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Sexual Assault Perpetrators' Alcohol and Drug Use: The Likelihood of Concurrent Violence and Post-Sexual Assault Outcomes for Women Victims†

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Abstract— Addressing sexual assault requires policy and practice responses that are well-informed and empirically-grounded. This study examines the impact of perpetrators' drug and alcohol use during and after sexual assault. A representative sample of women, who responded to a random digit dialing survey, and reported that they were sexually assaulted at some time in their lives were utilized. The survey questions were drawn largely from The National Violence Against Women (NVAW) Survey (Tjaden 1996), and a series of binary logistic regressions was conducted to determine the impact of perpetrators' alcohol and drug use on violence before and after the assault. Findings indicate that perpetrators' alcohol or other drug use at the time of the assault resulted in a greater likelihood of concurrent violence, including hitting, slapping, kicking, use of a weapon, threats to harm or kill, and physical injury during the assault, and as a result, assault victims experienced more time lost from work, school, home duties, and recreation. Both these impacts occurred regardless of the relationship of the perpetrator to the victim, location of the sexual assault, or the victim's ethnicity. This information assists advocates and policy makers in prevention efforts where sexual violence is more likely to emerge.

Keywords—alcohol and drug use, sexual assault, violence

Research on sexual assault indicates that in up to 50% of the cases, the victim, perpetrator, or both had been drinking (Abbey et al. 2004, 2003b). A study of college women found an even higher percentage (70%) (Fisher et al. 2003). Most

studies focus only on alcohol use because it is used far more commonly than other substances, has been more extensively studied for its role in aggressive behavior, consistently found to be the drug most often used in substance-related violence,

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and is more likely to be used in more serious crimes like homicide, rape, and sexual assault (NIAAA 2000). The primary aim of this study was to compare sexual assaults in which the perpetrator was using alcohol during the assault to those where he was not.

LITERATURE REVIEW

Prior research has examined a number of factors that often co-occur with sexual assault and alcohol or other drug use including victim injury, relationship between perpetrator and victim, the location of the assault, and the race/ethnicity of the perpetrator and victim. The use of alcohol or other drugs has been hypothesized to impact the severity of victim injuries from sexual assault. While the majority of studies have found that perpetrator drinking was associated with more victim injuries (Avegno, Mills & Mills 2009; Parkhill, Abbey & Jacques-Tiura 2009; Ullman & Brecklin 2000; Ullman, Karabatsos & Koss 1999; Martin & Bachman 1998), some research found no effect (Brecklin & Ullman 2001; Seifert 1999). Abbey, Clinton, McAuslan, Zawacki, and Buck (2002) reported a curvilinear relationship—perpetrators were most aggressive or violent when they were either sober or drank heavily. In a subsequent study, Abbey and colleagues (2003a) found that the amount of alcohol used by the perpetrator was curvilinearly related to the severity of sexual assault committed, but linearly related to aggressive behaviors during the assault. More recently, Abbey and colleagues (2004) have suggested that this relationship holds until the level of alcohol/drug induced impairment becomes so extreme that motor functioning begins to decline.

Substance use during sexual assaults may also vary by the relationship between the victim and the perpetrator. McFarlane and Malecha (2005) found that 68% of physically abused women had also experienced sexual assault from their partners and that at the time of the sexual assault, 50% reported that the perpetrator was using alcohol and 40% reported that the perpetrator was using illicit drugs. When perpetrators of intimate partner violence had been drinking, the victim was significantly more likely to be injured (Thompson & Kingree 2006). Tjaden and Thoennes (2000) found that women who were raped or physically assaulted by a current or former intimate partner or date were more likely to report injury from the event than those assaulted by other individuals. In a study of college women, alcohol use more often occurred during intimate partner violence than in stranger-perpetrated violence (NIAAA 2000), although other research has found that stranger and acquaintance assaults were more likely than intimate partner assaults to involve perpetrator drinking (Abbey et al. 2004; Brecklin & Ullman 2002; Cleveland, Koss & Lyons 1999).

Other variables may also predict the severity of concurrent and post sexual assault outcomes. The setting may be a factor (Abbey et al. 2003a; Ullman, Karabatsos & Koss 1999). Bars and fraternity parties play a role in sexual assault

because the men present are likely to be drinking (Abbey et al. 2004; Testa & Parks 1996). Other situational factors, such as how well the perpetrator knows the victim, the isolation of the setting, the amount of alcohol consumed, prior consensual sexual activities, and misperceptions about sexual interest may also contribute to a greater likelihood of sexual assault (Abbey et al. 2001). Perpetrators who used alcohol assaulted victims outdoors and at night more often (Brecklin & Ullman 2002). Other factors such as race (Avegno, Mills & Mills 2009; Hills et al. 1998), age (Avegno, Mills & Mills 2009), and location (Hills et al. 1998) have also been linked to increased injury.

Victims of sexual assault who had been drinking or using drugs have been found to be less likely to report the assault to law enforcement (Fisher et al. 2003; Jones et al. 2009). Neither drinking by perpetrators nor drinking by adolescents who were raped were related to seeking medical examinations following rape (Hanson et al. 2001), though seeking medical attention might increase the propensity to report to law enforcement given the support that victims often receive from programs with Sexual Assault Nurse Examiners (SANE).

In short, previous studies have found a relationship between alcohol/drug use, sexual assault, and other factors such as victim injury, victim/perpetrator relationship, location, ethnicity, and reporting. The primary aim of this study was to continue this line of research and compare sexual assaults in which the perpetrator was or was not using alcohol and other drugs during the assault. Using logistic regression and cluster analysis three factors were explored: (1) pre-assault factors (i.e., relationship of perpetrator to the victim, location of assault, and victim's race/ethnicity), (2) concurrent assault factors (i.e., intercourse or penetration, other violence such as hitting, slapping, kicking, use of a weapon, and other physical injury), and (3) post-assault factors (i.e., time and number of days off work, home duties, school, recreation, and reports to law enforcement).

METHODOLOGY

Data for this study come from A Health Survey of Texans: A Focus on Sexual Assault, a survey conducted to determine the prevalence of sexual assault among adult residents of the state of Texas (N = 1,200 [672 women and 528 men]; Busch et al. 2003) that was funded by a state law enforcement agency. The study used random digit dialing because this process provided participants with the highest possible degree of anonymity while allowing for a representative sample of Texas residents. Only adult participants aged 18 and older were interviewed because of the difficulty of obtaining parental consent and the vulnerability of younger participants. Participants were asked questions regarding their unwanted sexual experiences for three age periods: 13 and under, 14 to 17 years old, and 18 years and older. The analyses presented here involve only female victims because

TABLE 1
Frequencies for Dependent Variables (N = 129)*

Outcome	Not Occurring		Occuring		Total Count
	Count	%	Count	%	
Concurrent Assault Characteristics					
Intercourse/Penetration	50	47.2%	56	52.8%	106
Other Violence	84	76.4%	26	23.6%	110
Weapon Use	91	83.5%	18	16.5%	109
Threat to Harm/Kill	76	70.4%	32	29.6%	108
Physical Injury	81	73.6%	29	26.4%	110
Post Assault Characteristics					
Time Off Work	96	88.9%	12	11.1%	108
Days Off Work	100	92.6%	8	7.4%	108
Time Off Home Duties	95	88.8%	12	11.2%	107
Days Off Home Duties	98	91.6%	9	8.4%	107
Time Off School	95	89.6%	11	10.4%	106
Days Off School	97	91.5%	9	8.5%	106
Time Off Recreation	75	71.4%	30	28.6%	105
Days Off Recreation	77	73.3%	28	26.7%	105
Report to Police	88	82.2%	19	17.8%	107

*The total number of cases for each frequency count does not equal 129 due to missing data

the number of male victims was too small to provide reliable results. The Institutional Review Board at the University of Texas at Austin reviewed and approved this study.

Survey Instrument

Of importance for the analyses reported are the survey questions that addressed victims' assault characteristics and immediate aftermath effects or consequences of the assault. The survey questions that asked about sexual assault victimization were drawn largely from the National Violence Against Women (NVAW) Survey (Tjaden 1996) conducted by the National Institute of Justice and the Centers for Disease Control and Prevention (CDC). The instrument was translated into Spanish and an expert evaluated the instrument for language and meaning accuracy and cultural appropriateness.

Survivors often do not define their unwanted sexual experiences as sexual assault. Therefore, following procedures used in the NVAW survey, explicit questions were asked to ascertain if participants had ever been sexually assaulted. Following an introductory statement, interviewers asked nine detailed sexual assault screening questions adapted from the NVAW study. Participants who answered "yes" to any of the nine screening questions were asked a series of questions about the sexual assault, including questions about their relationship to the perpetrator, other injuries, whether

they reported to law enforcement, and aftermath or post-assault effects such as missing time from work or school. Demographic information included ethnicity, income, and number of household members. There were 41 queries about general perceptions of respondents' health status, history of injuries and illnesses, and use of alcohol and other drugs.

Participants

Of the 1,200 total participants, 129 females (20% of all female participants) reported that they had been sexually assaulted at some time during one of the three age periods and were selected for this analysis. Of the 129 females who reported being sexually assaulted, 63 (48%) reported that the assault occurred at age 18 or older, 33 (25.6%) reported the assault occurred between the ages of 14 and 17, and 33 (25.6%) reported the assault occurred when they were under age 13.

Study Variables

Predictor variables. Due to the small number of cases used in this analysis, several predictors were recoded to minimize the number of categories used for that predictor. This was especially important for tests of the interactions among the predictors. The primary predictor variable of interest was whether the perpetrator was using alcohol and/or other drugs at the time of the assault. Other predictor variables,

TABLE 2
Odds Ratios and P-Values for Each Predictor (Independent Variables) in Relation to the Binary Outcomes

Outcomes	Spouse/Relative Versus Someone Known/Stranger (Spouse, Relative = 1)		Any Alcohol Or Drug Use (Yes = 1)		Ethnicity/Race (Women of Color = 1)		Home Versus Other Location (Home = 1)	
	Odds Ratio	P Value	Odds Ratio	P Value	Odds Ratio	P Value	Odds Ratio	P Value
Concurrent with Assault								
Intercourse or Penetration	.30	.008	3.99	.002	1.09	.837	1.00	.996
Other Violence	2.34	.139	3.92	.021	1.32	.613	.75	.675
Weapon Use	1.36	.608	3.41	.056	1.37	.584	.10	.001
Threat to Harm Kill	1.84	.188	3.14	.016	.99	.991	.37	.060
Physical Injury	.87	.772	2.64	.038	1.54	.337	.99	.984
Post Assault Outcomes								
Time Off Work	.61	.444	1.97	.303	2.96	.102	1.83	.480
Days Off Work	1.90	.428	1.55	.582	10.68	.031	.69	.699
Time Off Home Duties	1.86	.368	2.82	.130	4.19	.046	1.12	.898
Days Off Home Duties	1.96	.384	2.77	.187	2.63	.201	.77	.775
Time Off School	3.25	.121	1.63	.477	3.70	.073	.53	.435
Days Off School	1.95	.396	2.96	.167	4.93	.061	.69	.692
Time Off Recreation	.27	.011	4.17	.004	1.18	.733	1.47	.501
Days Off Recreation	.36	.041	3.27	.016	.92	.854	1.30	.644
Assault Reported to Police	2.24	.149	.93	.892	1.21	.715	1.90	.369

used as control variables in the final analysis, are participants' race/ethnicity, assault location, and the relationship of the perpetrator to the victim.

Perpetrators' alcohol and/or other drug use. Of the 129 female respondents who had been sexually assaulted, 50 (38.8%) reported that at the time of the sexual assault, the perpetrator was using alcohol or other drugs, 60 (46.5%) reported that the perpetrator was not using alcohol or drugs, and 19 (14.7%) said that they did not know or declined to report whether the perpetrator was using alcohol or drugs. Since this is a critical variable for the analyses, the maximum sample for analyses was 110 participants. We did not include victim's alcohol or other drug use at the time of the assault because only a small number of victims (13%) reported using alcohol or drugs at the time of the assault and because of the possibility of underreporting because of embarrassment or shame.

Participants' race/ethnicity. The ethnic and racial backgrounds of the sexually assaulted female participants were: White (non-Hispanic), n = 60 (54.5%); African American, n = 15 (13.6%); Hispanic, n = 27 (24.5%); and Other-Asian, Mixed, n = 8 (7.3%). For purposes of this study, participants' ethnicity was recoded into women of color status, n = 50 (45.5%), or Whites n = 60 (54.5%).

Assault location. Participants reported that they were assaulted in the following locations: victim's home, n = 39 (35.5%); perpetrator's home, n = 19 (17.3%); someone else's home, n = 21 (19.1%); car, n = 14 (12.7%); and other location, n = 17 (15.5%). Assault location was further recoded into two categories: home (n = 79, 71.8%) and other (n = 31, 28.2%).

Relationship to the perpetrator. Participants reported that their relationship to perpetrator was as follows: spouse/ex-spouse/live-in partner, n = 18 (16.5%); relative, n = 35 (32.1%); someone else known, n = 49 (44.9%); and stranger, n = 7 (6.4%). Relationship to victim was further categorized into: spouse/ex-spouse/live-in and relative (n = 102 or 93.6%) and someone else or stranger (n = 7, or 6.4%).

Dependent variables. Table 1 shows the frequencies for the dependent variables in this study. Dependent variables include those variables that occurred concurrently with the assault and those variables that occurred post assault.

Those occurring concurrently included intercourse/penetration, other violence (such as slapping, hitting, kicking, biting), weapon use, threat to harm/kill, and whether a physical injury was sustained. Intercourse/penetration occurred most frequently.

Post assault variables included whether the participant had to take any time off from work, school, home, or recreational activities (time off) and how many days off the participant took from these activities (days off). Of these events, the most frequently reported were spending less days and time doing recreational activities. The final post assault variable was whether or not participants reported to law enforcement. Only 19 (17.8%) of the participants reported to law enforcement.

To begin to determine whether a typology of rape victims can be discerned based on concurrent and post-sexual assault outcomes when the perpetrator was or was not drinking or using drugs at the time of the assault, a series of binary logistic regressions was conducted and are summarized in Table 2. Perpetrators' alcohol/drug use, the

TABLE 3
Percentage of Cluster Membership on Ten Attributes

Attributes Retained in Cluster Solution	Cluster Membership	
	1	2
Intercourse/Penetration	32%	71%
Other Violence	5%	27%
Weapon Use	0%	31%
Threat to Harm/Kill	2%	57%
Physical Injury	12%	43%
Time Off Work	2%	16%
Time Off Home Duties	0%	22%
Time Off School	2%	24%
Time Off Recreation	0%	65%
Report to Police	0%	39%

primary predictor variables, and the three other predictor variables, perpetrator-victim relationship, victim's ethnicity, and assault location, were entered simultaneously so that the test for each predictor controls for all of the other predictors in the model and represents the unique effect of each predictor in explaining the conditional probability of experiencing the outcome event.

Analyses

In addition to frequency counts, the data analysis methods used were logistic regression and cluster analysis.¹ The analyses rely on a generalized linear model assuming a binomial distribution for the outcomes (McCullagh & Nelder 1989). The binomial distribution assumes a set of responses can be categorized into discrete events. The logit link function was used in estimating the models (Allison 1995). To interpret the statistically significant effects, the regression coefficients that are expressed in log units were exponentiated, which produced an odds ratio interpretation of the coefficient. An odds ratio of 1:1 represents no effect. An odds ratio less than one indicates a unit increase in the predictor leads to a corresponding *decrease* in the conditional probability of having a higher score (positive increase or no change). An odds ratio greater than one indicates a unit increase in the predictor and leads to a corresponding *increase* in the conditional probability of having a higher score (positive increase or no change). The statistical significance tests for each coefficient used the Wald chi-square test. A value less than .05 is considered statistically significant.

RESULTS

For concurrent assault outcomes, when the perpetrator was a spouse, ex-spouse, live-in partner, or relative versus someone else known or a stranger, intercourse or penetration was significantly less likely to occur ($OR = .3, p = .008$). For

post-assault outcomes, when the perpetrator was a spouse, ex-spouse, or live-in partner, victims were significantly less likely to take any time off recreation ($OR = .27, p = .011$), and to take at least one day off any recreation ($OR = .36, p = .041$) than when the assailant was someone else known or stranger.

Whites and women of color did not differ on concurrent assault outcomes. For post-assault outcomes, women of color were significantly more likely than Whites to take at least one day off work ($OR = 10.68, p = .03$) and take any time off home duties ($OR = 4.19, p = .046$).

For concurrent assault outcomes, when the assault occurred in a home, there was a decreased odds of weapons use ($OR = .10, p = .001$). For post-assault outcomes, when the assault occurred in a home, there were no statistically significant relationships.

For concurrent assault outcomes, when the perpetrator used alcohol or other drugs, the following were more likely to occur: intercourse or penetration ($OR = 3.99, p = .002$), violence ($OR = 3.92, p = .021$), threat to harm or kill ($OR = 3.14, p = .016$), and physical injury ($OR = 2.64, p = .038$). For post-assault outcomes, when the perpetrator was using alcohol or drugs there was an increased odds of the victim taking recreation time off ($OR = 4.17, p = .004$) and at least one day off recreation ($OR = 3.27, p = .016$).

To further determine the relationship between the primary predictor variable of perpetrators' drug or alcohol use and the dependent variables of concurrent and post-assault outcomes, we conducted a series of binary logistic regressions similar to those found in Table 2 and included three additional predictors representing the interactions between victims' ethnicity, relationship to perpetrator, and location of assault and whether perpetrators used drugs or alcohol. None of the interactions were statistically significant for either concurrent or post-assault outcomes. Thus, in this study we found no situation in which perpetrators' alcohol or drug

TABLE 4
Logistic Regression Predicting Cluster Membership Based on Perpetrator's Alcohol/Drug Usage, Victim's Ethnic Background, Relationship of Victim and Perpetrator, and Location of Assault

Parameter	Estimate	Odds Ratio	Chi-Square	Pr > Chi Sq
Alcohol/Drug Use (Yes = 1)	.95	2.59	4.78	.029
Ethnicity/Race (Minority = 1)	.16	1.18	.15	.703
Spouse, Relative, Versus Someone Known or Stranger (Spouse, Relative = 1)	-.11	.90	.06	.802
Home Versus Other Location (Home = 1)	.12	1.13	.06	.810

use works together with victims' ethnicity/race, relationship of the perpetrator to the victim, or the assault location to predict concurrent and post sexual assault outcomes.

Finally, we further assessed the relationships of interest by determining whether a typology emerges for concurrent and post-assault outcomes as they relate to perpetrators' drug or alcohol use at the time of the assault. The cluster analysis performed to test this research question identified two clusters that appeared to fit the data containing 10 of the concurrent and post assault outcome variables. Overall, cluster 1 shows lesser concurrent violence/harm and fewer post-assault negative outcomes compared to cluster 2 (see Table 3). The results of a chi-square test of association between cluster membership and each attribute showed cluster membership was statistically significantly related to each attribute (due to missing data on the clustering attributes which resulted in lack of assigning cluster membership, the total available cases for this analysis was 97).

To test whether cluster membership was associated with perpetrator's alcohol or drug use at the time of the assault, cluster membership was used as the dependent variable in a logistic regression with any drug or alcohol use; ethnicity/race; relationship (spouse, relative, versus someone known or stranger), and location (home versus other location) used as predictors. Table 4 shows that adjusting for all of the other predictors in the model, only alcohol or other drug use was positively related to membership in the more severe sexual assault cluster (OR = 2.59, $p = .02$).

DISCUSSION AND CONCLUSIONS

These findings are based on a statewide representative sample of women who experienced sexual assault at some point in their lives, and they do support previous work using convenience samples indicating that alcohol and drug-related sexual assaults are associated with a greater likelihood of concurrent violence, including hitting, slapping, kicking, use of a weapon, threats to harm or kill, and physical injury. The results also indicate that time lost from work, school, home duties, and recreation is greater in the aftermath of a sexual assault in which the perpetrator was using alcohol or other drugs. Both these concurrent and post sexual assault

effects occur regardless of the relationship of the perpetrator and victim, locations of the sexual assaults, or ethnicity of the victims. These findings suggest that more physical harm occurs in sexual assaults when perpetrators use alcohol or other drugs. We did not find that setting played a role in the concurrent and post assault factors of alcohol and drug-related sexual assault as others have found (see Abbey et al. 2003b for a review), although this may be due to the dichotomous nature of the variable we used. However, we agree with Hills and associates (1998: 605) that "avoiding environments in which drugs and alcohol are abused may reduce one's risk of traumatic physical injury during sexual assaults." While we strongly advocate for a non victim-blaming perspective and strongly believe in holding perpetrators accountable for their violent actions, our findings suggest that the presence of alcohol seems to be a risk factor for sexual assault. A victim who is drinking alcohol or using drugs should not be blamed for being raped and the responsibility of the assault rests solely with the perpetrator. However, it is unlikely that a *successful* sexual assault prevention program will include discussion of the increased risk of sexual assault where alcohol and drugs are present. Educators, victim advocates, and policy makers are called upon to develop prevention and interventions programs that embrace and tackle all these very complex issues.

We also did not find that the relationship between the perpetrator and the victim had the same effect in alcohol and drug-related sexual assaults that it has in other studies conducted (see Abbey et al. 2003b for a review). Some researchers find that alcohol-related sexual assaults are more likely to occur when people are acquainted but not romantically involved. Cleveland and colleagues (1999) found that acquaintances and dates used more alcohol and drug tactics (use of alcohol and drugs to accomplish an assault) with their victims than did husbands. Our study again indicates that it is alcohol or other drugs that play a significant role in increased concurrent violence and post-assault effects. Like Tjaden and Thoennes (2000), we found that injury was more likely to occur when perpetrators used alcohol or other drugs at the time of the assault. Since the analyses used in this study are correlational, they cannot be used to confirm a causative relationship between alcohol or other drug use

and sexual assault, particularly for assaults occurring in childhood. The data are also self-reported and the recall of events may have been inaccurate. The study might have been strengthened by including a number of other measures such as victims' alcohol or drug use and extent of alcohol or other drug use at the time of assault as well as the victims' and perpetrators' history of alcohol use disorders.

However, since the study indicates that alcohol and drug use result in more violence and days lost to usual activities, more efforts by educators, advocates, and policy makers may need to be directed at limiting men's alcohol and drug use and situations where sexual violence is likely to occur, not only to reduce harm from sexual assaults but also in the hopes of preventing sexual assaults.

NOTE

1. The cluster analysis involved identifying cluster solution using all binary variables with binary squared Euclidean distance as proximity measure and using Ward's method for joining observations, which tends to produce more equally sized groups of observations (both concurrent and post assault effect in same analysis). The fusion density coefficients were used to identify break points for cluster solution. The clustering attributes were examined by cluster membership to identify meaning of clusters and to assign a name to each cluster.

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