., gender or student vs. staff) were examined – to identify if implementer variables impacted outcomes.
6. Whether the study measured social-validity criteria – to examine the extent to which different stakeholders rated the programs positively or negatively.
7. Whether the study's outcome variables were psychometrically adequate (e.g. did the study try to avoid problems with self-report?) – to ensure researchers are accurately measuring the constructs/outcomes of interest.
8. Whether the proposed mechanisms of change were theoretically adequate – to aid in the replication and development of future interventions.
9. Whether the interventions were manualized – to evaluate the extent to which they can be faithfully disseminated.
10. Whether implementer and subject blindness was present – to mitigate the impact of allegiance effects or placebo effects.
11. Whether there was an attempt to understand subject x treatment interactions – to determine whether the program was differentially effective for certain kinds of individuals and evaluate any need to culturally tailor programs.
12. Whether cost was explicated – to aid administrator in understand budgeting implications.
13. Whether the study has been independently replicated – to determine whether the interventions effects generalize beyond the original sample.

Admittedly, this is a tall order. However, the importance and pragmatics of understanding the meaning of evidence-based effective prevention programming necessitates this level of detail and scrutiny. Future research can be guided by a more detailed understanding of the pragmatics of these questions. In order to maintain a rigorous scientific approach, this review aims to analyze both the weaknesses and strengths of the evidence base so work can be done on improving the deficits [18].

Current State of the Empirical Literature

Meta-analyses have revealed little support for the efficacy of prevention programs [19-21], with increases in knowledge regarding the prevalence, impact, and consequences of rape and sexual assault demonstrating the largest effect sizes [20]. Unfortunately, self-reported victimization and perpetration were found to result the smallest effects [20], implying that the effects of prevention programs are largely limited to modifying attitudes and intentions (as opposed to modifying actual criterion-relevant behavior), and even these attitudinal changes have been found to decrease with time [21-24]. Reviews have also concluded that longer, narrowly focused interventions, delivered by experts, with certain well defined populations (specifically those involved with Greek life) were most effective at producing positive changes [20,25]. Past reviews have stressed both the importance and dearth of information regarding the clinical significance of intervention effect sizes [23,26]; without such information, the true impact of prevention programs remains unknown.

Best Available Treatments

From our review of the literature, we suggest that four main approaches to rape prevention currently exist: prevention programs with men, risk-reduction programs with women, mixed-gender programs, and community-level programs (such as bystander-prevention / social-norms campaigns), with these approaches sometimes combined. Each type of intervention poses a unique set of pragmatic and ethical challenges for developers, implementers, and evaluators. This review presents an overview of the most effective available prevention programs, as determined by their effect sizes for decreasing the incidence of sexual violence. Additionally, the programs were judged on the 13 criteria stated in the "Methods" section above.

Prevention with men

Prevention with men is arguably the most important pathway in creating a rape-free environment [27]. However, this group is notoriously hard to reach [28,29]. Research has found that men are resistant to programs that try to change their attitudes and behaviors, often because they do not see themselves as potential rapists and thus find this information to be irrelevant [30]. Prevention with men that incorporates a bystander framework, such as The Men's Program and The Men's Project, provides an opportunity to target attitudes and behaviors while decreasing the likelihood of fostering backlash or animosity on the part of the participants [31]. In such programs, men are treated as "allies" or helpers of women [31]. Meta-analysis has found that these interventions have attained moderate success at changing self-reported attitudes but, as stated previously, actual behavioral change is disappointingly weak [20].

Only six studies focusing exclusively on males meet the inclusion criteria of quantitatively evaluating incidence of sexual perpetration in U.S. college males. Table 1 in the appendix provides a summary of these six studies. Three studies reported significant changes in rates of perpetration: Foubert et al. [32]; Gidyczet al. [33]; and Salazar et al. [34]. However, each study has its own set of issues.

In 2007, Foubert et al. [32] examined the efficacy of The Men's Program, as well as differences between men who go on to join fraternities vs. those who do not. The Men's Program strives to treat men as potential helpers of women rather than as potential rapists, and uses male peer educators to disseminate their message. Although the Men's Program has been empirically examined several times, this study was the first and only one to examine men's perpetration of sexual violence using behavioral measures.

Results indicated that, prior to the start of college, those men who later joined fraternities and those who did not had statistically equivalent rates of pre-college sexually coercive behavior. Interestingly, the seven-month follow-up survey found that men who joined fraternities were significantly more likely to commit sexual assault than those who did not join fraternities (8% vs. 2.5% respectively). However, fraternity men in the treatment group reported significantly fewer acts of sexual coercion at the seven-month follow-up than did fraternity men in the control group (6%

vs. 10% respectively). The lower rates of sexual coercion reported by fraternity men in the treatment groups, while promising, beg the question: Why did only fraternity men in the treatment group report significant improvements, and why were these positive changes limited to sexual coercion?

Gidycz et al. [33] conducted a study to evaluate the efficacy of The Men's Project on decreasing rates of sexual perpetration. Male residents in freshman dorms were randomly assigned to either treatment or control groups. Significant effects were found for decreased sexual perpetration in the treatment group compared to the control group at the four-month follow-up (1.5% vs. 6.7% respectively). Unfortunately, this effect did not remain significant at the seven-month follow-up. The Men's Project is a manualized intervention grounded in theory. The adherence checks, use of behavioral outcomes, multiple follow-ups, examination of participants' history of sexual perpetration, and evaluating for social desirability all strengthen the validity of the results. The apparent lack of attitudinal change with the presence of behavioral changes is another finding that further supports the logic that attitudinal change is not a proxy for behavioral change.

Only the Salazar et al. [34] evaluation of RealConsent demonstrated significantly positive changes at the final follow-up. The RealConsent program consists of six 30-minute training modules aimed at increasing pro-social bystander behaviors while decreasing sexually violent behavior toward women. The authors found that the treatment group's mean score for sexual perpetration at the six-month follow-up was nearly half of what was reported at the baseline (Baseline M = 0.53 vs. Follow up M = 0.26). Additionally, the treatment group reported significantly more pro-social intervening and statistically significant changes on 11 of the 12 secondary outcomes at the six-month follow-up. Most importantly, those in the treatment group were significantly less likely to report perpetrating sexual-violence at the six-month follow-up (M = 0.26, SE = 0.08) compared to controls (M = 0.50, SE = 0.09). Although the effect size was in the small to medium range (d = 0.29), an effect of this magnitude is fairly strong in the social sciences [35]. Researchers also examined differences between those who had already perpetrated vs. those who had not and found that the odds for perpetrating among those in the intervention group with perpetration histories were 73% lower than the odds for those in the control group (AOR 0.27, 95% CI 0.11-0.70).

RealConsent represents an innovative and possibly cost-effective approach to rape prevention in an easily disseminated package (although no precise values were given, the web-based program was reported to be low-cost). The positive effects found by this study, specifically the decreases in actual perpetration behaviors, support continued evaluation of RealConsent. However, the fact that the control group at baseline was significantly higher in self-reported perpetration, coercion tactics, and hostility towards women, coupled with the program's large attrition rate, makes conclusions tentative at best. The initial sample, consisting of 743 participants, decreased to only 215 participants by the six-month follow-up. This drop-out rate of nearly 70% would generally be considered unacceptable. The lack of information about the program's social validity, coupled with the large drop-out rate and the fact that study participants received financial compensation, may indicate that participants viewed the treatment at least somewhat unfavorably. Because RealConsent is a new program, replications are needed to address its attrition and, with longer follow-up periods and larger samples, to examine the program's lasting effects with multiple measures – the Salazar, et al. study used only one self-report subscale to measure perpetration.

The findings from these three studies indicate that the field of sexual-violence prevention with men has much to accomplish before any of these interventions can be considered to be "empirically supported treatments." Despite the issues with these programs and their overall lack of success, these three studies provide a platform for the development of future prevention programs with men. Specifically, these studies support the continued use of the bystander framework, in which participants are treated as helpers rather than as potential assailants. Additionally, programs that address issues of consent, such as RealConsent, show encouraging results on curbing sexual-violence perpetration and, although replication is needed, the simplicity of dissemination increases their appeal as mandatory trainings for college males.

Risk reduction programs with women

For the purposes of this review, interventions that function to decrease women's risk of victimization will be referred to hereafter as "risk-reduction programs." Typically, all-female programs focus on common themes, including the following: debunking rape-myth acceptance, reducing risky behaviors, challenging social forces that perpetuate rape culture, providing information about dating behaviors associated with acquaintance rape, improving sexual communication, increasing knowledge about sexual assault, and discussing situational factors associated with a higher risk of sexual assault [36]. Many programs that claim success – because they have demonstrated decreases in rape-myth acceptance and increases in knowledge about sexual assault – fail to examine rates of victimization [37]. However, the relationship between attitudes and behaviors is not causal [24] and women's attitudes about rape have not been found to be predictive of future victimization [38]. Moreover, few studies examine the durability of these attitudinal changes.

Sixteen studies evaluating risk-reduction programs for women met inclusion criteria, with several reporting positive reductions in sexual victimization. Table 2 in the appendix details these 16 studies. Unfortunately, these positive findings are limited to certain types of sexual-victimization experiences (e.g. incapacitated rape) and treatment success appears to be moderated by victimization history.

Treatment efficacy and victimization history

The Ohio University Sexual Assault Risk Reduction Prevention Program (including its precursors) represents the most well-replicated and researched risk-reduction program to date, with large sample sizes and lengthy follow-up periods. The program uses lectures, media, and discussions to address topics such as rape-myth acceptance, risk-reducing behaviors, social forces that perpetuate rape culture, dating behaviors associated with acquaintance rape, sexual communication, and situational

factors associated with higher risk of sexual assault [39,40]. However, findings from such evaluations remain equivocal; the success of the treatment varies depending on participants' histories of victimization. Hanson and Gidycz's study [39] found that the treatment only demonstrated success for women with no histories of victimization; a subsequent study, Gidycz et al. [40], found that only moderately victimized women benefited from the treatment (where "moderate victimization" includes, for example, any sexual victimization other than rape). In a later study, Gidycz et al. [41] found the converse, with only severely victimized women benefiting from treatment.

This varied success illustrates the importance of the subject x treatment interaction and of paying attention to participants' victimization histories. Whether these findings result from subtle nuances in the delivery program, from evolution of the program over time, from the particular sample used, or from some other erroneous variable remains to be determined. The use of follow-up periods, large samples, examination for behavioral outcomes, differentiation between victimization status, RCT methodology, and a well-manualized program all represent strengths of these studies. However, these studies are not without limitations; examining for dosage, blindness, cost, mechanism of change, and the social validity of the programs all warrant consideration.

Types of victim.mization

The risk-reduction interventions that have garnered the greatest support are those that target specific pathways to victimization. These risk-reduction pathways include self-defense interventions and interventions that target alcohol-facilitated or incapacitated rapes and sexual assaults.

Alcohol centered interventions: Two studies found statistically significant differences between the treatment and control groups in terms of incapacitated rape. One of these studies, Testa et al. [42], tested the efficacy of an innovative prevention program, Parent Based Intervention (PBI), disseminated by mothers to their daughters prior to entering college. The aim of the intervention is to reduce alcohol-related sexual victimization by facilitating communication in general – as well as about alcohol – with the intention that this improved communication would decrease binge drinking.

Results indicated that daughters in the treatment group were somewhat less likely to report victimization, but this did not reach statistical significance. However, daughters in the treatment group reported significantly fewer experiences of incapacitated rape (IR) in the first year of college (8.0%) compared to the control group (12.1%), with odds ratio (OR) of 0.63 (95% CI 0.40 - 0.99); meaning that those in the treatment group were 0.63 times less likely to report IR. Despite this effect, frequency of binge drinking did not differ between the groups. Using path analysis, researchers found that, even after controlling for mediators, the PBI had a significant direct effect on decreasing the likelihood of incapacitated rape. Further analysis revealed that general communication, but not alcohol-specific communication, acted as a mediator between intervention and total sexual-victimization experiences. Although this large-scale study is one of the few to find significant changes remaining at the follow-up, it is not without fault. While bibliotherapy and parent-based interventions are promising, they are limited because investigators cannot directly control for fidelity in delivery of the treatment.

These findings from the PBI intervention are bolstered by the positive results reported by the Clinton-Sherrod, Morgan-Lopez et al. [43] study, which examined the impact of a motivational interviewing (MI) drinking intervention on rates of sexual victimization over a three-month period. The results revealed that ambivalence concerning alcohol use was positively related to unwanted sexual activity and that steeper decreases in ambivalence concerning alcohol use over time (from baseline to follow-up) led to steeper declines in risk of unwanted sexual activity over the same period (d = 0.509). At the three-month follow-up, lower levels of ambivalence predicted a simultaneous decrease in reports of unwanted sexual activity (d = 0.362).

Compared with the control condition (and controlling for ambivalence, alcohol use, and pre-college victimization), the combined motivational interviewing plus feedback (MIFB) condition led to steeper decreases in unwanted sexual activity from baseline to three-month follow-up (d = 0.481). Additionally, compared to the control group, those in the MIFB condition were significantly less likely to report victimization at the three-month follow-up regardless of prior victimization (d = 0.353). Interestingly, changes in the quantity of alcohol consumed were unrelated to the risk of unwanted sexual activity over the same periods (controlling for ambivalence, victimization prior to college, and intervention condition). The authors suggested that the discussion of alcohol-related consequences may have increased subjects' vigilance when drinking and may have promoted harm-reduction tactics (e.g. buddy systems, alternating alcoholic drinks with water, etc.) in such a way that the quantity imbibed remained the same but the process of drinking was altered.

One concern with MI is the implementation cost, both financially and in human resources. Although cost was not addressed, considering the extensive training and the one-on-one dissemination of MI, this intervention would be a costly and time-intensive endeavor. While the PBI bibliotherapy approach is more economical than in-person MI, PBI requires mothers to be involved, which limits the applicability of such a treatment. Adapting MI to a web-based program would alleviate these burdens; however, whether it would result in the same positive outcomes needs to be evaluated.

Self-defense interventions: Hollander [44] conducted a study to examine the efficacy of an intensive self-defense training class at decreasing sexual assault. Participants were recruited to enroll in a self-defense class offered every year through the Women's and Gender Studies Program. One hundred and seventeen women from the class were compared to a group of 169 women enrolled in unrelated classes. The self-defense class was taught by a woman with 20 years of experience, and included 30 hours of training in physical and verbal self-defense as well as discussions of issues germane to violence against women. The class incorporated components of the "Assess, Acknowledge, Act" model [45] to promote early detection of risky situations, barriers to resistances, and strategies for different types of assaults (e.g. stranger vs. acquaintance). The class met for three hours per

week for 10 weeks and sexual victimization was assessed at a one-year follow-up.

Results indicated that women trained in self-defense reported less sexual victimization at the one-year follow-up, both in the quantity and severity of assaults. Women in the self-defense class reported not only fewer sexual assaults and rapes, but also fewer attempts. The author suggests that this is due to the women's increased awareness and assertiveness. However, an equally plausible explanation may be that the women who choose to enroll in self-defense classes are systematically different from those who do not, and are therefore at a decreased risk to begin with. This explanation is supported by the fact that those in the comparison group were more likely to have a history of sexual victimization at the baseline, and prior victimization is linked to subsequent victimization [46].

The findings from Hollander and from Senn et al., [47], another self-defense study conducted with Canadian students, support continued use and evaluation of the "Assess, Acknowledge, Act" model. Note, however, that other studies with self-defense components did not report such findings [41,48-50]. Also note that this study (Hollander) is not without flaws. The issues of dosage and cost are particularly important. Thirty hours of training is a costly endeavor, in terms of both time and money, and administrations must explore whether this is a feasible intervention to implement. One caveat with self-defense prevention is the issue of incapacitated rapes. No data was reported on the occurrence of incapacitated assaults and rapes. This is an important consideration, given that incapacitated rape among college students occurs at significantly higher rates than does forcible rape [51]. Is self-defense training ineffective when women imbibe heavily, or do these trainings alert women to danger cues, thus leading to a decrease in risky drinking behaviors? Such questions remain to be answered.

Despite their flaws, risk-reduction programs represent an important contribution to the ongoing battle against rape and sexual assault. In line with Rozee and Koss' [45] argument that risk-reduction programs for women over-emphasize women's risk behaviors while neglecting to educate women about recognizing risk factors in potential perpetrators, more work is needed on training women to recognize behaviors of potential perpetrators. Women may be more amenable to the risk-reduction message if they are taught to recognize risk factors rather than to change and restrict their own behavior.

Our review of risk-reduction programs for women indicates that programs targeting specific risk factors for victimization demonstrate stronger effects than programs that attempt to combat all forms of sexual assault. This difference suggests that employing a bottom-up approach to risk reduction is more likely to elicit positive outcomes. In line with this bottom-up approach, researchers should garner empirical support for risk-reduction interventions aimed at specific kinds of victimization experiences rather than tackling all types of victimization. Additionally, given the stability of victimization rates [52-54], prevention programs that increase resilience and mitigate the sequelae of sexual assault also need to be developed and implemented.

Community-level prevention programs

Since the 2000s, bystander programs have become one of the most popular types of prevention programs available [19]. Their theoretical grounding and the fact that they address participants in a non-confrontational manner make them appealing, as these programs treat participants as potential helpers, rather than as potential perpetrators or victims [19]. While bystander programs continue to grow and become widely implemented, the evidence has yet to support the enthusiasm surrounding this approach. A recent meta-analysis by Katz and Moore [19] showed that, compared to control participants, those in bystander programs reported greater bystander efficacy, less rape-myth acceptance, and lower rape proclivity, but did not differ in their reported rates of perpetration behaviors. Although bystander programs were found to have moderate effect sizes for increasing bystander efficacy ($d = 0.49$), only small effect sizes were found for rape proclivity ($d = 0.17$) and bystander intervening behaviors ($d = 0.23$). The authors concluded that bystander programs might be more successful at promoting efficacy and intent to help rather than effecting actual changes in behavior, which illustrates the importance of distinguishing between proxy variables and actual behaviors.

Only one study, Coker et al. [55], met the inclusion criteria for bystander studies. Table 3 in the appendix provides a summary. Coker et al. [55] evaluated the effectiveness of the Green Dot prevention program on reducing self-reported rates of victimization and perpetration. The program consists of two phases, the first of which is a 50-minute motivational speech, presented to all members of the campus community. The second phase involves an intervention program called Students Educating and Empowering to Develop Safety (SEEDS). The SEEDS phase consists of small group trainings in which students learn about identifying and engaging in bystander behaviors, barriers to intervening, perpetrators, and patterns of perpetration.

Results indicated statistically significant differences in reports of unwanted sex victimization for all students; for unwanted-sex experiences, the adjusted least-squares mean value was 17.2% lower for the Green Dot group versus the comparison group (0.168 and 0.203, respectively) for the response "having unwanted sexual activities with someone because you were too drunk or high on drugs to stop them." However, this result did not retain significance when researchers examined the sexual victimization of women separately. Additionally, perpetration of sexual violence was not found to differ significantly between groups.

This study was successful in assessing actual rates of victimization and perpetration. Although the Green Dot program was unsuccessful in decreasing sexual perpetration or women's sexual victimization, the finding that Green Dot participants were significantly less likely to report incapacitated victimization is promising. The fact that only a small portion (16%) reported participation in both phases of the program may help explain the lack of significant findings, but it may also suggest problematic social validity.

Many factors can account for a bystander program's lack of

success. One of the most compelling and overlooked factors is that opportunities to act as a bystander are scarce. Supporting this theory, Flack et al. [56] found that 78% of sexual assaults occur within the context of a "hook-up," and a separate study found that "hook-ups" typically take place in relatively isolated or semi-private locations [57]. Given these findings, it is logical to conclude that potential bystanders may lack opportunities to engage in bystander intervention.

From a feminist perspective, these interventions can be viewed as somewhat disempowering to women, since community-level interventions place decisions about a woman's sexuality outside of her control and into the control of bystanders. For instance, many of the community-level programs discuss the importance of stopping friends and others from becoming intimate with women who have had too much to drink [19]. However, determining when someone has had "too much" may be a very nuanced issue, as different people with the same blood-alcohol content may not display the same kinds of behavior. The woman may not have been intoxicated, or she may have been under the influence yet still sober enough to consent and earnestly wanted to engage in that behavior. While the intentions of bystanders might be noble, the implications of their interventions can be insidious.

In spite of these issues, bystander programs represent an emerging third prong in sexual-violence prevention. Presenting sexual assault as a community issue diminishes the power of the rape culture. Perhaps one of the most important functions of bystander interventions is the fostering of intolerance for sexually violent behavior and attitudes, both before and after a sexual assault has occurred. Changing the social environment and fostering pro-social norms may be the keystone to ending rape culture [58,59].

Mixed-gender prevention programs

Mixed-gender programs may represent a more fiscally conservative and pragmatic way of delivering interventions than single-sex programs. However, contention arises concerning their effectiveness vs. their single-sex counterparts [20,21,25]. The primary criticism of mixed-gender programs is that they may do more harm than good. Yeater and O'Donohue [36] posited that it might be unethical to provide women's risk-reduction strategies to men, as perpetrators could potentially use this information to their own benefit. Fabiano et al. [58] have argued that by excessively focusing on extreme behaviors, an availability heuristic is created; that is, illustrating the widespread prevalence of rape may inadvertently normalize it.

Only five mixed-gender studies met the inclusion criteria; and of these five only three found statistically significant differences between the treatment and control groups at the final follow-up. Table 4 in the appendix presents a summary of these five studies. In one of the three studies to report significant findings [59,60], the treatment significantly impacted rates of victimization only for those with no victimization histories, and rates of perpetration were not examined. Another of these studies [61] found that participants in the treatment group exhibited a statistically significant lower likelihood of reporting sexual victimization compared to the control group. However, further analysis revealed that, of the participants with a history of sexual victimization, those in the treatment group were more likely to report being sexually assaulted in their first year than were those in the control group (21% vs. 7% respectively), possibly suggesting iatrogenic effects.

The one remaining study with significant effects, conducted by Pascell et al. [62], evaluated the efficacy of AlcoholEdu, a two-part program designed to decrease problematic drinking and its consequences for incoming college freshmen. Part 1 of AlcoholEdu attempts to combat drinking norms by addressing attitudes and beliefs about alcohol, effects of alcohol on the body and brain, laws and policies regarding drinking, and strategies for dealing with problem drinking. Part 2 recaps the information from Part 1 and provides additional information on managing stress and recognizing problems related to drinking. The authors found that, overall, students in the AlcoholEdu treatment group reported significantly fewer alcohol-related problems compared to the control group; the program was also found to impact rates of victimization, with students in the treatment group reporting a statistically significant decrease in total victimization (Event ratios= 1.89[CI 1.22 -2.94]). Additionally, this decrease in victimization was found to differ depending on exposure to the program, with students who completed both Parts 1 and 2 reporting significantly less victimization than students who completed Part 1 only (Event ratios = 0.44 [CI 0.23 -0.85]). While the decreased risk of victimization is encouraging, one large caveat must be considered: The authors reported only total victimization, which included non-sexual victimization such as physical assault and theft. No separate analyses were conducted on rates of sexual victimization.

One possible explanation for the lack of success of mixed-gender programs is that the aims of prevention programs are vastly different for men and women. For example, programs for women focus on ways in which women can decrease their risk for sexual assault, while programs for men tend to focus on increasing victim empathy, highlighting the legal consequences of rape, emphasizing the importance of establishing consent, and decreasing acceptance of sexual violence. Time spent in mixed-gender programs covering topics salient only for women could be better spent addressing issues relevant only to men, and vice versa. This is important beyond ethical considerations, because longer programs are associated with better outcomes [20]. Thus, mixed-gender programs can squander the limited amount of time available for interventions. Given the dearth of positive findings in mixed-gender programs and the recommendation of experts [27,28,23], we recommend that universities implement single-sex programs specifically addressing issues relevant to the target populations.

Summary

Sexual violence on college campuses remains prevalent despite the proliferation over the past thirty years of prevention and risk-reduction programs and of studies evaluating them [52,53,54]. Although conclusive evidence remains sparse regarding which treatments decrease rates of sexual violence, many programs are considered worthy of implementation by universities and

the U.S. Government, despite the lack of evidence showing their relationship to decreases in rates of victimization or perpetration. Universities owe it to their students – and are required by law [8] – to provide prevention programs and safe, non-hostile environments [10], but numerous barriers obstruct the conducting of empirically sound studies of prevention programs. To demonstrate a true commitment to the safety and well-being of the student body, and to comply to the fullest extent with the law, universities should employ only those prevention programs with the greatest empirical support for decreasing sexual violence.

Recommendations for administrators

The dearth of positive findings of prevention-program evaluations impacting rates of sexual violence makes it difficult to decide which program to implement. The bystander model may sway administrators, but conclusions regarding the impact of bystander programs on decreasing rates of sexual violence are incomplete; more research is needed. Similarly, community-level prevention programs known as "social-marketing" models, which are marketed to "consumers" as educational material promoting improvements in public health, have been enthusiastically endorsed by The White House [63]. While we found no empirical evaluations of social-marketing campaigns that examined rates of sexual violence, the low cost, theoretical base, and simplicity of these programs warrant further investigation. Finally, based on our review of the literature in conjunction with other reviews and meta-analyses [25,27,64,65], we advise against mixed-gender programs.

Unfortunately no "one size fits all" treatment exists for the prevention of sexual violence. This paucity is related to a multitude of factors, including wide discrepancies in how rape, sexual assault, and consent are conceptualized, and the fact that prevention programs may be unable to effectively curb every different form of sexual violence. However, for universities to demonstrate a commitment to preventing sexual violence and to comply with Title IX, they should employ the prevention programs with the strongest empirical support.

While no gold-star treatment exists, some programs demonstrate promise. For women, treatments dealing with alcohol consumption show potential [66]. Although the successes of such programs are limited to the issue of incapacitated rape, that type of sexual assault represents a large portion of the sexual violence occurring on college campuses [51], with studies finding that incapacitated rape occurs five times more frequently than forcible rape [67]. These promising treatments also challenge alcohol-supportive norms and dangerous drinking behaviors. However, the issue of sexual assaults and rapes not facilitated by alcohol still lingers. Incorporating or adding self-defense components may aid in combating this problem. More work is needed on preventing other forms of sexual violence but, currently, programs that target alcohol-facilitated assaults and that challenge social norms regarding both sexual violence and drinking retain the greatest potential for reducing rates of sexual victimization.

The issue of implementing effective prevention programs for men remains unresolved. While interventions like The Men's Program, The Men's Project and RealConsent hold promise, the preponderance of data supporting the efficacy of risk-reduction programs for women far outweighs any data about gains made by prevention programs for men. A reasonable explanation for this difference may be that women are far more motivated to decrease their risk of victimization than potential perpetrators are to change their behaviors. Providing women with the knowledge and resources to report their assaults may be the most effective and cost-efficient means of reducing rates of sexual violence.

Given that research has found that 68% of college men who perpetrate are repeat offenders [68], increasing the rates of prosecution is essential to decreasing the rates of sexual violence. In order for sexual violence to be punished, victims must report these incidents. In one study, only 11.5% of college women experiencing sexual violence reported their victimization to law enforcement, and only 2.7% of women who were victimized while under the influence of alcohol or drugs reported their assaults [69]. However, few of the studies reviewed explicated if or how they encouraged reporting. Additionally, the social backlash and maltreatment of victims, often referred to by victim advocates as a "second rape" [70], makes it unlikely that victims will come forward. To increase reporting and prosecution rates, reform is necessary in every step of the adjudication of sexual violence. Providing information about how to report assaults is an essential first step in this process, as is stressing the importance of reporting in risk-reduction programs. In addition, checks for quality improvement with campus police and victim advocates could lead to a more victim-supportive environment, and in turn generate greater reporting.

It is not enough for universities to merely implement empirically supported programs. The implemented programs must gather, evaluate, and generate data, which includes continually evaluating the rates of victimization and perpetration. However, self-selection bias may pose a serious complication. For instance, students who voluntarily divulge information may differ qualitatively from those who do not, and this difference may be reflected in reported rates of perpetration and victimization. Providing incentives for participating combined with the use of brief behavioral measures may expand the number of students who choose to participate in prevention programs. Additionally, information about rapes and sexual assaults from collateral sources, such as university officials, should be taken into account by program evaluators. However, high rates of reporting should not be viewed as evidence of program failure; they may actually reflect program successes in prompting victims to report and in helping them to file reports.

Recommendations for researchers

The evaluation of rape-prevention programs must continue to evolve; researchers must develop more rigorous and inventive methods of designing studies and assessing outcomes than the methods currently in use. While progress has occurred, increased efforts are needed, particularly well-designed studies that address the 13 criteria stated above.

Methodological issues

Researchers evaluating rape-prevention programs face many methodological challenges, and although it may not be feasible

to address all of the challenges, precautions can be implemented to address the most common issues. One such precaution is the reporting of effect sizes. Despite the APA mandate that researchers report effect sizes [71], many researchers fail to include them in their results [72]. Additionally, the majority of studies reviewed failed to mention clinical or practical significance; without such information, relatively little can be said about the success of programs in applied settings, such as college campuses. Another methodological obstacle is variation in outcome measures, specifically self-report measures. The use of different scales across studies makes comparisons problematic. Although the Sexual Experiences Survey (SES) is the most widely used measure, researchers often use variants of this scale or select only a few items for inclusion. One problem with the SES is that it fails to distinguish between who is perpetrating or who is being victimized, an extremely important consideration when evaluating the success of an intervention. While self-report measures can provide a wealth of information, researchers should not rely solely on them, but should also consider the use of behavioral proxies such as the Asch conformity paradigm [73] used by Schewe and O'Donohue [74], behavioral analogies developed by Thomas and Gorzalka [75], or response-latency measures developed by Marx and Gross [76], among others. Such measures, which involve observing participant behavior in real-life situations, provide a more critical method of evaluating participant attitudes and behaviors than do self-report measures. Similarly, behavioral proxies provide a robust way for researchers to examine their hypotheses and are better indicators of ecological validity than self-report measures.

The language used in measures is an important consideration for researchers. Measures addressing perpetration and victimization should describe behaviors and experiences in a manner that college students can understand and relate to, without eliciting social-desirability or demand characteristics. Researchers must therefore be careful in their selection of scales, as those developed in the 80s and 90s might not capture the evolution of constructs related to sexual violence [77]. In relation to social-desirability and demand characteristics, keeping participants blind to the intent of the intervention can mitigate these concerns. To mitigate the allegiance effects, researchers should also strive to keep program implementers blind to the hypothesis of the study.

Additionally, it is important for researchers to examine program implementer characteristics, as the person who delivers the intervention may impact the outcome. Since the 2000s, peer leaders and peer educators have proliferated in interventions on college campuses [78]. However, results on the effectiveness of peer leaders vs. experts remain mixed [19,79,80]. Little is known about the attributes and characteristics that peer leaders or expert educators should have. (I.e. Are good-looking peer leaders more effective? What affiliation should they hold? Will the effectiveness of these demographic variables vary regionally or by subculture affiliation?) Research needs to provide more information regarding program implementers, as this can provide insight into differences in outcomes, not only between interventions but also between participants. Attention to differences between participants can elucidate what factors influence or moderate treatment success or failure. History of prior victimization and perpetration should also be included in outcome evaluations, as research has shown this factor predicts outcome [39,81]. Additionally, researchers should explore whether and how other participant characteristics interact with treatment to predict success or failure, particularly variables such as cultural identity or sub-group affiliation, as this inquiry addresses Paul's question of "for whom."

Other important factors for researchers to consider when designing a study include the length of follow-up periods, dosages, and replications. Follow-up periods must not only be long enough to capture incidences of sexual assaults and rapes, but also to examine the durability of the effects. A nine-month or academic school-year period could provide researchers with a wide-enough range of time to capture victimizations and perpetrations, and would allow researchers to make inferences about the durability of treatment. Using a nine-month timeframe also provides researchers with an opportunity to include booster sessions and evaluate treatment outcomes. Manipulation of dosage is another important research consideration. Although research has shown that longer programs are associated with better outcomes [20], students possibly prefer shorter programs. Thus examining dosage can help achieve an appropriate balance. Finally, replication is necessary before conclusions can be drawn about program efficacy [15].

Theoretical issues

Historically, many rape and sexual-assault interventions have lacked a coherent theoretical underpinning [26, 82]. Theory dictates the selection of treatment targets and how they should be modified. Currently, many interventions are grounded in theory, specifically the belief-system theory [83] and the elaboration-likelihood model [84]. Another factor contributing to prevention programs' general lack of success in altering behaviors is the lack of knowledge about – and attention to – the potential factors related to functional processes [85]. It is essential that researchers clarify the mechanisms or pathways of change (i.e. mediators and moderators) of an intervention before expanding and investing in new treatments and interventions [86].

Practical issues

Beyond theoretical and methodological concerns, research must also take pragmatic considerations into account, such as cost, fidelity, manualization, and acceptability of treatment (or the social-validity criteria). The vast majority of studies reviewed are manualized, but none explicitly address the cost of dissemination. The cost of a rape-prevention program is essential when determining its feasibility. Whether the program is acceptable to participants is an often overlooked issue that warrants further attention. In addition to analyzing for participant backlash, conducting focus groups to assess social validity, or including one item that asks participants to rate how helpful they found the program, or how much they liked it, can provide key information about whether such a program should be implemented.

Conclusion

Universities face an uphill battle when combating sexual violence, and empirically supported interventions represent the best line

of defense. Sexual violence on college campuses may be an unsavory topic, particularly to the parents of incoming students. However, universities that employ empirically supported treatments can use this decision as a selling point that demonstrates their commitment to ending sexual violence and protecting students. The battle to create an environment free of sexual violence cannot be won by prevention programs alone. Creating an environment that punishes rape-supportive ideology will be more effective than restricting women's liberties and trying to change the established repertoire of the minority of men who perpetrate.

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Author Newlands conducted the literature search and provided summaries. Both authors Newlands and O'Donohue contributed to the manuscript and have approved the final manuscript.

Conflict of Interest

The author's declare no conflicts of interest.

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