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Alcohol Consumption and Women's Vulnerability to Sexual Victimization: Can Reducing Women's Drinking Prevent Rape?

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Abstract

Before effective prevention interventions can be developed, it is necessary to identify the mechanisms that contribute to the targeted negative outcomes. A review of the literature on women's substance use and sexual victimization points to women's heavy episodic drinking as a proximal risk factor, particularly among college samples. At least half of sexual victimization incidents involve alcohol use and the majority of rapes of college women occur when the victim is too intoxicated to resist ("incapacitated rape"). Despite the importance of women's heavy episodic drinking as being a risk factor, existing rape prevention programs have rarely addressed women's alcohol use and have shown little success in reducing rates of sexual victimization. We argue that given the strength of the association between heavy episodic drinking and sexual victimization among young women, prevention programs targeting drinking may prove more efficacious than programs targeting sexual vulnerability. Applications of existing drinking prevention strategies to reducing women's sexual victimization are discussed.

Keywords

Prevention; intervention; human females; college students; rape; acquaintance rape; victimization; alcohol drinking patterns; drug usage; risk factors

Introduction

Alcohol consumption has long been considered as being to increase vulnerability to sexual victimization, with numerous studies documenting a positive association between women's alcohol use and their experiences of sexual victimization, at both the global and the event level (see Abbey, 2002; Abbey, Zawacki, Buck, Clinton, and McAuslan, 2004; Testa and Parks, 1996 for reviews). Research shows that sexually victimized women tend to drink more than women without a history of victimization. Moreover, a substantial proportion of sexual assaults occur when the victim has been drinking and incidents of victimization are disproportionately likely to occur on drinking days as opposed to nondrinking days. These findings raise the intriguing question: Can the incidence of sexual victimization be reduced by reducing women's drinking? Because alcohol use is amenable to change, prevention efforts that focus on reducing women's drinking may be a promising means of reducing sexual victimization.

We do not mean to suggest that women who consume alcohol are responsible for their own victimization. Few would dispute that it is the perpetrator, nearly always male, who is responsible for sexual victimization and that it is imperative that prevention efforts target male perpetration. Nonetheless, without in any way blaming the victim, it is also responsible to help

women to reduce their risk of sexual victimization by altering the behaviors that increase their vulnerability.

Before determining whether reducing women's drinking might serve to reduce their vulnerability to sexual victimization, it is necessary to evaluate the strength and nature of the relationship between the putative risk factor and the outcome. As Leonard (2005) has cogently argued regarding the role of alcohol in perpetration of intimate partner violence, there is no single study or design that can definitively establish causality.¹ However, an accumulation of evidence from different types of studies may be strong enough to implicate alcohol consumption as a contributing cause. We focus on studies conducted in North America and on sexual victimization of women by men, since women constitute the majority of victims and men the majority of perpetrators (Bureau of Justice Statistics, 2005).² The goal of our review is not only to evaluate the strength of the relationship, but to specify under what conditions and within which populations the alcohol consumption-related sexual victimization link is strongest so that prevention efforts can best be targeted. This goal is consistent with arguments regarding the necessity of developing a theoretical model of risk behavior to guide subsequent intervention efforts (Coie et al., 1993). We conclude by discussing the applicability of existing substance prevention programs for addressing sexual victimization.

Definition and Prevalence of Sexual Victimization

Forcible rape is typically defined as unwanted sexual intercourse that is accomplished through physical force or threat of force or harm. Estimates from national prevalence studies suggest that 13%–16% of adult women have experienced forcible rape in their lifetimes (Kilpatrick, Resnick, Ruggerio, Conoscenti, and McCauley, 2007; Tjaden and Thoennes, 2000). Some studies also consider rape to include unwanted sexual intercourse when the woman is incapacitated by alcohol, either as a result of her voluntary consumption or because substances were administered to her by the perpetrator for the purpose of incapacitating her. Intercourse with a woman who is unable to provide consent as a result of incapacitation is illegal in most states (see Kramer, 1994). Studies that have assessed incapacitated rape using items that conform well to legal statutes report that lifetime prevalence of rape in the general population increases to about 18% when these experiences are included (Kilpatrick et al., 2007; Testa, Livingston, VanZile-Tamsen, and Frone, 2003).

“Sexual victimization” or “sexual assault” are broader terms that typically include not only completed rape, but also attempted rape, verbally coerced intercourse, and unwanted sexual contact. This definition is closely tied to the Sexual Experiences Survey (SES, Koss, Gidycz, and Wisniewski, 1987). This widely used, 10-item, behaviorally specific measure was designed to capture the full range of unwanted sexual experiences without requiring the victim to label her experiences as rape. Significantly, the SES also contains items assessing rape or attempted rape as a result of a man giving the woman alcohol or drugs, thereby legitimizing and spurring research on alcohol and sexual victimization. The first use of the SES, in a nationally representative sample of college students, revealed that a shocking 54% of college women reported some type of unwanted sexual experience since age 14 (Koss et al., 1987), with 13% meeting the study's definition of rape. Subsequent studies of college students using the SES report similar or even higher rates of sexual victimization (Abbey, Ross, McDuffie, and McAuslan, 1996; Humphrey and White, 2000; Gidycz, Hanson, and Layman, 1995).

¹The reader is referred to Hill's criteria for causation which were developed in order to help assist researchers and clinicians determine if *risk factors* were causes of a particular disease or outcomes or merely associated. (Hill, A. B. (1965). The environment and disease: associations or causation? *Proceedings of the Royal Society of Medicine* 58: 295–300.).Editor's note.

²This review focuses on the sexual victimization of women by men within an alcohol consumption-related context. We acknowledge, however, that societal and cultural norms surrounding gender, sexuality, and alcohol use converge to shape individual expectations and actions within a given context. These macro level conditions perpetuate violence against women in a variety of contexts, not limited to those in which alcohol is consumed (see Anderson and Doherty, 2007 and Gavey, 2005 for a fuller discussion of these issues).

Relative to the general population of women, female college students and young women more generally are at elevated risk of sexual assault, rape, and substance-related rape. Risk of rape is highest between ages 16 and 19, followed by ages 21 and 24 (Bureau of Justice Statistics, 2005). Thus, the period of highest rape vulnerability coincides with late adolescence and college years, a time also associated with higher levels of drinking (Greenfield and Rogers, 1999; Johnston, O'Malley, and Bachman, 2001; Wilsnack, Kristjanson, Wilsnack, and Crosby, 2006) and greater numbers of sexual partners (Laumann, Gagnon, Michael, and Michaels, 1994) relative to older women. Accordingly, although lifetime prevalence of rape and sexual assault is typically higher in general population samples of adult women relative to college samples, annual incidence of sexual victimization is higher in college students. For example, lifetime prevalence of rape was 18.0% in a sample of women from the general population (mean age = 46.6 years) and 11.5% among a college sample; however, estimated annual incidence of any type of rape was 5.15% in the college sample compared to 0.94% in the general population (Kilpatrick et al., 2007). Past year rape incidence in Tjaden and Thoennes's (2000) general population sample (which did not assess substance-involved rape) was even lower (0.3%). Other college studies show a similarly high incidence of rape. For example, in a large national college sample, 4.7% reported completed rape in the past year (Mohler-Kuo, Dowdall, Koss, and Wechsler, 2004). Humphrey and White (2000) find a declining annual incidence of completed rape across college, from 6.4% among freshman to 3.9% among seniors.

What Is the Nature of the Alcohol-Sexual Victimization Relationship?

Before effective prevention strategies can be developed, it is necessary to first identify the causal mechanisms responsible for a negative outcome. In the case of alcohol consumption and sexual victimization there is no causal relationship in the sense that we typically understand the concept. Because victimization is something that happens to a person, rather than something that one does, women's drinking cannot be said to directly cause victimization. A woman who drinks to the point of incapacitation is arguably at no greater risk of victimization than a sober woman as long as she drinks alone in her home. Rather, a woman's drinking increases her vulnerability by virtue of her drinking in settings in which there is a potential perpetrator in proximity. Because young women typically consume alcohol in social settings such as bars and parties and rarely drink alone (Knibbe, 1998; Single and Wortley, 1993; Vogler, Webber, Rasor, Bartz, and Levesque, 1994), this condition is nearly always met. Thus, for most practical purposes, drinking and drinking in potentially risky settings are highly correlated and difficult to separate.

Drinking settings typically include men who are drinking and hence more likely to be sexually aroused, to misperceive women's sexual intent (see Abbey, 2002 for a review), and to accept and perpetrate sexual aggression (see Testa, 2002 for a review). Moreover, these settings often involve implicit or explicit sexual activity, which may be enhanced by expectancies about alcohol consumption and sex (Norris, Nurius, and Dimeff, 1996). For example, intoxicated women may be vulnerable because men perceive them to be more sexual (Abbey, Zawacki, and McAuslan, 2000; George et al., 1997) and hence are more willing to make sexual advances and ignore the woman's resistance. Some studies find that frequency of exposure to risky drinking settings, such as bars or drinking games, is a better predictor of sexual victimization than is women's actual alcohol consumption (Fillmore, 1985; Johnson, Wendel, and Hamilton, 1998; Parks and Miller, 1997; Schwartz and Pitts, 1995). These findings do not negate the role of women's actual alcohol consumption as a risk factor for sexual victimization. Since frequency of attendance at bars presumably means frequency of drinking at bars, findings are consistent with the notion that it is drinking within risky contexts that is the key risk factor for sexual victimization.

It is frequently assumed that a positive relationship between women's drinking and sexual victimization reflects victimization occurring while or because the woman was drinking. However, survey methodology, whether cross-sectional or prospective, can examine only whether women who tend to drink more heavily are also more likely to report sexual victimization, a necessary but insufficient step toward demonstrating a causal relationship. In contrast, establishing a proximal relationship, which we argue is key to the development of prevention efforts, requires the use of critical event, daily diary or laboratory analog methodology to establish that a woman is more likely to experience victimization when she is drinking than when she is sober.

Are Heavy Drinking or Drug Using Women at Elevated Risk for Sexual Victimization?

Many survey studies have addressed the relationship between women's drinking or drug use patterns and their experiences of sexual victimization. Cross-sectional studies frequently find a significant positive relationship, at least at the bivariate level, between alcohol consumption patterns and sexual victimization (e.g., Abbey et al., 1996; Brener, McMahon, Warren, and Douglas, 1999; Cecil and Matson, 2006; Champion et al., 2004; Johnson et al., 1998; Koss and Dinero, 1989; Larimer, Lydum, Anderson, and Turner, 1999; McMullin and White, 2006; Mohler-Kuo et al., 2004; Schwartz and Pitts, 1995; Small and Kerns, 1993; Synovitz and Byrne, 1998; Testa and Dermen, 1999; but see Vicary, Klingaman, and Harkness, 1995 for an exception). Others find a positive relationship between alcohol consumption-related problems and sexual victimization (Burnam et al., 1988; Merrill et al., 1999; Messman-Moore and Long, 2002; Myers, Templer, and Brown, 1984; Padgett and Struening, 1992; Plant, Miller, and Plant, 2004; Polusny, Rosenthal, Aban, and Follette, 2004; Siegal and Williams, 2003). Drug use or misuse has also been identified as a predictor of sexual victimization in some studies (Champion et al., 2004; Mohler-Kuo et al., 2004; Myers et al., 1984; Padgett and Struening, 1992; Plant et al., 2004).

Although cross-sectional studies are quite consistent in documenting a positive relationship between alcohol consumption and sexual assault, by themselves they are inadequate for establishing that women's drinking contributes to subsequent victimization. It is possible that rather than increase vulnerability to victimization, alcohol is used to self-medicate following the trauma of sexual victimization (e.g., Stewart and Conrod, 2003). It is also possible that the relationship is spurious, reflecting an underlying factor common to both drinking levels and sexual assault vulnerability such as sensation seeking, exposure to risky contexts, or elevated sexual activity (e.g., Caspi et al., 1997). Prospective survey methodology is an accepted method of demonstrating the direction of a relationship and is generally considered methodologically superior to cross-sectional studies. However, as noted above, prospective studies can provide only an indirect estimate of the presumed proximal alcohol consumption-related-victimization relationship, since they seek to predict victimization within a given time period from patterns of substance use reported prior to that period.

Prospective studies of general population samples provide weak evidence of a relationship between women's substance use and subsequent victimization. In a large sample of young adults ($N = 2170$), women's marijuana use at age 23 predicted sexual victimization (defined as unwanted sex that was verbally coerced or physically forced) over the subsequent six years but alcohol consumption did not (Martino, Collins, and Ellickson, 2004). In a smaller sample of rural adolescents ($N = 237$), frequency of drunkenness in grade 9 did not predict either forced or coerced sexual penetration, (including intercourse when too drunk to resist) reported nine years later (Zweig, Sayer, Crockett, and Vicary, 2002). Testa and Livingston (2000) found that lifetime alcohol problems, but not alcohol consumption, predicted sexual victimization over the subsequent year in a small sample of young, sexually active, ($N = 93$).

The largest and most cited prospective study is that of Kilpatrick, Acierno, Resnick, Saunders, and Best (1997). This study examined the reciprocal relationships between substance use and victimization within a nationally representative sample of adult women ($N = 3,006$). Although Time 1 alcohol consumption-related problems (based on DSM-III criteria for alcohol abuse and dependence) were positively associated with experiences of victimization over the subsequent two years, in multivariate analyses that controlled for prior victimization and drug use, alcohol problems were no longer significant. Drug use remained a significant multivariate predictor, leading Kilpatrick to speculate that the illegality of drug use results in association with dangerous people and settings that contribute to victimization risk. Although frequently cited as a study of sexual victimization, physical and sexual victimization (defined as completed or attempted forcible rape) were combined in the 1997 paper, with physical victimization much more common than sexual. In a later paper that separated sexual from physical assault, neither alcohol problems nor drug use predicted subsequent rape, whereas drug use but not alcohol problems predicted subsequent physical victimization (Acierno, Resnick, Kilpatrick, Saunders, and Best, 1999). It is worth noting that the failure to find a relationship may, at least in part, reflect the fact that the study's definition of sexual victimization did not include rape when administered substances or too intoxicated to resist.

Prospective studies using college student samples provide mixed evidence that alcohol consumption increases subsequent risk of sexual assault. Gidycz et al. (1995) failed to find evidence that the alcohol consumption of entering first year students predicted subsequent sexual victimization at either a bivariate or multivariate level. However, Combs-Lane and Smith (2002) found that alcohol use (but not drug use) discriminated between women who were sexually victimized versus not victimized over the next six months. Greene and Navarro (1998) found that Time 1 alcohol use predicted Time 2 victimization although the relationship failed to replicate from Time 2 to Time 3. In all three studies sexual victimization was defined broadly using the SES and included rape or attempted rape that the woman attributed to her alcohol use at the time.

Is the Impact of Women's Drinking Specific to Certain Types of Victimization?

Sexual victimization is a heterogeneous phenomenon that may encompass verbally coerced intercourse from an intimate, incapacitated rape at a fraternity party, or violent rape by an acquaintance or a date. The tactics used in these experiences are different—verbal, substances, force—as are the contexts and the perpetrators. It is plausible that factors that increase vulnerability to one type of experience do not necessarily increase vulnerability to another type. For example, two studies of college students found that women's drinking was associated with experiencing alcohol consumption-related sexual victimization, as would be expected, but not with experiencing sexual victimization resulting from force or verbal coercion (Marx, Nichols-Anderson, Messman-Moore, Miranda, and Porter, 2000; Tyler, Hoyt, and Whitbeck, 1998).

In two larger college studies, women's drinking was associated not only with alcohol consumption-related victimization but with other types as well. Mohler-Kuo et al. (2004) found, as expected, a strong cross-sectional relationship between women's substance use and experiencing unwanted intercourse when too intoxicated to consent in a national college sample ($N = 23,980$). As is common in studies of college students, alcohol use consisted of a measure of the frequency of heavy episodic drinking (HED), that is, of drinking four or more drinks on an occasion. The odds of experiencing rape when too intoxicated to consent were three times higher for women with one episode of HED in the past two weeks and eight times higher for women with three or more episodes of HED. Women's HED also increased the odds of experiencing forcible rape, though not as dramatically. We are currently finding a similar pattern of results in a recently completed study of approximately 1000 first year college

students. That is, there is a very strong relationship between frequency of HED in the first semester of college and experiencing incapacitated rape during the semester and a more modest but still significant relationship between HED and other types of sexual victimization. In this study, approximately 2/3 of all sexual assaults involve alcohol consumption by the victim and occur following drinking contexts such as parties. The centrality of alcohol consumption in the college social scene and fluidity of heterosexual relationships at this age may explain the particularly strong relationships between women's drinking and all types of victimization.

The majority of sexual assaults among college students are perpetrated not by intimate partners but by classmates, friends, acquaintances or "hook-ups" (Fisher, Cullen, and Turner, 2000; Flack et al., 2007; Littleton and Bretkopf, 2006). Intimate partners are significantly less likely than acquaintances to use drugs and alcohol as a sexual aggression tactic (Cleveland, Koss, and Lyons, 1999; Koss, Dinero, Seibel, and Cox, 1988), relying instead on the easy access afforded by the relationship, sexual precedence, and verbal persuasion to obtain sex from an unwilling partner (see Livingston, Buddie, Testa, and VanZile-Tamsen, 2004). Thus, we would not expect victim substance use to be an important risk factor for intimate partner assault, which constitutes about 2/3 of sexual assaults within the general population (Testa, VanZile-Tamsen, and Livingston, 2007; Tjaden and Thoennes, 2000). However, victim alcohol use is likely to increase risk of sexual assaults by nonintimates. This relationship may be direct, as male acquaintances take advantage of woman's intoxication, but also indirect, since women's drinking occurs in settings in which there are many potential perpetrators.

We tested directly the notion that women's substance use is differentially related to victimization from intimate versus nonintimate perpetrators using data from a community sample of women ages 18–30 ($N = 927$). We hypothesized that women's substance use would predict subsequent sexual victimization from nonintimate perpetrators (e.g., acquaintances, friends, strangers) but not victimization from intimate perpetrators (boyfriends, husbands). Prospective analyses considered whether baseline measures of various demographic and behavioral risk factors predicted the occurrence of sexual victimization over the subsequent two years. Sexual victimization perpetrated by nonintimates was predicted by younger age, being single, higher levels of consensual sexual activity, and higher frequency of heavy episodic drinking (Testa et al., 2007). In contrast, risk factors for sexual victimization from intimate partners included prior history of intimate partner sexual aggression, being married, lower sexual refusal assertiveness, and surprisingly, drug use. We believe that women's drug use, which also prospectively predicted experiencing intimate partner physical violence (Testa, Livingston, and Leonard, 2003), may actually reflect the drug use of the intimate partner and hence his risk status as a perpetrator. Prior prospective studies that have analyzed all types of sexual victimization together have tended to find that only prior victimization emerges as a predictor of later victimization (e.g., Acierno et al., 1999; Gidycz et al., 1995). When we re-analyzed the data without distinguishing the two types of victimization, we replicated this finding. However, distinguishing between these two different types of victimization allowed us to identify distinct risk factors, allowing us to develop a better model from which to develop interventions.

Proximal Relationships: Is an Intoxicated Woman More Vulnerable to Sexual Victimization?

As noted above, survey studies examining whether women's alcohol use predicts sexual victimization presume that the distal relationship indicates a proximal one: that is, women who engage in more frequent heavy drinking report more victimization because they are victimized during those bouts of intoxication. However, survey studies do not tell us whether sexual victimization occurred during a drinking episode and hence cannot address the key proximal, event-level relationship.

An alternative approach involves examining incidents of sexual assault, to document the prevalence of alcohol and drug use and to compare the characteristics of alcohol consumption-involved versus sober assaults (see Ullman, 2003 for a review). Across a large number of studies of college and other samples, approximately half of sexual assault incidents occur when the victim, the perpetrator, or both have been drinking alcohol or using drugs (see Abbey, 2002; Abbey et al., 2004 for reviews), with college samples typically yielding higher estimates (see Testa and Parks, 1996). Although the coincidence does not establish causality, the proportion of sexual assaults involving alcohol consumption is higher than the proportion of intimate partner violence episodes in the general population that include alcohol (e.g., 26.4–37.7%, Leonard and Quigley, 1999), a field in which it is generally accepted that there is a relationship between alcohol consumption and violence (Lipsey, Wilson, Cohen, and Derzon, 1997). The proportion is also considerably higher than the proportion of first dates that include drinking (e.g., 14%, Cooper and Orcutt, 1997) or the proportion of first time sexual encounters that involve drinking (e.g., 21% of women, Graves and Hines, 1997).

Prospective daily diary methodology addresses the weaknesses of critical event studies by permitting within-person comparison of sexual victimization risk as a function of drinking level as it varies from day to day. Studies using this methodology, all involving college samples, provide strong evidence that sexual victimization is significantly more likely to occur on drinking days, particularly heavy drinking days, than on nondrinking days. For example, Parks and Fals-Stewart (2004) had women complete daily diaries for six weeks, recording incidents of drinking and incidents of sexual victimization. They found that the odds of being victimized on a given day were three times higher when the woman consumed alcohol earlier that day and nine times higher when she drank five or more drinks (mean 7.5 drinks) compared to nondrinking days. In a subsequent study (Parks, Hsieh, Bradizza, and Romosz, 2008), college women recorded incidents of drinking and aggression for eight weeks using daily reports via interactive voice response (IVR). The odds of sexual victimization occurring on days of heavy drinking (four or more drinks) were 19 times higher than the odds of sexual victimization on nondrinking days; however, drinking fewer than 4 drinks was not associated with increased risk of victimization. In a study of male and female college students ($N = 1113$) monitored over 30 days, Neal and Fromme (2007) found a positive event-level relationship between daily blood alcohol level (BAC) and being a victim of coercive sex. In addition, they found an interaction between daily BAC and average BAC such that vulnerability increased as individuals increased their level of intoxication above their average level of intoxication. Although women were more likely than men to experience coerced sex, the event-level relationships did not vary by gender. Results of these recent studies corroborate those of an early retrospective event-based study of college women by Muehlenhard and Linton (1987). In that study, sexually aggressive dates were significantly more likely to include drinking to intoxication and drug use than nonaggressive dates reported by the same individual; however, they were more no more likely to include light or moderate drinking.

How Does Alcohol Consumption Increase Sexual Vulnerability? Impairment vs. Incapacitation

Given the well-established cognitive and motor impairment associated with consumption (e.g., Naranjo and Bremner, 1993), it is often presumed that alcohol impairs a woman's ability to recognize sexual assault risk or to respond to or resist sexual advances (Abbey, 2002; Ullman, 2003). According to the Alcohol Myopia model (Steele and Southwick, 1985), in situations of high conflict, drinking makes inhibiting cues (e.g., fear of unwanted sexual advances) less salient, allowing impelling cues (e.g., interest in sexual activity, or pursuing romantic relationship) to dominate. Although these cognitive processes cannot easily be examined in real life, experimental analog studies portraying situations involving a potential risk of sexual aggression generally provide support for these processes. That is, following a moderate dose

of alcohol (sufficient to raise blood alcohol concentration to .08 or about 4 drinks), women are more willing to engage in sexual approach behaviors, less able to perceive sexual risk, and less likely to express intentions to resist sexual advances (see Norris et al., 2006; Stoner et al., 2007; Testa, Livingston, and Collins, 2000; Testa, VanZile-Tamsen, Livingston, and Buddie, 2006). Thus, it is plausible that at least some of the sexual assault risk associated with drinking results from these processes.

However, an alternative possibility is that the impact of women's intoxication on sexual victimization may be more direct. A man may have intercourse with a woman who is unconscious as a result of heavy drinking or incapacitated to the extent that she cannot object or resist. He may administer substances or encourage her to drink or take advantage of her after she has become intoxicated on her own. In these cases, the victim's substance use does not merely facilitate victimization, by impairing judgment, in the presence of other tactics such as force or threats. Rather, victim substance use becomes the tactic used by the perpetrator to accomplish sexual assault, making it a direct rather than indirect contributor to the outcome. In most states, sexual intercourse with a woman who is incapable of consent or who is administered alcohol or drugs without her knowledge or consent is legally considered rape (see Gyls and McNamara, 1996). In actuality, however, such incidents are rarely prosecuted and intoxicated women are often blamed for their victimization or their accusations considered unreliable (e.g., Kramer, 1994). Recent research, reviewed below, suggests that a large proportion of alcohol consumption-involved assaults actually reflect what we have called "incapacitated rape" and that incapacitated rape is quite prevalent, particularly among college samples.

In our Women 2000 study we sought to estimate the prevalence of incapacitated rape in a representative community sample of young women ages 18–30. The original SES (Koss et al., 1987) included a question about rape "... because a man gave you alcohol or drugs?" We modified the item to make it correspond to legal criteria by specifying that alcohol or drugs were given by a man "without your knowledge or consent," consistent with New York State law. We also added an item that asked the respondent whether she had ever had sexual intercourse because she was incapacitated and unable to consent (see Testa, VanZile-Tamsen, Livingston, and Koss, 2004). Women who responded positively to either of these two items were considered to have experienced incapacitated rape, whereas those who responded positively to items assessing intercourse or sex acts due to force or threat of force were considered to have experienced forcible rape. Women in this sample were just as likely to have experienced incapacitated rape (9.4%) as they were to have experienced forcible rape (9.9%) for an overall rape prevalence of 17% (Testa et al., 2003).

Incapacitated and forcible rapes differed on several dimensions. For example, incapacitated rapes were more likely than forcible rapes to occur following time spent in a bar or party (70.8% vs. 16.9%) and less likely to be perpetrated by a prior consensual sexual partner (14.6% vs. 39.1%). Women's narrative descriptions of incapacitated rapes indicate that many were unconscious and found out later that they were raped or else were only dimly aware of what was happening and unable to speak or stop the assailant. By definition, all of the incapacitated rapes involved victim substance use (62.5% alcohol only, 4.2% drugs only, 33.3% both) and women rated their intoxication at the time as extremely high (6.7 on a 7 point scale). However, just 24.6% of forcible rapes involved substance use and self-reported intoxication in those incidents was moderate (4.0 on a 7 point scale). When the two types of rape were combined, just over half involved substance use, consistent with other studies (see Abbey et al., 2004). However, combining the two types masks critical differences in the presence and role of substances in each. In a subsequent study that separated forcible rapes from incapacitated rapes, Kilpatrick et al. (2007) found even lower rates of substance use within the former. That is, just

7% of forcible rapes reported by women in the general population and 11% reported by college women involved any substance use.

After examining the prevalence of incapacitated rape versus forcible rape, we examined the correlates of each. We hypothesized that women's substance use would be more strongly associated with incapacitated rape than with forcible rape. We conducted multivariate logistic regression, using as predictors adolescent alcohol use, marijuana use, drug use (all operationalized as years of usage prior to age 18), adolescent sexual activity, and childhood sexual abuse. Incapacitated rape was predicted by adolescent use of alcohol and drugs other than marijuana; marijuana use did not achieve significance. The only predictors of forcible rape were older age and childhood sexual abuse; substance use did not increase risk of this type of rape (Testa et al., 2003). Results support the contention that the association between victim substance use and sexual assault is specific to certain types of assault, in this case, experiences occurring as a direct result of incapacitation.

As noted above, the high rate of heavy episodic drinking among college samples suggests that incapacitated rape may be particularly prevalent among college women. In fact, Mohler-Kuo et al. (2004) found that 72% of rapes in a national college sample occurred because the victim was too intoxicated to consent; the remainder resulted from use of force. In our recent study of first year college women we find a nearly identical proportion: about three times as many women report rape or attempted rape following incapacitation compared to rape or attempted rape due to force. Kilpatrick et al. (2007) compared the prevalence of forcible and incapacitated rape in a national college sample versus a national sample of adult women. In contrast to the other two studies, college women were only slightly more likely to have experienced incapacitated versus forcible rape in the past year. However, past year incapacitated rape was nine times more prevalent among college women (3.58%) than women in the general population (0.42%).

These studies lead to several conclusions with important implications for prevention. First, a substantial proportion of rapes, particularly among college students, occur as a direct result of the victim being incapacitated by substances and unable to consent or resist. Separating forcible rapes from incapacitated rapes reveals that only a minority of forcible rapes involve victim substance use. Thus, it appears that a substantial proportion of alcohol consumption-involved sexual assaults are actually instances of incapacitated rape that occurred as a direct result of the victim's heavy drinking. Cognitive impairment resulting from a moderate dose of alcohol may increase women's sexual vulnerability by making it difficult to recognize or respond to risk; however, these data suggest that this mechanism is relevant to only a minority of rapes.

Voluntary vs. Involuntary Incapacitation

Before making recommendations for prevention, it is important to know whether women's incapacitation during sexual assault results primarily from voluntary ingestion of alcohol and/or drugs or whether incidents are primarily the result of women being coerced or unwittingly administered alcohol or other substances (e.g., "date rape drugs") by perpetrators as a way of accomplishing assault. Admittedly, these routes are not easy to distinguish, since substance use can be both encouraged and voluntary, and self-reports may not be accurate.

As described above, Testa et al. (2003) classified women as having experienced incapacitated rape if they endorsed either the modified SES item regarding being administered substances without knowledge or consent or our newly created item regarding unwanted intercourse when incapacitated or passed out. The majority endorsed the latter item (8.5%) compared to the former (2.9%), however, the items were not mutually exclusive and some endorsed both. Women's description of events involving "substances without knowledge or consent" are difficult to distinguish from those involving incapacitation only. That is, incidents of both types

clearly indicate extremely high levels of intoxication, however, very few of the former provide a clear indication of a perpetrator drugging, coercing, or unwittingly administering alcohol or drugs. Rather, most incidents that we labeled incapacitated rape involve a perpetrator taking advantage of a victim who has voluntarily consumed large amounts of alcohol.

In an attempt to distinguish voluntary from involuntary incapacitation, Kilpatrick et al. (2007) asked women who reported an instance of substance-involved rape whether the substance(s) were: (1) taken voluntarily, (2) “given without permission or to try to get you drunk,” or (3) both. The term “incapacitated rape” (IR) was reserved for cases in which substances were consumed voluntarily; cases involving perpetrator administered substances were labeled “drug or alcohol facilitated” (DAFR). Women who indicated both were classified as DAFR. Moreover, “try to get you drunk” does not meet legal definitions of coerced or involuntary administration of substances. Although their method appears to have favored DAFR, more cases were classified as IR (12.5%) than as DAFR (9.6%) in the general population sample and in the college sample (28.2% IR vs. 7.8% DAFR).

In recent years there has been a great deal of concern in the media about the use of so-called “date rape drugs,” with a proliferation of warnings to young women never to accept drinks from men they do not know or leave drinks unattended at parties. Although it is difficult to determine prevalence accurately, it appears that the risk of involuntary drugged rape is considerably lower than the risk of rape following voluntary use of substances. First, evidence from a variety of studies reveals that the vast majority of incidents of substance-involved sexual victimization involve alcohol use only, followed by alcohol consumption in combination with drugs (usually marijuana), with very few incidents of drugs only. For example, in Kilpatrick et al.'s (2007) study only 2% of DAFR/IR incidents in the general population and 4% of incidents in the college sample involve drugs only, primarily marijuana. Furthermore, they found just one reported case of suspected use of rohypnol, a notorious date rape drug. Results from our current study of college students also indicate that rape following intentional drugging is quite rare. In addition to completing an expanded SES at the end of their first semester of college, respondents were asked explicitly whether someone had sexual intercourse with her or tried to after administering a drug to her without her consent. In a sample of over 900 women, only one case of drug-facilitated rape was reported.

Toxicology studies involve testing for the presence of alcohol and drugs in the urine of rape victims when there was a suspicion that drugs had been used. In three such studies, the majority of samples tested positive for alcohol, either alone or in the presence of other drugs (ElSohly and Salamone, 1999; Scott-Ham and Burton, 2005; Slaughter, 2000). Marijuana was the next most common substance. GHB and rohypnol, substances which have been implicated as “date rape drugs,” were found in less than 3% of positive samples (Scott-Ham and Burton, 2005; Slaughter, 2000). These studies suggest that in many cases in which a drugged rape is suspected, the woman's incapacitation may actually be the result of alcohol she ingested voluntarily. However, findings cannot rule out the possibility that a perpetrator may find it easier to administer drugs or to encourage additional consumption once the woman is already intoxicated.

As best as we can determine from these studies, it appears that most incidents of incapacitated rape follow voluntary consumption of large amounts of alcohol as opposed to deliberate intoxication of the woman by a perpetrator. “Date rape drugs” appear to play a role in only a very small proportion of incidents of incapacitated rape. Thus, efforts to prevent sexual assault should focus on reducing women's voluntary heavy consumption of alcohol.

Summary and Implications for Prevention

Prior reviews on the association between women's substance use and sexual victimization were suggestive of a positive relationship between the two. However, given the limited number of studies available, much of the value of these reviews was in discussing the various mechanisms that might be responsible for an alcohol-victimization link and spurring future research (Abbey, 2002; Abbey et al., 2004; Testa and Parks, 1996). A burgeoning of research in the past few years now allows us to specify more precisely the nature of the alcohol consumption-related sexual victimization relationship, permitting us to make recommendations for prevention that are based on empirical research.

Our review of the literature on women's substance use and sexual victimization points to the conclusion that women's alcohol consumption plays a significant role in a large proportion of sexual assault incidents among young women, particularly college students. Few sexual assault incidents involve drug use and very few involve deliberate drugging (e.g., Kilpatrick et al., 2007). However, among college students, 2/3 of rapes occur when the victim is too intoxicated to consent (e.g., Mohler-Kuo et al., 2004). A minority of rapes are the result of force, and a minority of these involve any victim substance use (e.g., Kilpatrick et al., 2007). Thus, it appears that cognitive impairment resulting from more moderate doses of alcohol plays a role in a relatively small number of sexual assault incidents. Moreover, Parks, Hsieh et al.'s (2008) recent electronic diary study showed no increased risk of sexual victimization on days of light drinking relative to drinking no alcohol. Findings clearly point toward women's voluntary heavy episodic drinking within social settings as a key risk factor in sexual victimization and a mechanisms to address in prevention efforts.

The conclusion that voluntary heavy episodic drinking (HED) puts college women at risk of alcohol-related sexual assault is not likely to come as a surprise to researchers who have documented the high prevalence of heavy episodic drinking among college students and its associated negative consequences. From the perspective of these researchers, sexual assault is one of a number of negative consequences that are attributable to HED. These consequences, which increase with the frequency of HED, include missing classes, arguments with friends, injuries, and unplanned sexual activities (Read, Beattie, Chamberlain, and Merrill, 2008; Wechsler and Issac, 1992; Wechsler, Lee, Kuo, and Lee, 2000). Unpublished data from our current study of college women illustrates the strength of the relationship between frequency of HED and risk of experiencing incapacitated rape in the first semester of college. Among women who reported HED (drinking 4 or more drinks on an occasion) less than once a month or not at all 6/555 (1.1%) reported attempted or completed rape while incapacitated. Among those who reported HED one to three times per month, 18/203 (8.9%) reported incapacitated rape, whereas among women who engaged in HED on a weekly basis, 42/178 (23.6%) reported incapacitated rape during their first semester of college, $\chi^2 = 105.54$, $p < .001$.

On the basis of this review, we conclude that prevention efforts aimed at reducing women's (HED) within social settings can have a significant impact on reducing rates of sexual victimization among college students. Review of the literature suggests that the alcohol-sexual victimization association is stronger in college populations than in the general population, with the majority of college rapes occurring due to victim incapacitation. Thus, college women would appear to be a natural target for prevention efforts designed to address sexual victimization via reducing HED. However, other young women, such as high school students and young women who do not attend college may also be viable targets for such efforts. Because the majority of sexual victimization among older women is perpetrated by intimates, and does not involve alcohol, reducing HED is not likely to be an effective prevention strategy for adult women.

Existing Sexual Assault Prevention Efforts

The high rates of sexual victimization among college women have resulted in widespread prevention efforts on college campuses (U.S. Department of Justice, 2005). However, there is little evidence that these efforts have paid off; sexual victimization among college women has not declined since first documented by Koss in the 1980's. For the most part, evaluations of college rape prevention programs provide little evidence of success in reducing the incidence of sexual assault or altering behaviors presumed to increase risk (see Anderson and Whitson, 2005; Bachar and Koss 2001; Blackwell, Lynn, Vanderhoff, and Gidycz, 2003; Breitenbecher, 2000; Ullman, 2002 for reviews). Among the few that have shown some promise, enthusiasm is dampened by small sample size (Marx, Calhoun, Wilson, and Meyerson, 2001), failure to replicate initially promising results (e.g., Breitenbecher and Gidycz, 1998; Breitenbecher and Scarce, 1999) or effects limited to low risk subgroups but no effects for higher risk subgroups: women previously victimized (Hanson and Gidycz, 1993) or women who drink alcohol (Rothman and Silverman, 2007). Systematic evaluations of controlled prevention trials reveal that very few have addressed women's alcohol use at all (see Bachar and Koss, 2001) or else include modest amounts of alcohol-related information (e.g., advice to stay sober on dates) as a small part of a multifaceted approach (e.g., Gidycz et al., 2001; Marx, et al., 2001). Examining these efforts as a prevention researcher, one is struck by the failure to base prevention efforts on basic research findings (see Yeater and O'Donohue, 1999). For example, many programs have targeted attitudes and stereotypes despite a lack of evidence that women's attitudes toward rape contribute to their risk. Moreover, the eclectic and multifaceted nature of these programs compromises the ability of intervention trials to inform psychosocial research or future prevention efforts (see Coie et al., 1993). That is, when multiple mechanisms are addressed, it is difficult to know which is responsible for the success (or failure) of a program.

The strength of the relationship between frequency of heavy episodic drinking and sexual victimization and the prevalence of incapacitated rape suggests that women's HED is a key mechanism in sexual victimization, at least among college women. This model suggests that successfully reducing women's HED can reduce incidence of sexual victimization. This approach has analogies in other fields. For example several studies demonstrate that treatment for alcohol abuse results in a concomitant reduction in post-treatment perpetration of partner violence, not only for men completing Behavioral Couples Therapy (O'Farrell and Fals-Stewart, 2000; O'Farrell, Van Hutton, and Murphy, 1999) but for men completing individual therapy (O'Farrell, Fals-Stewart, Murphy, and Murphy, 2003). Some studies also show that drug abuse treatment results in post-treatment reduction in HIV sexual risk behaviors (Avants, Margolin, Usubiaga, and Doebrick, 2004; Gossop, Marsden, Stewart, and Treacy, 2002). Finally, Griffin, Botvin, and Nichols' (2006) drinking and drug reduction program for adolescents resulted in reductions in sexual HIV risk that were mediated via substance use, even though content specific to HIV was not included.

A key advantage of this proposed strategy is that there are already many existing prevention and intervention programs that have shown efficacy in reducing HED in college students (see Barnett and Read, 2005; Larimer and Cronce, 2002, 2007; Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, NIAAA, 2002a). Thus, prevention efforts need not start from scratch. Our goal is not to review these programs, since that has already been done, but rather to consider how these programs might be applied or adapted toward reducing sexual assault in college and other populations. We have organized these prevention approaches into two broad categories: those selectively targeting individuals known to be at high risk because of their heavy drinking levels and universal strategies, provided to all regardless of risk. The advantages and disadvantages of each, specific to sexual victimization, are considered.

Targeted Prevention Programs

Given the strong relationship between frequency of heavy episodic drinking and vulnerability to sexual victimization, particularly incapacitated rape, a strong argument can be made for targeting prevention programs to the heaviest college drinkers. Larimer and Cronce (2002, 2007) have conducted two comprehensive reviews of this literature, concluding that there is evidence in support of several individually focused strategies. Motivational interventions that incorporate personalized feedback and skills-based interventions have shown the most promise in reducing heavy episodic drinking. Social norm approaches have shown mixed support, whereas no support was found for knowledge-based approaches. The majority of these studies were conducted on college students who were identified as heavy drinkers through screening or were mandated to intervention as a result of alcohol drinking policy violations.

Most college intervention programs targeting heavy drinkers do not identify students in need of intervention until they are already on campus and drinking heavily, or experiencing alcohol consumption-related problems (see Marlatt et al., 1998 for an exception). However, the first year of college is a time of particularly high risk for sexual victimization relative to later years (Humphrey and White, 2000) and our data suggest that risk is higher in the first semester of college than in the second. Moreover, Mohler-Kuo et al. (2004) show that women who drank heavily in high school remain at higher risk of college assault independent of their college drinking level. Women who drink heavily in high school are particularly likely to escalate their drinking as they transition to college (Auerbach and Collins, 2006; Turrise, Mallett, Mastroleo, and Larimer, 2006). Parks, Romosz, Bradizza, and Hsieh (2008) found that it was women who escalated their drinking from high school to college who were at increased risk of sexual victimization in their first year. Thus, targeting heavy drinking women makes sense, however, programs aimed at preventing victimization among this high risk group should ideally occur prior to college entry.

Even intervention prior to college entry may be too late to truly prevent sexual victimization, since women who are drinking heavily at the end of high school are likely to have already been victimized (Champion et al., 2004). In fact, for some women, problem drinking may be a consequence of prior sexual assault (Kaukinen and DeMaris, 2005). On the other hand, reducing HED may be an effective way of preventing re-victimization, which traditionally has proven even more difficult to address than victimization (e.g., Hanson and Gidycz, 1993) and is associated with even higher levels of trauma (Messman-Moore, Long, and Siegfried, 2000).

Universal Prevention

Although women who drink heavily prior to college are at particularly high risk of being sexually victimized in college, other women are at risk as well. Weitzman and Nelson (2004) argue that because moderate drinkers are much more numerous and their risk is not zero, more change in a population can be effected by targeting this more numerous group. Although typically there is a substantial correlation between high school drinking and college drinking, college provides strong normative pressure to increase drinking and is associated with overall increases in heavy episodic drinking (White et al., 2006). Neal and Fromme's (2007) finding that episodes of alcohol consumption are most likely to increase subsequent risk of victimization when the amount consumed surpasses one's typical consumption suggests that new heavy drinkers may be especially vulnerable.

Recognizing that entry into college is associated with increased HED, many colleges have mandated that all entering freshmen complete an educationally focused program (e.g., Alcohol.Edu), despite an absence of evidence supporting the effectiveness of these programs. Given the lack of efficacy of knowledge-based programs in general, educating women about

the risks of alcohol consumption-related sexual assault is also likely to be of limited effectiveness, particularly given that women fail to recognize their personal vulnerability when drinking and tend to overestimate their ability to handle unwanted advances (see Livingston and Testa, 2000; Norris et al., 1996). However, the prevention approaches identified as effective for heavy drinkers by Larimer and Crouce (2007) may be applicable to college students more generally. For example, Larimer et al. (2007) provided personalized mailed feedback to a large sample of unselected college students. They found an overall effect of intervention on frequency of heavy episodic drinking one year later, an effect that was primarily the result of abstainers in the intervention group being more likely to remain abstainers compared to those in the control group. Similarly, a group-delivered motivational enhancement program was effective in reducing peak drinks per consumption event and alcohol consumption-related consequences at 10-week follow-up for college women, regardless of initial drinking level (LaBrie et al., 2008).

Environmental and Policy Interventions for College Students—The Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism (2002b) lists several campus policies that may be able to reduce high risk drinking such as increased publicity and consistent enforcement of campus alcohol consumption-related policies, eliminating alcoholic beverages at sports events, and increasing the number of Friday classes to reduce Thursday evening partying. A recent review of environmental policies to reduce college drinking found support for the effectiveness of such policies as banning alcohol use in college residences or on campus (Toomey, Lenk, and Wagenaar, 2007). Environmental strategies may be particularly efficacious in the case of sexual assault because of their potential to alter the context in which incapacitated rape typically occurs: social settings involving heavy drinking and containing potential perpetrators. Of significance, Mohler-Kuo et al. (2004) found that rates of incapacitated rape (but not forcible rape) were higher on campuses with higher rates of heavy episodic drinking. Environmental changes that impact the community at large, beyond the campus, can also reduce drinking. These approaches include increasing the legal age for drinking (see Wagenaar and Toomey, 2002 for a review) and lowering the legal limits for driving while intoxicated among young drivers (Wagenaar, O'Malley, and Toomey, 2001).

Parent-Based Intervention Before College—Another type of universal prevention strategy that has shown some promise is parent-based intervention (PBI), which aims to reduce college drinking by increasing parental monitoring and communication (Turrissi, Jaccard, Taki, Dunham, and Grimes, 2001). An advantage of this approach is that it can be disseminated at low cost on a large scale. During the summer before college, parents of incoming students were provided with a handbook designed to help them talk to their students about college drinking. Although the handbooks contain factual information, the intervention is not conceived as primarily educational in nature. Rather, the handbooks contain tips on improving parent-teen communication, emphasizing the importance of communicating values about alcohol use to teens and continued parental monitoring and communication during college as ways of reducing college student drinking. The initial trial showed that intervention was associated with reduced first semester HED and alcohol consumption-related problems for male and female students regardless of initial drinking level (Turrissi et al., 2001). A subsequent study showed that PBI was associated with less growth of drinking from high school to college and lower likelihood of transitioning from abstainer to drinker status (Ichiyama et al. in press). Intervention effects, as expected, were mediated via increased parental monitoring and communication (Turrissi, 2008; Turrissi, Taki, and Dunham, 2002).

We have just completing a randomized controlled trial, the first to our knowledge, designed to examine whether pre-college PBI can prevent college sexual victimization by reducing women's HED. Given the apparent efficacy of PBI in reducing college HED and strong link between college HED and sexual victimization, we hypothesized that alcohol-focused PBI

would reduce rates of HED and sexual victimization relative to a no intervention control group. However, not all incidents of sexual victimization involve alcohol consumption. A minority, but still a substantial number, are perpetrated by intimates, who typically use verbal coercion and possibly force, but rarely alcohol as a strategy. Thus, we also included an enhanced intervention condition that included additional content focused on sexual assertiveness and partner selectivity, mechanisms that our prior research suggests are predictive of victimization (Testa et al., 2007).

Approximately 1000 mother-daughter pairs recruited from graduating high school seniors in the Buffalo NY area, were randomly assigned to one of three conditions: alcohol only PBI, alcohol + sex risk PBI, or control. This design allowed us to examine whether reducing HED is sufficient to reduce sexual victimization and also whether there is additional benefit to including sexual vulnerability content. Given the strong link between HED and alcohol consumption-related victimization, a reduction in victimization rates will almost undoubtedly reflect reduced incidence of incapacitated rape. However, given the links between alcohol use and other forms of sexual victimization in college samples (e.g., Mohler-Kuo et al., 2004), reductions in HED may reduce other types of victimization as well. Finally, given the importance of understanding underlying mechanisms by which an intervention works, we sought to examine whether the effects of the intervention are mediated via parental monitoring and communication.

Preliminary analyses provide support for the hypothesized indirect effects of intervention. That is, relative to no-intervention controls, intervention resulted in increased parental monitoring, which was associated with reduced frequency of first semester HED (Testa and Livingston, 2008). We have not found an advantage associated with the enhanced intervention; rather, the two intervention conditions result in similar effects on monitoring, and hence on HED and sexual victimization. As expected, reductions in first semester HED were associated with lower incidence of incapacitated rape, reflecting the strong association between the two. However, HED was also associated with other types of sexual victimization, perhaps reflecting an indirect mechanism whereby heavier drinkers tend to socialize with more sexually aggressive men, for example, via the Greek system (Copenhaver and Grauerholz, 1991). Future analyses will allow us to address the research questions with more confidence, although more general questions about the efficacy of this prevention strategy will require additional research. For example, although it appears from our study that there is no additional benefit to addressing sexual violence vulnerability separate from HED vulnerability, this may be specific to our intervention and requires replication.

Prevention with Noncollege Populations

We have made the argument that college women are appropriate targets for intervention given their high rates of binge drinking and alcohol consumption-related sexual victimization, and the strong relationship between the two. Although less research has been conducted on noncollege students, these young women are likely to be similarly vulnerable to sexual victimization via similar processes. For example, noncollege students of similar age also exhibit high rates of heavy episodic drinking (e.g., Dawson, Grant, Stinson, and Chou, 2004; Slutske, 2005) and alcohol consumption-related consequences (Hingson, Heeren, Winter, and Wechsler, 2005). Buddie and Testa (2005) found that the same risk factors (heavy episodic drinking and number of sexual partners) were associated with sexual victimization among 18–22 year old women regardless of whether they were attending college or not. Zweig, Barber, and Eccles (1997) found that young women not in college reported even higher rates of sexual victimization than college students. Thus, although college students are a captive and well-studied population, similarly aged non-college students appear to be at similar or even higher risk of heavy drinking and sexual victimization, and thus deserving of prevention efforts.

Universal Prevention with Adolescents—Given the early ages at which sexual victimization and onset of heavy episodic drinking occur, school or community based efforts addressing adolescents also seem appropriate as a means of true prevention. Moreover, such strategies are more truly universal than are programs designed strictly for college students. Alcohol consumption among adolescents tends to be lower than among college-aged women in general (Newes-Adeyi, Chen, Williams, and Faden, 2005). Accordingly, incidents of adolescent sexual assault are less likely to involve victim drinking (Young, Grey, Abbey, Boyd, and McCabe, 2008). However, Young et al. found that adolescents older than 16 were more likely to report that their sexual assaults included alcohol use than did girls under 16, reflecting increasing risk of alcohol consumption-related assault as adolescents begin to drink and socialize like their older peers. These findings support an argument for prevention efforts targeted at young adolescents as a way of preventing the onset of HED and the concomitant risk of alcohol consumption-related assault.

Numerous interventions to prevent adolescent alcohol and drug use have been developed and evaluated and a number of programs have been identified as efficacious (see Skara and Sussman, 2003; Spoth, Greenberg, and Turrise, 2007 for reviews). Although these studies have not considered sexual victimization as an outcome, there is evidence that the effects of broad-based preventive interventions can extend beyond the initially targeted behaviors to reduce other risky behaviors (e.g., risky driving, Griffin, Botvin, and Nichols, 2004). For example, although sexual risk prevention was not targeted as part of the initial skills-based program, Griffin et al. (2006) found that adolescents who participated in the Life Skills Training program in 7th, 8th, and 9th grades reported engaging in less HIV sexual risk behavior during young adulthood compared to controls. These effects were partially mediated through lower acceleration of drinking and marijuana use throughout high school. In brief, the success that many of these programs have had and the strong link between alcohol use and sexual victimization supports the argument that prevention efforts targeted at children and young adolescents may be an effective means of reducing subsequent HED and the concomitant risk of alcohol consumption-related sexual assault in older adolescents and young women.

General Limitations to this Strategy

Review of the literature led us to the conclusion that heavy episodic drinking by young women is a key mechanism underlying sexual victimization and that reducing women's HED may be an effective strategy for preventing sexual assault in the most vulnerable age group: 16–24 year old women (BJS, 2005). We acknowledge, however, that not all sexual victimization is alcohol consumption-related, and reducing drinking will not address sexual victimization that arises from these other sources. For example, the majority of rape in household samples of adult women is perpetrated by intimates (Tjaden and Thoennes, 2000), who are unlikely to rely on victim intoxication. Similarly, verbally coerced intercourse is experienced predominately by women in intimate relationships and rarely involves alcohol consumption by the woman (Livingston et al., 2004). Other mechanisms, such as sexual assertiveness and selectivity in partner choice may play important roles in assaults from intimate partners (Testa et al., 2007) and thus may be appropriate targets for intervention to reduce these other types of sexual victimization. Although in our current college study the intervention condition targeting sexual assertiveness in addition to alcohol failed to offer an advantage relative to the alcohol only intervention condition, it is premature to dismiss these efforts.

Because our literature review did not support a proximal role of victim drug use in sexual victimization among general or college populations, we have not advocated for drug prevention as a means of reducing sexual victimization. Few incidents of sexual assault in the college and general population studies reviewed involve the use of drugs, particularly in the absence of alcohol (Kilpatrick et al., 2007). However, in high risk populations such as the homeless,

prostitutes, and those on methadone maintenance, drug use has been associated with sexual victimization at the global level (El-Bassel, Gilbert, Wu, Go, and Hill, 2005; Padgett and Struening, 1992) and may be important at the event level as well (see Gilbert, El-Bassel, Rajah, Foleno, and Frye, 2001). Thus, among women with drug problems, drug treatment may reduce sexual HIV risk behaviors (e.g., Gossop et al., 2002) and concomitantly, the high rates of sexual victimization among these vulnerable women as well.

Conclusion

The continuing high rates of sexual victimization among young women and the failure to develop successful prevention programs call for a new approach. Careful review of the literature on the relationship between women's substance use and sexual victimization experiences suggests that women's heavy episodic drinking plays a direct role in a large proportion of these experiences, particularly among college women. Thus, we argue that targeting this mechanism using already-developed alcohol consumption interventions may be an efficacious way of reducing sexual victimization.

There are important advantages to the approach that we advocate. First, new programming specific to sexual assault does not need to be developed, given that there are many existing programs with demonstrated efficacy for preventing or reducing heavy episodic drinking. Moreover, reducing heavy episodic drinking should reduce the full range of alcohol consumption-related problems associated with this behavior. Thus, even apart from any reduction in sexual victimization risk, reducing heavy episodic drinking is a worthy goal unto itself given the negative health, legal, and social consequences associated with this behavior.

Rape prevention efforts targeting women's behavior have been criticized as unfairly requiring women as potential victims to alter their behavior and restrict their freedom in exchange for their safety (see Ullman, 2002). Although the goal of the approach we advocate is to alter women's behavior, it seems difficult to argue that preventing women from drinking to the point of incapacitation restricts their freedom or involves a loss. On the contrary, it offers many additional benefits. Advocating drinking reduction for women as a way of reducing their vulnerability to rape implies neither that women are to blame for their own victimization nor that prevention directed toward male perpetrators is unnecessary. College drinking reduction programs have most commonly been directed toward women and men, and this two-pronged approach, targeting both victim and perpetrator drinking, may prove especially effective in reducing sexual victimization.

We encourage researchers who are testing the efficacy of prevention interventions to include outcome measures that permit examination of the impact of these interventions on subsequent risk of sexual victimization, both alcohol consumption-related and nonalcohol consumption related. Such data can address the hypothesis we have suggested: that sexual victimization can be reduced by reducing heavy episodic drinking in young women. Moreover, results of these trials, whether successful or not, can in turn inform basic research by providing additional insight into how women's alcohol consumption contributes to sexual victimization.

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Glossary

Alcohol consumption-related sexual victimization Sexual victimization when the victim the perpetrator, or both are under the influence of alcohol. These activities may include completed forcible rape, incapacitated rape, attempted rape, verbally coerced sexual intercourse or sexual contact.

Forcible rape Unwanted sexual penetration resulting from the perpetrator's use of physical force or threat of harm to the victim.

Heavy episodic drinking (HED) Five drinks on an occasion or in a single sitting for a female or five or more drinks for a male.

Incapacitated rape Unwanted sexual penetration occurring because the female victim is incapacitated as a result of alcohol or drug use and is unable to resist a perpetrator's sexual penetration of her. This incapacitation may result from the victim's voluntary consumption or because substances were administered to her without her knowledge or consent by the perpetrator for the purpose of incapacitating her.

Sexual victimization (Sexual assault) Sexual activity including completed forcible rape, incapacitated rape, attempted rape, verbally coerced sexual intercourse and unwanted sexual contact.

Biographies

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