Examining the Roles of Heavy Episodic Drinking, Drinking Venues, and Sociosexuality in College Men's Sexual Aggression

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ABSTRACT. Objective: College men's alcohol consumption is positively associated with sexual aggression perpetration, yet men's drinking does not typically predict later sexual assault after accounting for risk factors, such as impersonal sexuality. In the present study, we tested an indirect effects model whereby college men's impersonal sex orientation and heavy episodic drinking (HED) were hypothesized to contribute to sexual aggression perpetration via more frequent attendance at drinking venues (parties, bars). **Method:** Freshman males (N = 1,043) were recruited to participate in a five-semester study. Key measures included the Sociosexuality Index as a measure of impersonal sex attitudes and behaviors, frequency of HED, and frequency of attending drinking venues (parties, bars). The dichotomous outcome measure was based on the Sexual Strategies Survey, a measure of tactics used to convince a female partner to have sex. Structural equation modeling was used to examine whether sociosexuality attitudes, sociosexuality behaviors, and HED (all measured at Wave 1) would have direct and indirect effects on use of Wave 5 sexual aggression tactics, through effects on Wave 3 venue attendance. **Results:** The model supported the hypothesized indirect effects of sociosexuality and HED via men's subsequent drinking venue attendance and was preferred over alternative models. **Conclusions:** College men who more frequently attended drinking "hot spots" were more likely to perpetrate subsequent sexual aggression, supporting a growing body of evidence on the importance of drinking venues in college sexual assault. Findings also help to explicate the mechanism underlying the robust role of impersonal sex orientation in sexual aggression. (*J. Stud. Alcohol Drugs, 80,* 177–185, 2019)

SEXUAL ASSAULT REMAINS a serious public health issue on U.S. college campuses, with about one in five college women experiencing some type of sexual assault during their college years (Muehlenhard et al., 2017). Although self-reported perpetration by college men is typically lower, rates as high as 30% have been documented (Thompson et al., 2015). Alcohol consumption is associated with increased risk of both sexual assault victimization and perpetration (Abbey, 2011; Abbey et al., 2014), particularly among college samples (see Testa & Livingston, 2018, for a review). However, the mechanisms responsible for this association are less clear. The present study considered whether men's heavy episodic drinking (HED), in combination with an impersonal sex orientation, contributes to subsequent sexual assault perpetration via more frequent drinking venue attendance.

Alcohol use and sexual aggression

Compared with men who do not report sexual assault, perpetrators are more likely to be problem drinkers (e.g., Abbey et al., 2006; Tuliao & McChargue, 2014) and to consume alcohol in dating and sexual situations (Schwartz et al., 2001). However, longitudinal studies have generally not found direct associations between men's HED and later sexual assault after accounting for personality traits, including hostility toward women, anger, aggression, and low self-control (Davis et al., 2015; Testa & Cleveland, 2017; Thompson et al., 2015; Wilhite & Fromme, 2017). Testa and Cleveland (2017) found that although HED did not have an independent effect on sexual assault perpetration, the between-person effect of attendance at bars and parties remained significant when controlling for the covariates. Subsequent within-person analyses demonstrated that the odds of sexual assault were increased during semesters in which men reported more frequent bar and party attendance, relative to their own typical attendance, pointing toward a potential role for drinking venues in facilitating sexual assault. Indeed, other researchers have concluded that parties and bars provide opportunities to target vulnerable, intoxicated women for sexual advances and possible assault (Graham et al., 2014b; Mumford et al., 2011).

Motives for drinking venue attendance

A large literature demonstrates positive associations between HED and impersonal sexuality, characterized by a preference for sex without commitment and a greater number of sexual partners (Bersamin et al., 2012; Cooper, 2002; see Claxton et al., 2015, for a review). Among college students, HED most often occurs at off-campus parties, bars,

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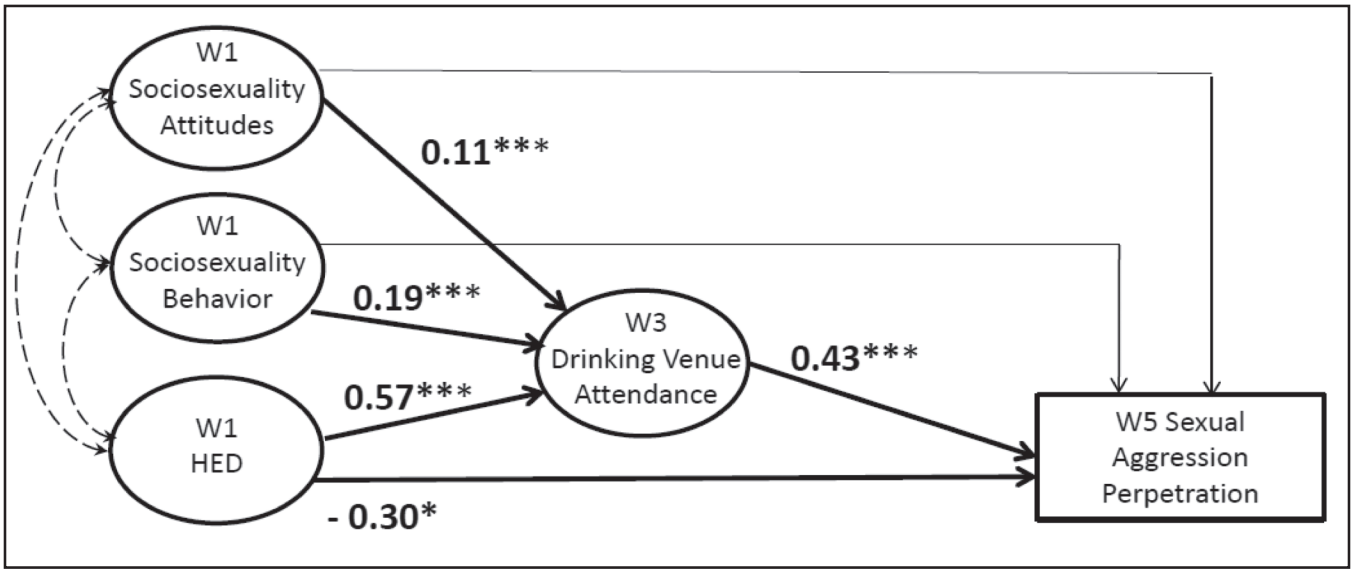

FIGURE 1. Indirect effects model of sociosexuality and heavy episodic drinking on sexual aggression perpetration. *Notes:* Depicted paths in **bold** represent significant effects (standardized coefficients). Direct effects of Wave 1 (W1) covariates (low self-control, delinquency, and hostility to women) are not presented. W = wave; HED = heavy episodic drinking.
*$p < .05$; ***$p < .001$.

and fraternity/sorority houses (Clapp et al., 2006; Harford et al., 2002), and attendance at drinking venues is presumably motivated by a desire to consume alcohol. However, these settings also facilitate social interactions and sexual relationships; hence, desire for sexual activity may also contribute to frequenting of drinking venues.

Qualitative interviews with college students demonstrate that drinking venues are viewed as places that facilitate meeting potential sexual partners and "hooking up," such that students deliberately seek out alcohol to either indicate sexual willingness (for women) or facilitate making sexual advances among men (Lindgren et al., 2009). There is also evidence that students who attend more parties are more likely to report having sex with a stranger (Bersamin et al., 2012) and that more frequent and heavier drinking at fraternity/sorority parties and in bars is associated with more unprotected and unplanned sex events (Mair et al., 2015). Some studies suggest that drinking at bars and parties is associated with males' propensity toward intimate partner violence (Mair et al., 2013); however, such links have not been fully explored among college students or with specific focus on sexual assault perpetration.

According to the Confluence Model of sexual aggression (Malamuth et al., 1991), men with an impersonal sex orientation are more likely to perpetrate sexual aggression (e.g., Parkhill & Abbey, 2008; Yost & Zurbriggen, 2006; for review, see Davis et al., 2018). We suggest that the association between impersonal sexuality and sexual aggression perpetration may be at least partially explained by drinking venue attendance. A recent study provides evidence that sociosexuality predicts greater HED (Corbin et al., 2016). Because college HED takes place largely at parties and bars, men with an impersonal sex orientation may frequent these venues because they provide access to many potential sex partners. Men who are prone to frequenting drinking venues, and who engage in sexual activity as a result of these contexts (e.g., "hookups"), may be more inclined toward sexual aggression. Indeed, sexual encounters with new partners are more likely to include alcohol and sexual aggression compared with events with established partners (Testa et al., 2015), and men with a history of sexual aggression consumed more alcohol and were more likely to have sex in conjunction with a night out than were men without such a history (Mumford et al., 2011).

Current study

This study examined an indirect effects model of sexual aggression perpetration that specified a central role for college men's drinking venue attendance (Figure 1). Using longitudinal data collected across the men's first 3 years of college, we hypothesized that men who hold more favorable beliefs toward impersonal sex will seek out bar and party settings, presumably as opportunities for hooking up (Corbin et al., 2016). The effects of an impersonal sexuality on subsequent sexual aggression may be the result of more frequent drinking venue attendance. We also tested the hypothesis that the effects of HED on sexual aggression are indirect, via attendance at drinking settings. Guided by the Confluence Model and previous research (Testa & Cleveland, 2017), we controlled for low self-control, delinquency, and hostility toward women, all of which have been shown to predict sexual aggression (Malamuth et al., 1991; Parkhill & Abbey, 2008; Thompson et al., 2015).

Method

Participants and procedures

Participants included 1,043 freshman males, ages 18 and 19, who entered a large Northeastern public university in the fall of 2012. The sample composition was 71.9% White, 7.1% African American, and 15.8% Asian American; about 7.6% reported Hispanic heritage. Most participants lived on campus as freshmen (67.1%).

Participants were recruited by email to participate in a study of college men's behaviors and attitudes over five semesters of college. All first-semester men who resided in the United States, who allowed their university email address to be included in the student directory (about 85% of the class), and who were 18 or 19 on November 1, 2012, were invited. Nonresponders were sent up to five email reminders and a letter to their permanent address at Thanksgiving. Email invitations included a link to a secure site, which required entry of their student ID. After providing online informed consent, they were directed to the 30-minute survey. The surveys were completed by participants in the private setting of their choice, and all responses were linked by an anonymous subject number. Response rate for the initial recruitment was 66.1%. The study was approved by the university institutional review board, and a Certificate of Confidentiality was obtained from the study funder (National Institutes of Health).

Similarly, men were recruited via email for the subsequent assessments at the end of the next four semesters. Men could continue participation if they left the university; however, such men accounted for no more than 8% of participants at Wave 5. Participants were compensated $25 in Campus Cash (or check) for completing Waves (W) 1, W3, and W5, and $10 for completing the briefer spring semester surveys at W2 and W4. They were also entered into a lottery drawing for $400. For the present study, we used data from W1, W3, and W5. A total of 790 men completed W3 (76% of the initial sample), and 742 completed W5 (71% of the initial sample). Men were on average 18.6 years of age at W1. None of the men were above the legal age for consuming alcohol at W1 or W3; 11.9% of the men were age 21 at W5.

Measures

Sociosexuality. Impersonal sex was measured via the Sociosexual Orientation Inventory (Simpson & Gangestad, 1991). Consistent with previous research, we distinguished between sociosexuality attitudes and sociosexuality behaviors (Penke & Asendorpf, 2008; Webster & Bryan, 2007).

Sociosexuality attitudes were assessed with three items: "Sex without love is OK," "I can imagine myself being comfortable and enjoying casual sex with different partners," and "I would have to be closely attached to someone before I could feel comfortable and fully enjoy having sex with that person (reversed)." Participants indicated their agreement with the three items using a 9-point scale that was anchored by 1 = *strongly disagree* to 9 = *strongly agree.* The three items were used as separate indicators of the sociosexuality attitude latent construct ($\alpha = .79$).

Sociosexuality behaviors consisted of three items. The number of lifetime sex partners was assessed with the open-ended question, "With how many women have you had sexual intercourse in your life?" Number of partners desired in the next 5 years was assessed by asking, "How many different partners do you foresee yourself having sex with during the next 5 years?" Respondents were also provided with the definition of a hookup (a romantic or sexual encounter between two people who are strangers, friends, or acquaintances; some physical interaction is typical, but it may or may not involve sexual intercourse), and then they responded to the open-ended question, "Since the current semester began, how many 'hookups' have you had?" The three items were Winsorized to the 95th percentile (Reifman & Keyton, 2010) to reduce outliers and used as separate indicators of the sociosexuality behavior latent construct ($\alpha = .76$).

Heavy episodic drinking. Following a standard drink definition, men were asked, "Since the current semester began, how often did you drink 5 or more drinks in a row on a single occasion (e.g., in the same evening)?" and "Since the current semester began, how often would you say you consumed enough alcohol to feel drunk or intoxicated?" For both items, seven response categories ranged from 0 = *never* to 6 = *3 or more days per week.* Students who indicated in response to an earlier question that they never drank alcohol skipped the questions and were assigned a 0. The two items were used as separate indicators of the HED latent construct ($r = .91$).

Attendance at drinking venues. Two items assessed attendance at two types of drinking venues. Men were asked, "Since the current semester began, how often did you (attend a party/go to a bar or club)?" Seven response options for each item ranged from 0 = *never* to 6 = *3 or more days per week.* These two items were used as indictors for the drinking venues latent construct ($r = .52$).

Sexual aggression tactics. The outcome variable was assessed at W5, using the Sexual Strategies Scale (SSS), adapted from the Postrefusal Sexual Persistence Scale (Struckman-Johnson et al., 2003). The SSS includes 22 dichotomous items that describe a range of tactics used to obtain sex from an unwilling target, ranging from taking off your clothes to physical harm. Items were preceded by the statement, "Since the current semester began, which if any of the following strategies have you used to convince a woman to have sex (oral, anal, vaginal) with you when she didn't want to (check all that apply)?" Participants were classified as perpetrators if they responded positively to one or more

items. Previous comparisons reveal that the SSS has some psychometric advantages over the Revised Sexual Experiences Survey (SES; Koss et al., 2007), including better assessment of less severe tactics and simpler wording (Testa et al., 2015). Research also suggests that the SSS identifies more sexually aggressive behaviors than the SES (Strang et al., 2013) and that participants are more likely to endorse Postrefusal Sexual Persistence Scale items than SES items (Buday & Peterson, 2015).

Covariates. Three additional covariates, all assessed at W1, were included as manifest control variables. Low self-control was assessed using the 13-item Brief Self-Control Scale (Tangney et al., 2004). Items (e.g., "Sometimes I can't stop myself from doing something even if I know it is wrong") were assessed on 5-point scales ranging from *not at all* to *very much* and summed (α = .81). Higher scores indicated more self-control. Delinquency was assessed using the 18-item Antisocial Behavior Checklist, adolescent version (Zucker, 2005), which includes items such as *cursed at a teacher, skipped school,* or *beat someone up.* Four response options included *never, rarely, sometimes,* and *often.* Responses were assigned scores from 0 to 3 and summed (α = .82). Hostility toward women consisted of 10 items, such as "I am easily angered by women" and "I feel that many times women flirt with men just to tease them or hurt them" (Lonsway & Fitzgerald, 1995). These were rated on 7-point scales ranging from 1 = *strongly disagree* to 7 = *strongly agree* and summed (α = .84). These variables have been associated with sexual assault perpetration (Testa & Cleveland, 2017; Thompson et al., 2015).

Analysis plan

We used structural equation modeling (SEM) to address the study aims. The dependent variable, W5 sexual aggression perpetration, was specified as a dichotomous variable, indicating use of any sexual aggression tactics versus no use of any sexual aggression tactics during the current semester. We hypothesized that sociosexuality attitudes, sociosexuality behaviors, and HED (all measured at W1) would have direct and indirect effects on the use of W5 sexual aggression tactics, through effects on W3 venue attendance. An initial measurement model for the latent constructs (W1 sociosexuality attitudes, W1 sociosexuality behaviors, W1 HED, and W3 venue attendance) was followed by a structural model that specified the hypothesized associations among the variables. The W1 covariates (low self-control, delinquency, and hostility toward women) were specified as exogenous control variables with direct paths to all model constructs (Little, 2013).

Analyses were conducted in Mplus 6.1 (Muthén & Muthén, 1998), which accommodates missing data using full information maximum likelihood. We specified a mediation model with a binary outcome and a latent continuous mediator. In this approach, the observed binary dependent variable was treated as a continuous latent response variable, such that parameters for all dependent variables are interpreted as linear, representing an increase or decrease in the latent probability of the outcome (Muthén, 2011). Indirect effects were computed using the delta method; 95% confidence intervals (CIs) for specific indirect effects (MacKinnon et al., 2004) were calculated (http://quantpsy.org; Selig & Preacher, 2008). Model fit of the measurement model was evaluated with the comparative fit index (CFI; Bentler, 1990) and the root mean square error of approximation (RMSEA; Browne & Cudeck, 1992). We calculated 90% CIs for the RMSEA values. Ideally, the lower limit of the 90% CI is near zero, and the upper limit is less than 0.10. The subsequent structural models were estimated using Monte Carlo integration, which precluded calculation of chi-square–based fit indices.

Results

Descriptive statistics

The proportion of men who reported use of any sexual aggression tactics (i.e., at least one item on the SSS was endorsed) was 19.56% at W1, 20.25% at W3, and 15.23% at W5. At each wave, we compared the means of the study variables between men who reported sexual aggression perpetration and those who did not report aggression perpetration at that particular wave. As seen in Table 1, men who reported sexual aggression at each wave reported higher baseline levels of delinquency and hostility toward women and lower baseline levels of self-control. With two exceptions, perpetrators also reported higher concurrent levels of impersonal sexuality attitudes and behaviors compared with men who did not perpetrate at that time point. Men who perpetrated sexual aggression at each wave concurrently reported more frequent HED and more frequent attendance at parties and bars.

SEM: The measurement model

Table 2 presents the inter-item correlations for the measurement model variables and their standardized factor loadings. With few exceptions, all of the items correlated positively and significantly with other items. The measurement model provided adequate fit to the data, $\chi^2(29)$ = 147.40, $p < .001$, χ^2/df ratio = 5.08, CFI = .97, RMSEA = .06, 90% CI [.05, .07]. All factor loadings were significant at the $p < .001$ level. Standardized factor loadings for sociosexuality attitudes and sociosexuality behaviors ranged from .51 to .85 and .67 to .74, respectively. Standardized factor loadings for the HED items were .93 and .98. The standardized loadings for the two venue attendance items were .90 and .59. Correlations among the four latent constructs are presented in Table 3.

Table 1. Means of study variables by sexual aggression perpetration, across waves

Variable	Wave 1			Wave 3			Wave 5		
	No perp. (n = 837) M (SD)	Any perp. (n = 204) M (SD)	t	No perp. (n = 629) M (SD)	Any perp. (n = 160) M (SD)	t	No perp. (n = 628) M (SD)	Any perp. (n = 112) M (SD)	t
Wave 1 covariates									
Self-control	43.93 (7.80)	40.35 (7.60)	5.91***	44.06 (7.68)	41.71 (8.09)	3.40***	43.98 (7.70)	41.82 (7.99)	2.72**
Delinquency	5.57 (4.39)	8.80 (5.71)	8.86***	5.33 (4.37)	8.06 (5.25)	6.73***	5.49 (4.41)	7.54 (5.54)	4.35***
Hostility to women	31.04 (9.98)	35.52 (9.66)	5.78***	31.36 (10.06)	33.96 (9.73)	2.93**	31.37 (10.19)	33.73 (9.54)	2.29*
Sociosexuality attitudes									
Sex w/o love	4.53 (2.60)	5.94 (2.63)	6.91***	4.81 (2.65)	5.86 (2.32)	4.60***	5.25 (2.75)	5.76 (2.61)	1.80
Casual sex	4.17 (2.62)	5.83 (2.69)	8.08***	4.35 (2.68)	5.58 (2.44)	5.29***	4.69 (2.75)	5.24 (2.75)	1.96*
Not attached	4.26 (2.61)	5.52 (2.55)	6.22***	4.26 (2.50)	4.99 (2.34)	3.37***	4.35 (2.50)	4.81 (2.37)	1.81
Sociosexuality behaviors									
Partners 5 years	4.35 (4.95)	7.60 (6.40)	7.85***	3.52 (3.40)	4.81 (4.24)	4.05***	3.49 (3.51)	4.56 (4.27)	2.87**
Partners life	1.59 (2.45)	3.10 (2.86)	7.64***	1.86 (1.86)	2.83 (1.73)	5.97***	2.18 (1.92)	3.04 (1.67)	4.42***
Hookups	0.98 (1.63)	2.26 (2.01)	9.59***	0.93 (1.52)	1.68 (1.88)	5.28***	0.97 (1.58)	1.78 (2.04)	4.72***
Alcohol use									
HED	1.31 (1.75)	2.44 (1.95)	8.07***	1.46 (1.75)	2.21 (2.06)	4.66***	1.62 (1.82)	2.30 (1.93)	3.62***
Intoxication	1.42 (1.76)	2.74 (1.98)	9.33***	1.60 (1.76)	2.29 (1.92)	4.37***	1.75 (1.79)	2.50 (1.90)	4.05***
Venue attendance									
Frequency party	1.94 (1.71)	3.11 (1.79)	8.67***	1.72 (1.64)	2.66 (1.84)	6.28***	1.75 (1.61)	2.60 (1.72)	5.12***
Frequency bar	0.62 (1.16)	1.34 (1.56)	7.41***	0.52 (1.03)	1.25 (1.70)	6.85***	0.64 (1.14)	1.31 (1.57)	5.42***

Notes: Values for covariates represent comparisons of Wave 1 variables with sexual aggression perpetration at Wave 1, Wave 3, and Wave 5. All other values in table reflect concurrent comparisons of study variables and sexual aggression perpetration at Wave 1, Wave 3, and Wave 5 for each separate t test, respectively. Perp. = sexual aggression perpetration; w/o = without; HED = heavy episodic drinking.
*p < .05; **p < .01; ***p < .001.

SEM: Testing longitudinal predictors of sexual aggression perpetration

Standardized coefficients of the hypothesized structural model are presented in Figure 1, with significant (p < .05) paths labeled and bolded. Although not depicted in the figure, all three covariates had significant and positive effects on W1 sociosexuality attitudes and W1 HED (all p values < .001). Delinquency and hostility toward women were positively associated with W1 sociosexuality behaviors (p < .001); none of the covariates predicted W3 venue attendance. Sociosexuality attitudes, sociosexuality behaviors, and HED were all positively associated with subsequent W3 venue attendance (p values < .001). The model explained 58.9% of the variance in the latent W3 venue attendance factor.

There were two positive direct effects on W5 sexual aggression perpetration: odds of perpetration were higher among men who reported higher delinquency scores (odds ratio [OR] = 1.06, p < .05) and more frequently attended drinking venues (OR = 1.74, p < .05). Consistent with hypotheses, W1 sociosexuality attitudes and behavior each had significant indirect effects on W5 perpetration through their

Table 2. Inter-item correlations and factor loadings among the study variables

	W1 control variables			W1 sociosexuality attitudes			W1 sociosexuality behaviors			W1 alcohol use		W3 venue attend	
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. W1 low self-control	–												
2. W1 delinquency	.36	–											
3. W1 hostility toward women	.26	.25	–										
4. W1 sex without love is okay	.21	.23	.23	–									
5. W1 comfortable casual sex	.23	.26	.26	.79	–								
6. W1 not attached to enjoy sex	.19	.14	.14	.40	.46	–							
7. W1 number partners 5 years	.15	.21	.15	.40	.45	.36	–						
8. W1 number partners lifetime	.05	.21	.16	.28	.31	.26	.50	–					
9. W1 number of hookups	.10	.19	.16	.28	.31	.31	.50	.52	–				
10. W1 frequency HED	.28	.28	.19	.36	.35	.30	.40	.32	.50	–			
11. W1 frequency intoxication	.28	.28	.21	.38	.37	.30	.41	.34	.52	.91	–		
12. W3 frequency attend party	.19	.22	.15	.35	.37	.26	.39	.32	.41	.61	.64	–	
13. W3 frequency attend bar	.13	.16	.10	.20	.22	.16	.25	.26	.34	.40	.41	.53	–
14. W5 sexual aggression perp.	.10	.16	.08	.04	.08	.06	.08	.08	.12	.07	.09	.15	.20
Factor loading	–	–	–	.85	.92	.51	.72	.67	.74	.93	.98	.90	.59

Notes: Values > .07 represent significant coefficients at p < .05. Factor loading refers to standardized factor loading in the measurement model. W = wave; HED = heavy episodic drinking; perp. = perpetration.

Table 3. Correlations among the latent constructs in the measurement model

	1.	2.	3.	4.
1. W1 sociosexuality attitudes	–			
2. W1 sociosexuality behaviors	.55	–		
3. W1 HED	.44	.62	–	
4. W3 venue attendance	.46	.60	.73	–

Notes: All correlations are significant at the $p < .001$ level. W = wave; HED = heavy episodic drinking.

positive effects on W3 venue attendance (attitudes indirect effect = 0.04, 95% CI [0.006, 0.086]; behavior indirect effect = 0.04, 95% CI [0.008, 0.095]). Also as hypothesized, there was a positive indirect effect of W1 HED on W5 perpetration through its positive effect on W3 venue attendance (indirect effect = 0.28, 95% CI [0.090, 0.482]). Unexpectedly, there was a negative direct effect of W1 HED on W5 perpetration (OR = 0.70, $p < .01$). The fully mediated model explained 14.8% of the variance in the underlying latent construct for W5 sexual aggression perpetration. It is also possible to conceptualize drinking venue attendance as a risk factor for sexual aggression within the same semester (e.g., Testa & Cleveland, 2017). When the model was repeated using W3 sexual aggression as an outcome (instead of W5), results were identical, and 18.8% of variance in W3 perpetration was explained.

SEM: Testing alternative models

To ensure that our hypothesized model was the best representation of the hypothesized underlying relationships, we tested two alternative models (Table 4). In the first alternative model (AM1), we reversed HED and venue attendance, since men who frequent drinking venues may subsequently drink more heavily, leading to greater likelihood of perpetration. Although all three W1 constructs (sociosexuality attitudes, sociosexuality behaviors, and venue attendance) were significantly and positively associated with W3 HED, neither W1 venue attendance (β = .04, 95% CI [-.17, .25]) nor W3 HED (β = .05, 95% CI [-.15, .12]) predicted W5 sexual aggression perpetration. Next, we considered the alternative that more frequent HED and attendance at drinking venues predict greater sociosexuality, which in turn contributes to W5 perpetration. In this model (AM2), W1 venue attendance and W1 HED were highly correlated ($r = .87$, $p < .001$); however, venue attendance (but not HED) was significantly and positively associated with W3 sociosexuality attitudes and behaviors (both p values < .001). Neither W3 sociosexuality attitudes (β = -.02, 95% CI [-.15, .12]) nor sociosexuality behaviors (β = .10, 95% CI [-.01, .22]) predicted W5 sexual aggression perpetration. Thus, neither of the alternative models indicated a significant effect between the proposed mediator (W3 HED, W3 sociosexuality attitudes or behaviors) and W5 sexual aggression perpetration, and each explained significantly less variance than the hypothesized model. Based on this evidence, we deemed the hypothesized model as the preferred choice.

Discussion

This study examined an indirect effects model of HED, impersonal sexuality, and attendance at drinking venues on college men's sexual aggression. Using longitudinal data from a sample of college men, the results supported the hypothesized links: college men who are interested in drinking and in having impersonal sex were more likely to frequent drinking venues, and more frequent attendance at bars and parties predicted subsequent sexual aggression perpetration. Consistent with other prospective studies (Testa & Cleveland, 2017; Thompson et al., 2015), we did not find that more frequent HED directly increased the odds of perpetration. Rather, initial HED was indirectly associated with the increased likelihood of sexual aggression perpetration through more frequent attendance at drinking venues. We also found that initial HED had a negative direct effect on subsequent aggression perpetration. This unexpected finding is probably a function of the high correlation between the HED and drinking venue constructs. It is possible, however, that college men who drink, independent of drinking settings, may be less likely to socialize with women and hence less likely to perpetrate.

Table 4. Summary for hypothesized and alternative models

Model specified	Independent variables	Mediator variable	β	[95% CI]	*SE*	Dependent variable	Variance explained
Hypothesized model	W1 sociosex. attitude W1 sociosex. behavior W1 HED	W3 venue attendance	.43***	[.18, .68]	.126	W5 perpetration	14.8%
Alternative Model 1	W1 sociosex. attitude W1 sociosex. behavior W1 venue attendance	W3 HED	.05	[-.16, .26]	.105	W5 perpetration	6.1%
Alternative Model 2	W1 HED W1 venue attendance	W3 sociosex. attitudes W3 sociosex. behavior	-.02 .14	[-.18, .14] [-.02, .29]	.081 .079	W5 perpetration	7.0%

Notes: All models include effects of covariates on the proposed mediator variable/s and dependent variable. β refers to the standardized path coefficient(s) from the specific mediator variable to the dependent variable. "Variance explained" refers to amount of variance explained in the Wave 5 dependent variable. CI = confidence interval; W = wave; sociosex. = sociosexuality; HED = heavy episodic drinking.
***$p < .001$.

We also found that men's impersonal sexuality contributed to sexual aggression perpetration via more frequent attendance at bars and parties. These findings are important in increasing understanding of the Confluence Model, which posits impersonal sexuality as one of the key contributors to sexual aggression (Malamuth et al., 1991). Parties and bars facilitate access to sexual partners in a permissive, alcohol-laden environment that contributes to both consensual and nonconsensual sex in numerous ways (see Armstrong et al., 2006). Although the present study did not examine characteristics of sexual assault events, it is possible that drinking venues serve as "hot spots," in which sexual aggression is facilitated by the convergence of vulnerable target women, motivated male offenders, and a relative lack of "capable guardians" who can prevent the sexual assault (Mustaine & Tewksbury, 2002).

Although most college sexual assault prevention efforts have focused on reducing the vulnerability of women, our results suggest efforts that focus on potential perpetrators' behaviors may also be fruitful. For example, prevention programming that targets interrelationships between sexual risk-taking behavior and sexual violence are warranted (Tharp et al., 2013). Particular emphasis may be placed on providing information about healthy sexual relationships and how to encourage open sexual communication (Davis et al., 2018). Prevention efforts may also be directed toward men's sexual motives for drinking and beliefs about the association between drinking and sex. Finally, although we cannot determine in this study whether sexual assaults occurred as a direct result of drinking venues, results are consistent with evidence that drinking venues constitute a common context in which sexual assaults occur (Cranney, 2015). As such, bystander intervention training (Salazar et al., 2014) may help to reduce risk associated with these settings by changing norms about the acceptability of sexual activities and empowering other students to intervene on behalf of their peers (Weiss & Dilks, 2016).

Limitations

When drawing conclusions, several limitations of the current study deserve mention. First, the sample was restricted to men recruited from a single entering class at a single university. Second, we also relied on men's self-reports of their own sexual aggression perpetration. Because much of our knowledge of college sexual assault is based on women's reports, this may be viewed as a strength. Third, however, it is important to recognize that these reports may omit experiences viewed by the female targets as sexual victimization (see Testa et al., 2018). Fourth, it is also possible that lack of anonymity may have suppressed reporting of perpetration. Finally, all study variables were assessed at the semester level and captured inter-individual differences. Future research that examines these associations at the event level, that is, the extent to which episodes of sexual assault occur as a result of drinking venue attendance, may provide further insight into the hypothesized links.

Conclusions

Our study provides further understanding of the complex association between men's HED and their use of sexual aggression tactics. Although perpetrators reported higher levels of concurrent HED at each wave, the effects of HED on subsequent perpetration in the longitudinal models were more distal and indirect. Rather than alcohol consumption, per se, men's attendance at bars and parties predicted a greater likelihood of sexual aggression perpetration. These findings reinforce the important role of the culture in which alcohol use is embedded on college campuses—and the type of men who choose drinking activities. Men who reported higher HED also reported a preference for uncommitted sexual relationships and were also more likely to attend drinking "hot spots." Such results suggest prevention of sexual assault should include a focus on the perpetrators' motives and behaviors.

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