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The Relationship Between the Quantity of Alcohol Consumed and the Severity of Sexual Assaults Committed by College Men

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Researchers have suggested that intoxicated perpetrators may act more violently than other perpetrators, although empirical findings have been mixed. Past research has focused on whether or not alcohol was consumed, rather than the quantity consumed, and this may explain these inconsistent findings. The authors hypothesized that the quantity of alcohol consumed would have a curvilinear relationship to the severity of the assault. Data were collected from 113 college men who reported that they had committed a sexual assault since the age of 14. The quantity of alcohol that perpetrators consumed during the assault was linearly related to how much aggression they used and was curvilinearly related to the type of sexual assault committed. The quantity of alcohol that victims consumed during the assault was linearly related to the type of sexual assault committed. Strategies for improving assessment of alcohol consumption in sexual assault research are discussed.

Keywords: *sexual assault; alcohol; perpetration; college students*

Research with convicted rapists, community samples of sexual assault perpetrators and victims, and college student perpetrators and victims consistently finds that approximately half of sexual assaults are associated with alcohol use by the perpetrator, victim, or both (Abbey, McAuslan, & Ross,

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1998; Abbey, Ross, McDuffie, & McAuslan, 1996a; Ageton, 1983; Harrington & Leitenberg, 1994; S. E. Martin & Bachman, 1998; Muehlenhard & Linton, 1987; Scully, 1991). Although findings are mixed, alcohol-involved sexual assaults are often more violent and more likely to be completed rapes (Abbey, Ross, McDuffie, & McAuslan, 1996b; Ullman, Karabatsos, & Koss, 1999a, 1999b).

Alcohol reduces people's ability to engage in complex, higher order cognitive processes and encourages them to focus on the most salient cues in a situation (Peterson, Rothfleisch, Zelazo, & Pihl, 1990; Steele & Josephs, 1990; Taylor & Leonard, 1983). Thus, alcohol consumption may contribute to some sexual assaults because it allows perpetrators to focus on their immediate feelings of sexual desire and entitlement rather than on more distal cues such as the victim's suffering or their own sense of morality (Abbey, Zawacki, Buck, Clinton, & McAuslan, 2001). In laboratory studies that use willingness to deliver shock to a confederate as a proxy for aggression, intoxicated men retaliate strongly if they feel threatened, and once they begin to act aggressively, it is difficult to make them stop (Taylor & Chermack, 1993). Although dose of alcohol is positively related to levels of aggression in these studies, both ethical and practical reasons limit the quantity of alcohol to an amount that typically results in a blood alcohol level of 0.10. People often reach much higher levels of intoxication in natural drinking situations, and levels of intoxication above a blood alcohol level of about 0.20 strongly impair cognitive and motor skills (Schuckit, 1995). At this level of intoxication, individuals are likely to be clumsy and unable to engage in behaviors that require a thoughtful, coordinated response (Giancola, 2002; Pernanen, 1993). This suggests that there may be a curvilinear relationship between perpetrators' alcohol consumption and their aggressiveness. At low and moderate levels of consumption, alcohol is hypothesized to encourage perpetrators to use greater force, which in turn leads to greater victim resistance and injuries (Ullman et al., 1999a). Alcohol-induced cognitive and motor impairments at high levels of consumption may be so severe that perpetrators cannot act effectively, thus they are less able to commit acts of aggression. Furthermore, men are often less able to maintain an erection when severely intoxicated, and therefore, they may be unable to complete a rape (George & Norris, 1991; Wilsnack, Plaud, Wilsnack, & Klassen, 1997).

Intoxicated women also experience cognitive and motor impairments; therefore, they may be less likely than sober women to initially figure out that the perpetrator is trying to sexually assault them. Once the man's assaultive

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intentions are clear, the woman's fear and desire to escape are likely to be the most salient and immediate cues. Thus, at low to moderate doses, alcohol myopia should encourage increased resistance. At high levels of intoxication, however, resistance is expected to decrease because women lack the motor skills needed to effectively resist. Thus, perpetrators may not need to be as physically forceful with extremely intoxicated victims because less force is required to subdue them. This observation is not intended to suggest that perpetrators are any less culpable in these situations. Most state laws clearly indicate that forcing sexual intercourse on someone who is too intoxicated to give consent is rape (Keiter, 1997).

A limitation of past research is that analyses were based on measures of whether or not the perpetrator and the victim consumed alcohol, rather than the quantity of alcohol consumed. The effects of low, moderate, and high doses of alcohol are likely to be quite different; thus, combining all levels of alcohol consumption may mask important dose-related effects. The study described in this article extends past research by considering perpetrators' self-reports of the quantity of alcohol consumed by themselves and their victims. The analyses are designed to replicate and extend the path model tested by Ullman et al. (1999a) by substituting quantity of alcohol consumed for their dichotomous measure of alcohol use. First, the relevant literature is reviewed, and then the study's hypotheses, methods, and results are described.

Research Examining the Relationship Between Alcohol Consumption and Sexual Assault Severity

Using data from a nationally representative survey of college students (Koss, Gidycz, & Wisniewski, 1987), two parallel studies examined the relationship between alcohol consumption and sexual assault outcomes, with one study using men's reports (Ullman et al., 1999a) and one using women's reports (Ullman et al., 1999b). Both studies tested a path model that examined relationships between perpetrators' and victims' alcohol consumption during the assault, perpetrators' aggression, victims' resistance, and severity of the assault (ranging from sexual contact to completed rape). The measure of alcohol consumption during the sexual assault was whether or not the individual drank any alcohol. Both studies also included the participants' current alcohol consumption, the relationship between victim and perpetrator, and type of situation in which the assault occurred.

The two data sets produced results that were not completely comparable. Using perpetrators' reports (Ullman et al., 1999a), victims who drank alcohol during the assault experienced more perpetrator aggressiveness than did nondrinking victims, and whether the perpetrator drank during the assault

was unrelated to his aggressiveness. In contrast, using victims' reports (Ullman et al., 1999b), victims who drank alcohol during the assault experienced less perpetrator aggressiveness than did nondrinking victims, whereas perpetrators who drank alcohol were more aggressive than perpetrators who did not drink. In both data sets, perpetrators' aggressiveness was positively related to victims' resistance, which in turn was positively related to the severity of the assault. Also, in both data sets, participants' current alcohol consumption was related to alcohol consumption during the sexual assault, as was knowing each other less well and not having planned to be together.

Although many of the findings based on perpetrators' and victims' reports were similar, it is difficult to reconcile the different findings regarding the relationship of perpetrators' and victims' alcohol consumption during the assault and perpetrators' aggressiveness. In each data set, participants reported on their own and the other individual's alcohol consumption. Thus, errors in recall and self-serving biases that might affect self-reports could have differential effects depending on whether the perpetrator or victim answered the questions.

Recently, we attempted to replicate and extend Ullman et al.'s (1999b) findings with a sample of college rape victims (Abbey, Clinton, McAuslan, Zawacki, & Buck, 2002). Hypotheses about the effects of the quantity of alcohol consumed could be addressed because this study included questions about the perpetrators' and victims' number of drinks. As found in most research, perpetrators' and victims' alcohol consumption were strongly, positively correlated. Perpetrators' alcohol consumption during the rape had a curvilinear relationship to their aggressiveness, victims' resistance, and victims' injuries. The relationship was mildly *U* shaped, with the highest levels of aggression, resistance, and injuries occurring when perpetrators did not drink at all and when they drank the largest quantities of alcohol. In contrast, victims' alcohol consumption was negatively, linearly related to outcomes such that the more alcohol victims drank, the lower perpetrators' aggressiveness, victims' resistance, and victims' injuries. Next, a path model was examined that included all these variables. When both victims' and perpetrators' alcohol consumption were simultaneous predictors of perpetrators' aggressiveness, only victims' drinking was a significant predictor, with lower drinking levels related to greater aggressiveness. Increased perpetrators' aggressiveness, in turn, was related to increased victims' resistance and injuries. In addition, how much alcohol victims consumed during the rape was positively related to how much alcohol they usually drank at that point in their lives, spending time together that evening at a party or bar, and being in a more casual relationship.

Most of these findings supported the study's original hypotheses, except the shape of the curvilinear effect was not as expected. We had hypothesized that at the highest levels of alcohol consumption, perpetrators' aggressiveness would decrease because of the severe restriction of motor and cognitive skills at very high levels of intoxication (Giancola, 2002; Pernanen, 1993). One limitation of this study was that there were very few reports of extremely heavy drinking. Thus, it is likely that there were not enough severely intoxicated participants to evaluate the full range of alcohol's effects. As noted above, past studies did not assess quantity of alcohol consumed; thus, this study advanced understanding of the relationships between alcohol and sexual assault outcomes by taking quantity consumed into account.

Several other studies have also examined the relationship between whether or not the perpetrator consumed alcohol and sexual assault outcomes. The National Crime Victimization Survey asks victims about the perpetrators' alcohol consumption but not their own alcohol consumption. S. E. Martin and Bachman (1998) found that rapes were less likely to be completed when perpetrators drank alcohol and when victims resisted. In additional analyses of this same survey that included more years of data and more demographic controls, Brecklin and Ullman (2001) also found that perpetrators' alcohol consumption was related to a lower likelihood of rape completion. These studies differ from those described above in that only the perpetrators' alcohol consumption was assessed.

Summary of Hypotheses

This review of theory and empirical research suggests that it is important to measure the quantity of alcohol consumed during sexual assaults. In this study, college men who acknowledged committing sexual assaults reported on their own alcohol consumption and their victims' alcohol consumption. Perpetrators may not always know how much alcohol the victims consumed; however, they were together in a social interaction before the assault occurred. This suggests that in most cases, perpetrators observed their victims' drinking and could provide a reasonable estimate.

First, we hypothesized that there would be a curvilinear relationship between perpetrators' alcohol consumption and the severity of the assault, with severity operationalized as the perpetrators' aggressiveness, the victims' resistance, and the type of sexual assault committed. The shape of the curve depends on the distribution of alcohol consumption. Up to a certain point, the perpetrator's increased intoxication should be related to increased aggressiveness because the cognitive impairments induced by alcohol make it eas-

ier for him to see violence as an appropriate response (Sayette, Wilson, & Elias, 1993). However, at extremely high levels of intoxication, aggressiveness is expected to begin to decline due to alcohol's effects on motor and cognitive skills. Observing the drop-off point requires having enough drinkers at extremely high levels of consumption for the decline to be evident. As noted earlier, in our previous study that examined an independent sample of victims (Abbey et al., 2002), there were not enough reports of heavy drinking to examine the effects of the highest levels of intoxication. College men typically report consuming larger quantities of alcohol than do women (O'Malley & Johnston, 2002); thus, it was our expectation that there would be more reports of heavy drinking in this study of college men. The study described here is viewed as exploratory because of its relatively small sample size (113 perpetrators).

We also hypothesized that the more aggressively the perpetrator behaved, the more the victim would resist. In sequential analyses, Ullman (1998) found that victims' resistance tended to match perpetrators' aggressiveness. Past research has found mixed results regarding the relationship between victims' resistance and outcome severity. Some past research has shown that greater victim resistance is associated with rape avoidance (S. E. Martin & Bachman, 1998; Ullman, 1997), although other studies have found resistance related to more severe assault outcomes (Ullman et al., 1999a, 1999b).

Due to alcohol's effects on cognitive and motor skills, the woman's alcohol consumption was also hypothesized to have curvilinear effects so that resistance would increase with moderate levels of intoxication but diminish at the highest levels of intoxication. Again, finding this curvilinear effect is predicated on having an adequate number of extremely heavy drinkers; at moderate levels of consumption, a linear relationship is expected. Based on past research (Abbey et al., 2002; Ullman et al., 1999a, 1999b), knowing the victim only casually, spending time with her at a party or a bar, and usual alcohol consumption were hypothesized to be positively related to perpetrators' alcohol consumption during the assault.

METHOD

Participants

Participants were 113 male undergraduates at a large, urban, commuter university. These individuals were part of a larger study (Abbey et al., 2001), with participation in the current study restricted to those men who reported

that they had committed a sexual assault since the age of 14. Participants in the current study ranged in age from 18 to 53 years, with a mean age of 23 years. Of the participants, 61% ($n = 69$) were Caucasian, 27% ($n = 30$) were African American, 5% ($n = 6$) were Asian or Pacific Islander, 4% ($n = 5$) were Arabic or Middle Eastern, and the remaining 3% ($n = 3$) were either another ethnicity or did not answer the question. In all, 65% of participants were employed at least part-time, and 32% of participants' fathers and 30% of their mothers had completed college.

Procedures

Participants were recruited through advertisements in the student newspaper, fliers distributed on campus, and announcements made in classrooms about a study of dating experiences. Participants were required to have dated a woman in the past year, to not be married or engaged, and to have lived in the United States at least 10 years due to the purposes of the larger study. Small groups of 3 to 5 men were run in classrooms, which were large enough to allow participants to sit far apart so that no one could see their answers. Participants completed the questionnaire on their own after the experimenter reviewed the consent form with them. The consent form described the content of the questionnaire, indicated that no names or other identifying information were included on questionnaires, and indicated that participants could skip any questions that they wanted but emphasized the importance of providing honest answers to questions that they did answer. When finished, participants placed their questionnaire in an envelope, sealed it, and returned it to the experimenter. They were then paid \$10 or given course extra credit.

Measures

Sexual assault experiences. A modified 12-item version of the Sexual Experiences Survey (SES) (Koss et al., 1987) was used to assess sexual assault perpetration since the age of 14. The SES includes behaviorally specific questions that describe events that constitute various types of sexual assault (e.g., forced sexual contact, verbally coerced sexual intercourse, attempted rape, and completed rape) without labeling them as criminal behavior. Two additional items were included. One item assessed sexual intercourse when consent could not be given (because the victim was too intoxicated by alcohol or drugs or unconscious) (Abbey et al., 1998). The second item, which was the last question in the modified SES, asked if they had committed rape (Koss & Oros, 1982). The SES has been used extensively

and has good internal consistency and test-retest reliability (Koss et al., 1987). Cronbach's coefficient alpha in the present study was .78.

After completing the SES, participants answered questions about their most severe sexual assault. Participants who had committed this type of sexual assault more than once were asked to describe their worst experience. The following information about the worst sexual assault experience was analyzed.

Age. Participants were asked their age and the victim's age at the time of the assault and how long ago it occurred.

Relationship. Participants were asked how well they knew the victim at the time of the interaction on a 7-point scale with options ranging from *not at all well* to *extremely well*. They also described their relationship to the victim with the following categories being used: no relationship, just met, acquaintance, friend, casual date, steady date, or ex-girlfriend.

Location and time spent together. Participants were asked to look at a list of locations (e.g., his house, her house, a party) and to check all the locations that they were at with the victim during the interaction. They then indicated in minutes or hours how much time they spent together on this occasion.

Alcohol consumption. Participants were asked how much alcohol they consumed before they interacted with the woman that day and how much alcohol they consumed during their interaction with her. Their responses to these two questions were summed to assess total alcohol consumption prior to the incident. A drink of alcohol was defined as 12 ounces of beer, 4 ounces of wine, a 10-ounce wine cooler, or 1 ounce of liquor. Participants' scores ranged from 0 to 24 drinks. Responses were skewed; thus, they were winsorized by collapsing the high end of the scale (Winer, 1971). A 10-point scale was developed with scores ranging from 0 drinks to 9 or more drinks. Two parallel questions assessed the participant's best estimate of the victim's alcohol consumption prior to and during their interaction. This measure was also skewed (with scores ranging from 0 to 18 drinks) and recoded to form a 10-point scale.

To assess participants' usual frequency of alcohol consumption at the point in their lives that the sexual assault occurred, they were asked the approximate number of days they drank in the month prior to the sexual assault. Responses ranged from 0 to 30 days.

TABLE 1: Descriptive Information About Participants' Sexual Assaults (N = 113)

Variable	M	SD
Number of years since assault	2.76	2.84
Man's age at time of sexual assault	18.62	3.51
Woman's age at time of sexual assault	18.30	3.47
How well they knew each other ^a	5.08	1.73
Perpetrator's aggressiveness ^b	2.50	1.17
Victim's resistance ^b	2.62	1.16
Amount of time spent together (hours)	6.68	11.33
Man's alcohol consumption	2.49	2.94
Woman's alcohol consumption	2.31	2.57

a. Measured as 1 = *not at all* to 7 = *extremely well*.

b. Measured as 1 = *not at all* to 4 = *quite a bit*.

Perpetrators' aggressiveness. Participants were asked to rate the extent to which they used verbal pressure, threats of physical force, and physical force to obtain sex during the sexual assault using a 4-point scale with response options ranging from *not at all* to *quite a bit*. Rather than averaging participants' responses, we used the item to which they gave the most extreme response to assess their strongest degree of aggressiveness.

Resistance. Participants also indicated the extent to which the victim resisted by using six different verbal (e.g., saying no) and physical (e.g., pushing him away, punching, hitting, or kicking) strategies using a 4-point scale with options ranging from *not at all* to *quite a bit*. As for the measure of perpetrators' aggressiveness, rather than averaging participants' responses, we used the item to which they gave the most extreme response to assess the victim's strongest degree of resistance.

RESULTS

Of the participants, 45% reported that the highest level of sexual assault they committed was an act of forced sexual contact ($n = 51$), for 30% it was verbally coerced intercourse ($n = 34$), for 8% it was attempted rape ($n = 9$), and for 17% it was completed rape ($n = 19$). As can be seen in Table 1, the sexual assaults that these men described occurred, on average, almost 3 years earlier, when participants and their victims were approximately 18 years old. On average, as seen in Table 2, participants knew the women quite well; the

TABLE 2: Type of Relationship and Location of the Interaction for Participants' Sexual Assaults (N = 113)

<i>Variable</i>	n	%
Type of relationship		
Just met at party/bar	1	0.9
Friend/acquaintance	10	8.8
Casual date	37	32.7
Steady date	62	54.9
Ex-girlfriend	3	2.7
Locations of the interaction ^a		
Woman's home	41	36.3
Man's home	25	22.1
Restaurant	21	18.6
Movie theater	21	18.6
Party/bar	22	19.5
Car or outdoors	14	12.4

a. Participants could report multiple locations during the interaction; thus, percentages do not total to 100%.

most common relationship between the man and woman was a steady dating relationship. The total length of the interaction during which the sexual assault occurred averaged more than 6 hours (see Table 1). The most common locations where at least part of this interaction occurred were the woman's home and the man's home (see Table 2).

The Linear and Curvilinear Effects of Alcohol Consumption

Determination of whether the relationship between alcohol consumption and assault outcome was linear or curvilinear was based on hierarchical regression analyses using Cohen and Cohen's (1975) approach. First, a regression analysis was conducted in which the standard linear alcohol consumption term was the only predictor variable. Second, a regression analysis was conducted that included both the linear and quadratic terms as predictors: alcohol consumption and alcohol consumption squared. Third, the change in R^2 between the two equations was used to evaluate whether the quadratic term was needed to explain the relationship between alcohol consumption and each outcome measure. Three different sets of regression analyses were conducted to examine three different severity outcomes: perpetrators' aggressiveness, victims' resistance, and sexual assault outcome severity. Sexual assault outcome severity was created using the same approach Ullman et al. (1999a, 1999b) developed. The items in the SES were placed in

order of increasing severity, with acts of verbally coerced sexual contact that involved no penetration having the lowest severity, then physically forced sexual contact, then verbally coerced sexual intercourse, then attempted sexual intercourse, then sexual intercourse when the woman was unable to give consent, then physically forced sexual intercourse, and with physically forced sex acts having the highest severity.

The top half of Table 3 shows the results when perpetrators' alcohol consumption was used to predict the outcome measures; the bottom half of Table 3 shows the results when victims' alcohol consumption was used to predict these same outcome measures. Perpetrators' alcohol consumption was positively, linearly related to their aggressiveness, such that the more they drank during the sexual assault, the more aggressively they behaved. The curvilinear effect was not significant. Surprisingly, perpetrators' alcohol consumption was unrelated to victims' resistance; neither the linear or curvilinear effect was significant. Although perpetrators' alcohol consumption was significantly linearly related to outcome severity, there was also a significant curvilinear effect. The R^2 increased from 0.03 to 0.07 when the quadratic term was added to the regression equation. Although the amount of variance explained was relatively small, the addition of the quadratic component produced a significant increase in R^2 , $F(1, 109) = 5.00$, $p < .05$.

The form of the curvilinear effect relating perpetrators' alcohol consumption to sexual assault outcome severity was examined by using Statistical Package for the Social Sciences (Version 8) to draw the best fitting line through the data points. An inverted U pattern was found. Outcome severity increased gradually between zero and four drinks. It remained constant until perpetrators' consumption reached nine or more drinks, the highest level of alcohol consumption included, and at this point, it declined.

The bottom half of Table 3 includes parallel analyses examining the relationship between victims' alcohol consumption and these same dependent variables. Adding the quadratic component did not significantly increase the R^2 for any of the outcome measures. Contrary to expectation, there was no significant linear or curvilinear relationship between victims' alcohol consumption during the sexual assault and perpetrators' aggressiveness or victims' resistance. There was a significant positive, linear relationship between victims' alcohol consumption and outcome severity. The more alcohol victims drank, the more severe the type of sexual assault they experienced.

Path Model Summarizing Alcohol's Effects

In path analysis, a series of multiple regression analyses are conducted in which a dependent variable at one step becomes an independent variable at a

TABLE 3: Hierarchical Regression Analyses Examining the Linear and Quadratic Effects of Perpetrators' and Victims' Alcohol Consumption (N = 113)

Variable	<i>Perpetrators' Aggressiveness</i>				<i>Victims' Resistance</i>				<i>Sexual Assault Outcome Severity</i>			
	B	SE B	R ²	ΔR ²	B	SE B	R ²	ΔR ²	B	SE B	R ²	ΔR ²
Perpetrators' drinking												
Step 1: Perpetrators' alcohol consumption	0.19*	0.04	0.04	—	-0.08	0.04	0.01	—	0.18*	0.11	0.03	—
Step 2: Curvilinear drinking term	0.32	0.02	0.04	0.00	-0.85	0.02	0.03	0.02	-1.06*	0.06	0.07	0.04*
Victims' drinking												
Step 1: Victims' alcohol consumption	0.07	0.04	0.01	—	-0.10	0.04	0.01	—	0.23*	0.13	0.05	—
Step 2: Curvilinear drinking term	0.19	0.02	0.01	0.00	-0.42	0.02	0.02	0.01	0.10	0.06	0.05	0.00

* $p < .05$.

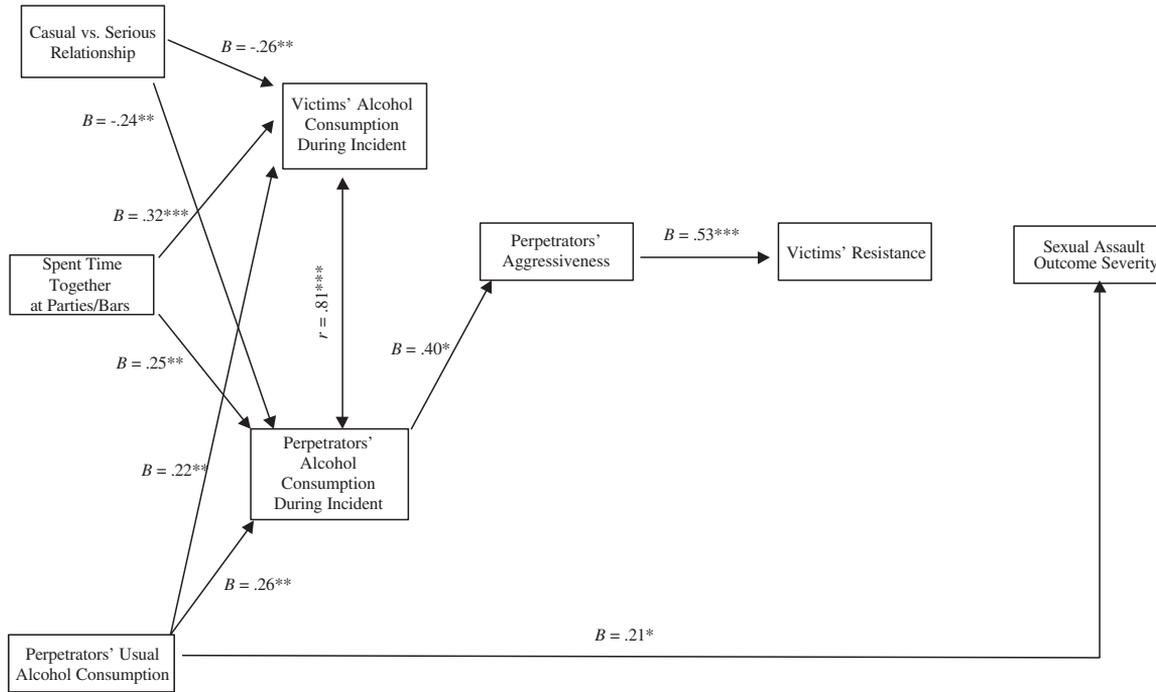


Figure 1: Path-Analytic Model of the Relationships Between Alcohol Consumption and Sexual Assault Severity

NOTE: Only significant paths are included. Standardized betas are shown.

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

later step (Kenny, 1979). Path analysis, like structural equation modeling, tests intervening paths. However, unlike structural equation modeling, path analysis does not require a large sample size, does not assess latent concepts, and examines each dependent variable sequentially. The results of our path analyses, which are based on those of Ullman et al. (1999a, 1999b), are depicted in Figure 1.

The first step involved a multiple regression analysis in which three variables were included as potential predictors of how much alcohol the perpetrator consumed during the incident: (a) his relationship to the victim (dummy coded as 0 = casual, meaning just met at party/bar, friend/acquaintance, or casual date; 1 = serious, meaning steady date or ex-girlfriend), (b) whether any time was spent during the interaction at parties or bars (dummy coded as 0 = no time spent together at parties or bars, 1 = some time spent together at parties or bars), and (c) his usual frequency of alcohol consumption at that point in his life. As can be seen in Figure 1, perpetrators who were in a serious relationship with the victim were significantly less likely to drink alcohol during the incident than were perpetrators in a more casual relationship. Perpetrators who spent time that evening with the victim at a party or a bar were significantly more likely to be drinking alcohol than those who did not. The more frequently perpetrators usually drank at that point in their life, the more alcohol they consumed during the incident. Being in a more casual relationship, spending time together at a party or bar, and perpetrators' usual alcohol consumption were also all significantly related to victims' alcohol consumption during the sexual assault. Perpetrators' and victims' alcohol consumption were strongly, positively correlated. The simple bivariate correlation is shown in Figure 1 because there was no a priori reason to assume that causality flowed in one direction.

Next, a regression analysis was conducted in which perpetrators' aggressiveness was the dependent variable and type of relationship, time spent at parties or bars, perpetrators' usual alcohol consumption, perpetrators' alcohol consumption during the incident, and victims' alcohol consumption during the incident were the independent variables. The only significant predictor was perpetrators' drinking during the incident (see Figure 1; for ease of presentation only significant betas are shown). The more alcohol perpetrators consumed, the more aggressively they behaved during the incident.

In the next step of the model, victims' resistance during the incident was predicted using all the variables to the left of it in the model. As can be seen from Figure 1, only perpetrators' aggressiveness was a significant predictor of resistance. The more aggressively perpetrators behaved, the more victims resisted.

For the final step of the model, the severity of the sexual assault was predicted by all the other variables in the model. Perpetrators' usual frequency of alcohol consumption was the only significant predictor. The more frequently perpetrators drank at the time they committed the sexual assault, the more severe the type of assault they committed.

DISCUSSION

This study's findings replicate and extend past research. As found in other studies, perpetrators' alcohol consumption during sexual assault was linearly related to their increased aggressiveness, and victims' alcohol consumption was linearly related to more severe forms of assault being committed (Abbey et al., 1996a; Ullman et al., 1999b). Also, the more aggressive perpetrators were, the more victims resisted (Ullman et al., 1999a, 1999b). The relationship between perpetrators' alcohol consumption and the severity of the type of assault committed had an inverted *U* shape, with higher levels of assault being committed when a moderate amount of alcohol was consumed. As noted in the introduction, there is evidence that at extremely high levels of intoxication, perpetrators are less likely to be able to complete a rape (Brecklin & Ullman, 2001; S. E. Martin & Bachman, 1998). Given our small sample size, we view this as an exploratory study. These results need to be replicated with a much larger sample of sexual assault perpetrators to fully understand the dose-related effects of alcohol consumption. In addition to asking detailed questions about the quantity of alcohol consumed, questions are also needed in future research that assess the number of hours over which the drinks were consumed, whether they were consumed on an empty stomach or with food, weight, and whether the individual was accustomed to consuming this quantity of alcohol. Such questions can help determine what participants' likely blood alcohol level would have been at the time of the sexual assault. Asking participants how intoxicated they felt would also be useful because this would be an indirect measure of tolerance.

Perpetrators' usual drinking at the time of the sexual assault, being in a casual relationship with the victim, and spending time at a party or bar with her were positively related to perpetrators' and victims' alcohol consumption during the sexual assault. Unlike past research, this study's measure of usual drinking reflected how frequently perpetrators drank at that point in their lives. Other researchers have used perpetrators' current drinking, which may be an outcome of the sexual assault rather than a predictor of it (Ullman et al., 1999a).

Victims' resistance was not significantly related to the severity of the type of sexual assault. In two studies that examined a similar path model, greater victim resistance was associated with more extreme types of sexual assault (Ullman et al., 1999a, 1999b). However, in other past research, increased victims' resistance has been linked to less severe outcomes (Ullman, 1997). More than half of the perpetrators in this study reported that the victim was a steady girlfriend. Although most college sexual assaults occur in the context of dating and parties, this is a higher percentage of close relationships than other studies typically find (Harrington & Leitenberg, 1994). Physical resistance may be less common in close relationships (Cleveland, Koss, & Lyons, 1999). If a woman's boyfriend is pushing for a greater degree of sexual intimacy than she wants, her trust and desire to maintain a relationship might lead her to try to reason with him rather than to engage in physical resistance. Ullman (1998) found that the type of resistance strategies used by victims tended to match the type of force used by perpetrators, with verbal force being resisted verbally and physical force being resisted physically. In this study, most perpetrators reported using verbal strategies, and most victims responded verbally. Alcohol's role may also vary based on the type of relationship. In casual relationships, perpetrators may seek out intoxicated women because they view them as easy targets and fair game (Kanin, 1985). In close relationships, alcohol may be perceived as a signal for sexual intimacy. Researchers have found that when college students read stories about couples on dates, alcohol consumption is associated with the perception that consensual sex will occur (Norris & Cubbins, 1992). Research is needed that systematically compares the characteristics of sexual assaults that occur in close versus casual relationships, with and without alcohol consumption, and how these characteristics affect the strategies used by perpetrators and victims.

How frequently the perpetrator reported drinking at the point in his life that the sexual assault occurred was the only significant predictor in the path model of the severity of the type of sexual assault that he committed. Studies of incarcerated rapists have frequently found that indicators of alcoholism or heavy drinking are associated with perpetration (Seto & Barbaree, 1997). This study did not include a measure of problem drinking; however, this finding suggests that heavy drinking is a risk factor for sexual assault perpetration among college men.

Although a strength of this study was the assessment of the quantity of alcohol consumed during the sexual assault, this study also had several limitations. Cross-sectional data were used; thus, causality cannot be determined. On average, the sexual assaults that participants described occurred almost 3 years earlier. Thus, errors in recall are possible, particularly for men who

were severely intoxicated. Errors in estimating the victims' alcohol consumption may also have occurred. Most participants spent several hours with the woman and knew her fairly well; thus, they were comfortable estimating her alcohol consumption. Some men may have underestimated how much the woman drank either because they did not know she had been drinking earlier that day or did not realize she was drinking particularly strong drinks.

Some qualitative studies suggest that perpetrators may want to exaggerate how much they drank because it provides a justification for what they did. Of the college date rapists interviewed by Kanin (1984), 62% felt that they had committed rape because of their alcohol consumption. These perpetrators did not see themselves as "real" criminals because real criminals used weapons to assault strangers. Similarly, some perpetrators may want to exaggerate how much the victim drank because they perceive intoxication as an acceptable seduction strategy (P. Y. Martin & Hummer, 1989; Mosher & Anderson, 1986). In contrast, evidence from recent vignette research suggests that some men may want to minimize the amount the victim drank because they think it makes them look bad. For example, Stormo, Lang, and Stritzke (1997) found that when college students evaluated an acquaintance rape scenario, sober men were perceived as being more responsible when they raped an intoxicated woman, presumably because they were seen as taking unfair advantage of her. The legal system has vacillated over the years as to when and if intoxication mitigates the seriousness of a crime (Keiter, 1997); thus, it is not surprising that perpetrators' and lay people's opinions also vary. Additional research is needed to understand the circumstances under which intoxication is seen as a justification for sexual assault. Overall, the quality of most self-report data suggest that perpetrators are trying to be accurate. Studies that include more specific follow-up questions about how much alcohol was consumed at what points in the interaction might make it easier for perpetrators and victims to recall the details of incidents that may have occurred several years earlier, thereby further increasing the accuracy of self-reports and providing important information about the generalizability of these results.

The strong positive correlation between perpetrators' and victims' alcohol consumption precluded examining their independent effects; only 9 men reported that either they or the woman drank alone. How much aggression the perpetrator needs to use to achieve forced sex is likely to vary depending on whether both the perpetrator and victim drink alcohol, only the perpetrator drank, or only the victim drank. To address this issue, studies need large samples, because typically if either individual drinks, then both do, particularly in college samples (Abbey et al., 1998; Harrington & Leitenberg, 1994). In a national sample of sexual assault victims, Ullman and Brecklin (2000) found

that when victims were drinking, the perpetrators were always drinking. However, they were able to compare incidents that involved no alcohol consumption, only the perpetrator drinking, and both the perpetrator and the victim drinking. Having only the perpetrator drink was related to more injuries to the victim; however, having both drink was unrelated to victims' injuries. This study provides some suggestive findings; however, studies are also needed that include situations in which only the woman drank and that use perpetrators' reports of what occurred.

Sexual assault is only one of many serious consequences of college students' heavy alcohol consumption. The National Advisory Council on Alcohol Abuse and Alcoholism's Task Force on College Drinking has recently recommended prevention initiatives that emphasize the role that administrators, parents, peers, media, and local, state, and federal policy makers can play in reducing students' alcohol consumption and alcohol-related problems. (The *Journal of Studies on Alcohol*, 2002, Supplement No. 14 is devoted to this topic.) Multilevel approaches that address a variety of individual, social, and environmental factors simultaneously are most likely to succeed. Examples of environmental-level strategies that can be implemented by college administrators include supporting social and extracurricular activities that are alcohol free, modifying the academic schedule to discourage beginning the weekend on Thursday, restricting alcohol industry sponsorship of campus activities, and enforcing campus rules and sanctions regarding underage drinking (DeJong & Langford, 2002). Although many sexual assaults do not involve alcohol consumption, any prevention program that successfully reduces college students' alcohol consumption is likely to also reduce the rate of alcohol-involved sexual assaults.

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