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The relationship between drug use and sexual aggression in a sample of men was examined at five time points from adolescence through the fourth year of college. Hierarchical Linear Modeling explored the relationship between proximal drug use and level of sexual aggression after controlling for proximal alcohol use at each time period. Results revealed that level of proximal drug use was associated significantly with sexual aggression severity: increased levels of drug use predict increased levels of sexual aggression across time. A second set of analyses explored the relationship between distal marijuana use and level of sexual aggression after controlling for distal alcohol use. Results indicated that increased levels of marijuana use predicted increased levels of sexual aggression across time. A third set of analyses explored the relationship between distal use of other illicit drugs and level of sexual aggression after controlling for distal alcohol use. Results mirrored the results of the second set of analyses. Results are discussed in terms of drug use as a component of deviant lifestyles that may include sexually aggressive behavior.

RELATIONSHIPS BETWEEN DRUG USE AND MALE SEXUAL AGGRESSION ACROSS TIME

by

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TABLE OF CONTENTS

Page

CHAPTER I

INTRODUCTION

College-age men, on average, display a relatively high rate of sexually aggressive behavior (Koss, Gidycz, & Wisniewski, 1987). According to a national survey of college men, 25.1% reported engaging in at least one instance of sexually aggressive behavior subsequent to the age of 14. Moreover, 7.7% of the men in this sample reported engaging in behavior that met the legal definition of rape or attempted rape (Koss, et al., 1987). These figures have been supported in more recently published studies (White & Smith, 2004). Researchers have established many links between male sexual aggression and alcohol-related factors (e.g., Abby et al., 2001; Ullman, 2003); however, much less is known about a link between male sexual aggression and drug-related factors. The current research intends to fill this void in the literature by examining the relationships between both proximal and distal drug use and male sexual aggression.

Previous research has relied heavily on victims' accounts of perpetrators' level of drunkenness or level of drug intoxication at the time of the sexual assault. It is important to remember, however, that in sexual assaults where perpetrators are under the influence of drugs or alcohol, a large proportion of victims are also under the influence (Ullman, 2003). Therefore, it is likely that in assaults where drugs or alcohol are factors, information obtained directly from perpetrators is more accurate than second-hand information from their victims. Collecting personal information such as substance use

patterns, perpetration or victimization history, or presence of psychopathology directly from sexual perpetrators, however, has proven to be a difficult task for researchers in the field. Sexual perpetrators do not easily stand out in society, and only a small percentage of them are brought to justice. Moreover, information concerning the lifestyles or psychological adjustment of those men who are brought to justice is rarely collected or made available to researchers for analysis. Men who are "caught" may not represent the population of sexually aggressive men, most of who do not end up in prison (Malamuth, Check, & Briere, 1986).

In the present research, we had the opportunity to analyze longitudinal data collected via self-report directly from sexually aggressive men. We are able, therefore, to test novel hypotheses concerning substance use patterns of sexually aggressive men. The purpose of the present research is to examine the link between substance use and sexual aggression in men. In the next section, we review the relevant literature on the link between sexual aggression and alcohol use. We examine this link first because it has been extensively studied; thus, this literature provides guidance in establishing a link between sexual aggression and drug use.

Sexual Aggression and Alcohol Use

Alcohol use has been asserted as one of many situational factors linked to sexual aggression. Researchers estimate that 50-74% of sexual assaults are perpetrated by men who had recently used alcohol (Abby et al., 2001; Koss, 1988; Pernanen, 1991). Women report that dates in which they experience sexual aggression are more likely to include heavy drug or alcohol use compared with dates in which there is no aggression

(Muehlenhard & Linton, 1987). Most studies have reported that victim and perpetrator alcohol use is highly correlated, making interpretation of the respective effects of each person's alcohol use on the occurrence and outcome of any sexual aggression nearly impossible. Two studies were able to isolate perpetrator alcohol use and showed that in cases where perpetrators were using alcohol and victims were not there was a higher percentage of both rape completion (Brecklin & Ullman, 2002) and victim injury than when both parties were using alcohol (Ullman & Brecklin, 2000). It is possible that alcohol use increases perpetrators' aggression, whereas lack of alcohol use increases victims' resistance. This is not to suggest that alcohol use is a causal factor in sexual assaults; it is unlikely that alcohol causes a man to become sexually aggressive if he does not already possess such tendencies (Seto & Barbaree, 1995). It is more likely that the temporary effects of alcohol aid the perpetrator in overcoming personal inhibitions toward sexual aggression. It has also been posited that situations conducive to sexual aggression may include alcohol (e.g., bars or large parties; Lackie & de Man, 1997).

There is disagreement within the literature concerning a distal link between alcohol use and sexual aggression. This disagreement may stem from the manner in which researchers define the constructs under consideration. Although researchers typically use the Sexual Experiences Survey to assess sexual aggression (SES, Koss et al., 1987), there is little agreement on how to operationally define distal alcohol use. For instance, Ouimette (1997) defines it as "meeting a diagnosis for alcohol abuse or dependence," whereas Koss and Gaines (1993) used a less restrictive definition and measured intensity of alcohol use ranging on an ordinal scale from "*I do not drink"* to

"*when I drink I get wasted*." Both definitions resulted in findings suggesting of a positive correlation between alcohol use and severity of sexual aggression.

Other researchers have found a null relationship between sexual aggression severity, assessed via the SES, and frequency of alcohol consumption (Calhoun, Bernat, Clum & Frame, 1997; Lackie & de Man, 1997; Rubenzahl & Corcoran, 1998). Most researchers in the field, however, agree that there is an association between male sexual aggression and a history that includes binge drinking (O'Leary & Schumacher, 2003) and general heavy alcohol use (Abby, Ross, & McDuffie, 1994; Berkowitz, 1992; Koss & Dinero, 1998). It is likely that these conflicting results are due to the differences in how alcohol use was operationally defined. Those that simply measure frequency of alcohol consumption (e.g., Calhoun et al., 1997) tend to find a null relationship with sexual aggression severity, whereas those that take levels of consumption into account (e.g., Koss & Gaines, 1993) tend to support this relationship. This explanation supports the argument that it may not be the effect that alcohol has on the person that leads to the sexually aggressive behavior; rather, it is more likely that the increases in sexually aggressive behavior are a byproduct of a lifestyle that includes increased levels but not necessarily increased frequency of alcohol consumption.

Sexual Aggression and Drug Use

Compared to research on alcohol, the literature on the relationship between drug use and violence against women is sparse (Fals-Stewart, Golden, Schumacher, 2003). The few studies that have examined this relationship were unable to separate the effects of drugs and alcohol, and they have frequently grouped these substances together for

analyses. Although these analyses are informative, there is a clear need to examine these agents separately. In one of the few studies linking men's use of drugs and their sexual aggression, Kilpatrick, Acierno, Resnick, Saunders, and Best (1997) examined drug use in women who had experienced sexual victimization. They found that women's drug use, but not alcohol use, was related to their later sexual victimization. Thus, the relationship between women's drug use and their victimization may be a function of their relationships with men who also use drugs (Testa, 2004). Women who use drugs often associate with men who do the same, and perhaps increased levels of drug use are related to increased levels of sexual aggression in men. Drug use may be the factor that brings victims close to a group of men with relatively high levels of sexual aggression.

In the present research, when examining the distal relationship between drug use and sexual aggression, drug use was analyzed as one class of substances. Alternatively, when examining the proximal relationship between drug use and sexual aggression, drug use was separated into two classes: "marijuana use" and "other illicit drug use." Marijuana is one of the few drugs to have been explored in relation to violence against women. Researchers have suggested that the use of marijuana is not related to violence against women due to its pharmacological subduing effects and to the stereotypical perceptions of its users as a way to "chill." Although this null relationship has been found in studies that have examined the proximal relationship between marijuana and male-to-female physical aggression (Fals-Stewart, Golden, Schumacher, 2003), this may not be true when examining sexual aggression. The context for physical and sexual aggression may be sufficiently different to question generalizing from one to the other (Swartout &

White, 2007). Marijuana is an illegal drug in the United States; men who choose to use it recreationally at increasing levels are likely to engage in other unlawful behaviors, resulting in a increasingly deviant lifestyle that is likely to include sexual aggression.

The Present Study

Prior research on substance use and sexual assault has yet to establish a relationship between marijuana use, other drug use, and sexual aggression severity despite a call within the literature to do so (Testa, 2004). In the present study, the effects of drug and alcohol use on sexual aggression severity were separated. Most research in this area restricts its scope to either proximal or distal relationships between substance use and sexual aggression severity; this study approaches the topic from both standpoints by reporting the relationships between sexual aggression severity and both situational drug use and general frequency of drug use.

Drawing data from a 5-year longitudinal data set, this study analyzes the relationships between men's drug use and sexual aggression over time. First, we hypothesized that situational drug use would positively and significantly predict severity of sexual aggression at each point in time. To disentangle the effects of situational drug use from alcohol use, situational alcohol use was controlled for in the analysis. Second, we hypothesized that frequency of distal marijuana use would positively and significantly predict severity of sexual aggression at each point in time after controlling for the effects of frequency of alcohol use. Finally, we hypothesized that frequency of distal illicit drug use (other than marijuana) would positively and significantly predict severity of sexual

aggression at each point in time after controlling for the effects of frequency of alcohol use.

CHAPTER II

METHOD

Participants

The data used in this study come from a larger longitudinal study of social experiences (see White & Smith, 2004). Men from three incoming classes (N = 851) at a medium-size state university were asked to complete a series of five questionnaires over a four-year period. Participants completed the first set of surveys upon initially entering the university, and the subsequent four sets of data were collected in the spring semester of their freshman, sophomore, junior, and senior years of college. Yearly retention averaged 71%. Participants were paid $15 upon the completion of the set of surveys each spring. All men were traditional college students who were between age 18 and 19 at the time of the first set of surveys. This university is considered to be representative of all state universities, the type that 80% of all US college students attend (Carnegie Foundation for the Advancement of Teaching, 1987).

Procedure

The purpose and method of the study were explained to participants prior to their completion of the first wave of surveys. For follow-up purposes, participants completed contact sheets with the name and contact information of a person who would know how to reach them the next year, in the event that there were problems contacting the student the next spring. Surveys and contact sheets were assigned code numbers and collected separately to ensure confidentiality. The list associating code numbers and names of

participants was kept in a locked safe. Further, a federal Certificate of Confidentiality was obtained from the National Institutes of Mental Health to enhance students' confidence that their information was indeed protected.

For the purposes of the present study, a subsample was constructed that was restricted to the men who reported engaging in sexual activity during adolescence (N = 621). Within this subsample, the average participant age was 18.47; approximately 26.2% were African-American, 68.3% were Caucasian, and 5.5% belonged to other ethnic groups; and 23% of the subsample of men completed all five sets of surveys across the four years.

Measures

Sexual perpetration experiences. Sexual perpetration was assessed using the Sexual Experiences Survey (SES; Koss et al., 1987), which categorizes men's sexual experiences into one of six levels: (1) none[1]; (2) consensual only; (3) unwanted contact; (4) verbal coercion; (5) attempted rape; or (6) rape. These categorizations were based on responses to 11 items that were ordered in terms of severity from only consensual experiences to rape. For the purposes of this research, the severity of participants' sexual aggression was analyzed. Participants were, therefore, categorized by their most sexually aggressive act reported at each time point—each participant had five scores, each of which could range from one to six during four years of college. This serves as the outcome variable in the analyses.

[1] Participants who endorsed this response during the first data collection point were excluded from the subsample.

Situational drinking and drug use. The situational drinking and drug use measures stemmed from a set of follow-up questions to the SES. Participants were asked to identify the last item on the SES they endorsed. They were asked to think back to that experience to answer a set of specific questions regarding their relationship to the victim and features of the situation. Two questions were asked: "Regarding this experience, were you drinking at the time?" and "Regarding this experience, were you using drugs and the time?" For each question, participants could endorse: (1) No; (2) Yes, but I was not intoxicated/high; (3) Yes, I was somewhat intoxicated/high; or (4) Yes, I was very intoxicated/high.

Frequency of drinking and drug use. Men's general drinking and drug use habits were assessed using three questions. The specific questions were: "How often do you drink alcohol?" "How often do you use marijuana?"; "How often do you use drugs other than alcohol or marijuana?" (all with responses on a 5-point scale ranging from "*never*" to "*more than twice a week*" within the past year).

CHAPTER III

RESULTS

Data Analysis Strategy

All hypotheses were tested using Hierarchical Linear Modeling (HLM). Essentially, the first level of an HLM equation resembles a multiple regression equation. There is an intercept and multiple slopes that estimate the relationship between variables. Each level 1 equation however, represents either a time point within a person (the first analysis) or a time point within a specified group of people determined by people's mean responses to a variable (the second analysis). To be clear, the trajectories provided by the intercepts and slopes of level 1 vary within level 2; the purpose of HLM is to explain this variability (Raudenbush & Byrk, 2002).

Level of Sexual Aggression across Time

White and Smith (2004) previously described the percentage of men engaging in sexual aggression at each point in time. They found that these percentages consistently decreased between adolescence and the fourth year of college (22.4%, 13.4%, 12.1%, 12.4%, and 7.6% respectively). Furthermore, the present study found that sexual aggression severity, at the person-level, significantly and consistently decreased over time.[2] This trajectory was judged by the relationship between the time and sexual aggression variables, $\pi_{1j} = -.087$, $SE = 0.022$, $t(1226) = 4.00$, $p < 0.001$. Taken together, these results suggest that not only did the percentage of men engaging in sexually

[2] Test for a quadratic relationship between sexual aggression levels and time proved nonsignificant, indicating participants' trajectories of sexual aggression across time are linear.

aggressive behavior decrease across time, the severity of the sexual aggression perpetrated also decreased between adolescence and the fourth year of college—men who engaged in sexual aggression committed less severe forms across time.

Proximal Substance Use and Sexual Aggression

A random coefficients model was used to assess the relationship between proximal substance use and sexual aggression. Level of sexual aggression was the outcome variable in the first analysis. Proximal drug use and time were modeled as uncentered variables; proximal alcohol use was a covariate. The participant ID variable stood alone at the second level of this model. The intercept of this model was interpreted as the level of sexual aggression of a man who reports no situational drug use at the first time point (adolescence), after adjusting for level of situational alcohol use. The variance coefficients corresponding to the intercept and proximal drug use variable were modeled as random effects.[3]

In a test of hypothesis 1, proximal drug use was a positive and significant predictor of sexual aggression level at each point in time, $\pi_{2j} = 0.216$, $SE = 0.094$, $t(705) = 2.305$, $p = 0.021$, after controlling for the variance associated with proximal alcohol use.[4] This clearly indicates a significant relationship between the proximal effects of drug use and sexual aggression severity.

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[3] The variance coefficients corresponding to time ($u_{1j} = .027$, $p > .500$) and proximal alcohol use ($u_{3j} = .162$, $p = .113$) were nonsignificant; they were therefore modeled as fixed effects.

[4] Proximal alcohol use also significantly predicted sexual aggression, $\pi_{3j} = 0.219$, $SE = 0.046$, $t(1226) = 4.803$, $p < 0.001$.

Distal Drug Use and Sexual Aggression: Marijuana

Table 1 represents the percentages of men who reported marijuana use during each year of the study grouped by their reported level of sexual aggression. This table suggests, in general, that men who reported increasing levels of sexual aggression were more likely to also report marijuana use. Bivariate correlations between the three measures of substance use are significant at $p < .05$ at all five time points. The correlations between distal marijuana and alcohol use range from $r = .330$ to .503; the correlations between distal marijuana and other drug use range from $r = .546$ to .636; and the correlations between distal alcohol and other drug use range from $r = .126$ to .282.

HLM allows for the testing of the hypothesis that the severity of sexual aggression and drug use is related after controlling for alcohol use in two ways. First, within individual men, changes in levels of sexual aggression are associated with changes in levels of distal drug use. That is, for a given individual, any changes across time in level of sexual aggression would be associated with a change in level of distal drug use. This hypothesis was tested using a random coefficients model with level of sexual aggression as the outcome variable, distal marijuana and alcohol use as level-1 predictor variables, and participant ID as the grouping variable at level-2. The distal alcohol use variable was controlled for via group-mean centering; because it was the variable of interest in this analysis, the distal marijuana use variable was not centered. The intercept and distal marijuana use variable were modeled as random effects.[5] The intercept was

[5] The variance coefficient associated with distal alcohol use was nonsignificant ($u_{2j} = .046$, $p = .068$), so the variable was entered into the model as a fixed effect.

significant, π_{0j} = 0.485, *SE* = 0.044, *t*(688) = 11.114, *p* < 0.001. Distal marijuana use was found to be a significant positive predictor of level of sexual aggression, π_{1j} = 0.119, *SE* = 0.031, *t*(688) = 3.891, *p* < 0.001; however, marijuana use frequency remained marginally related to level of sexual aggression, π_{1j} = 0.058, *SE* = 0.032, *t*(688) = 1.796, *p* = 0.072 providing support for the second hypothesis at the within person level.[6]

Second, analyses were conducted to measure between-group differences in sexual aggression severity associated with level of drug use at each point in time. This was accomplished by conducting a second analysis using an intercepts and slopes as outcomes model (full model) with level of sexual aggression as the outcome variable and distal marijuana and alcohol use as level-1 predictor variables. The first levels of the analyses were identical; however, the second analysis included aggregate variables of distal marijuana and alcohol use added to the intercept at level-2. Together, these models allowed the assessment of compositional effects within the data. In this case, a compositional effect is the degree to which within-person and between-person relationships between sexual aggression and distal drug use differ. In the analyses the intercept was nonsignificant, π_{0j} = -0.033, *SE* = 0.128, *t*(686) = 0.262, *p* = 0.794. The decrease in significance between intercepts can be attributed to the addition of the distal marijuana use aggregate (π_{01} = 1.195, *p* < .001), but not the alcohol use frequency aggregate (π_{02} = -0.286, *p* = .65), to the model. In other words, this adjustment removed the intercept variance that was once highly associated with the outcome variable, leading

[6] Although the variance associated with alcohol use frequency was controlled for in these analyses, it was found to be a significant negative predictor of level of sexual aggression (analysis 1: π_{2j} = -0.053, *p* < .015; analysis 2: π_{2j} = -0.072, *p* < .01).

to the conclusion that the average distal marijuana use is associated with men associated with differing levels of sexual aggression at the group level—men within a given sexual aggression group have relatively similar levels of distal marijuana use.

Distal Drug Use and Sexual Aggression: Other Illicit Drugs

The third hypothesis was tested using models similar to those used to test the second hypothesis. Distal other drug use replaced distal marijuana use in the analyses; the aggregates of distal other drug and alcohol use were added to the second level of one of the analyses. The alcohol use variable was controlled for via group-mean centering. The variance coefficients corresponding to the intercepts and the other drug use variable were modeled as random effects.[7] Overall, analysis of the third hypothesis yielded the same pattern of results as the second hypothesis. The intercept of the first analysis was significant, $\pi_{0j} = 0.434$, $SE = 0.032$, $t(832) = 13.684$, $p < 0.001$. The intercept of the second analysis, however, was nonsignificant, $\pi_{0j} = -0.088$, $SE = 0.171$, $t(830) = 0.518$, $p = 0.604$. The decrease in significance of the intercept can be directly attributed to the addition of the distal other drug use aggregate ($\pi_{01} = 0.739$, $p = .043$), but not the distal alcohol use aggregate ($\pi_{02} = -0.612$, $p = .348$), to the model. As with the second hypothesis, when the drug use aggregate variable is added to the model it accounted for a significant portion of the variance that was attributed broadly to the intercept.

In further concordance with the results of the second hypothesis, the first analysis of hypothesis three indicated that distal other drug use was significantly related to sexual

[7] The variance coefficient corresponding to distal alcohol use, although significant ($u_{2j} = .042$, $p = .009$), was modeled as a fixed effect to increase the reliability estimates of the intercept and distal other drug use. A deviance test revealed that the amount of variance lost from the model was nonsignificant.

aggression severity, π_{1j} = 0.155, *SE* = 0.054, *t*(832) = 2.864, *p* = 0.005; the second analysis, however, found other drug use to be only marginally related to sexual aggression severity, π_{1j} = 0.105, *SE* = 0.058, *t*(832) = 1.824, *p* = 0.068.

CHAPTER IV

DISCUSSION

Results of this study suggest that both proximal and distal drug use play significant roles in men's sexually aggressive behavior. Specifically, the results of the first analysis suggest that drug use immediately prior to sexual activity is significantly related to level of sexual aggression during that encounter, after controlling for proximal alcohol use. The results of the second set of analyses suggest that an increased level of sexual aggression is likely to include an increased frequency of marijuana use, but not other drug use, after controlling for distal alcohol use. These analyses indicate that the relationship between sexual aggression and marijuana use is stronger when measured between the groups of sexually aggressive men than when measured within each man. After accounting for the inter-group effects, however, within-person effects remained marginally significant ($p = .07$); this indicates that although the data are best modeled using between-person effects, within-person variables continue to account for a portion of the variance and should remain in the model.

In agreement with previous research on the topic, the analyses also suggest that, on average, men's sexual aggression levels steadily decreased from adolescence through four years of college. Coefficients associated with proximal drug and alcohol use, however, each greatly outweighed the coefficient associated with time. When situational substance use is considered, within-person trajectories become positive across time points. The coefficients suggest that situational substance use is a stronger indicator of

level of sexual aggression than year in college and thus nullify the negative trend of sexual aggression severity across time.

Although proximal drug use levels predict sexual aggression severity, this does not necessarily indicate that the proximal effects of drugs lead to sexually aggressive behavior. The use of these drugs is illegal in the US; thus, situations that include drug use are considered deviant. These situations include people who are willing to break the law and often lack legitimate authority figures. It is possible that deviant settings conducive to substance use may also be conducive to male-to-female violence (Kilpatrick et al., 1997; Martino, Collins, & Ellickson, 2005).

Explanations of Findings

There are several plausible explanations for the relationship that was found between sexual aggression and drug use. First, the pharmacological effects of drugs may lead a man to become sexually aggressive. This explanation is supported by the relationship between situational drug use and sexual aggression—men who experience increasing effects or "high" of drugs are likely to display increasing levels of sexual aggression. This pharmacological explanation is also somewhat supported by the relationships between distal drug use and sexual aggression—the effects associated with an increased frequency of drug use may lead men to display increased levels of sexual aggression. There are countless men, however, who use drugs but show no sexually aggressive behavior. This makes the possible causal link between drug use and sexual aggression tenuous.

Second, men may use drugs to overcome their personal inhibitions against sexually aggressive behavior. This explanation falls in line with the body of literature on the substance use of perpetrators of child sexual abuse. These perpetrators use drugs and alcohol to overcome their personal inhibitions toward perpetration. In this case, drugs and alcohol also serve as mechanisms to decrease the perpetrator's internal feelings of responsibility for their inappropriate behaviors. This explanation is supported by the link between proximal drug use and sexual aggression in that the perpetrators use drugs immediately before the sexually aggressive encounter to the experience the effects or "high" during the encounter.

Third, sexual aggression may lead to drug use as a method to cope with the guilt associated with the transgression. This pathway to substance use has been proposed to explain the relationship between alcohol use and victimization in females (Ullman, 2003). This explanation is supported by the relationship between distal drug use and sexual aggression. In the data that were used in this study, there is no way to assess the order of behaviors (i.e, sexual aggression and drug use). Therefore, it is possible that the sexual aggression occurred first and that drug use resulted as a coping mechanism. The relationship that this study had found between proximal drug use and sexual aggression casts doubt on this third explanation. In this case, it is clear that the drug use occurred before (or possibly during) the sexually aggressive encounter. This ordering refutes the rationalization that sexual aggression leads to drug use.

Fourth, drug use and sexual aggression may co-occur in men who lead a generally deviant lifestyle. This explanation is supported by the relationship between proximal drug

use and sexual aggression—it is quite conceivable that men engage in multiple deviant behaviors simultaneously. The Bureau of Justice Statistics (1998) reported that 36% of those incarcerated for violent crimes in 1996 had been using alcohol at the time that they committed their offense. It is not a stretch to assume that men who perpetrate sexual aggression follow the same pattern. This explanation is also strongly supported by the relationships between distal drug use and sexual aggression. These findings suggest that it is not necessary for perpetrators to be under the influence of drugs at the time of the aggression. The mere disposition toward using drugs at increasing levels may indicate a level of deviance that can predict levels of sexual aggression.

Finally, there may be a third variable that is highly associated with both sexual aggression and substance use. This may be a psychological variable that predisposes a man to use drugs and display sexually aggressive behavior. Although the current study has extended prior research by examining the relationship between drug use and sexual perpetration, it still fails to illuminate which pathway this relationship takes. All of the pathways described above are possibilities that need to be explored in future research.

Limitations

Despite of the longitudinal nature of the data, there are still concerns associated with this research. First, data for this study, although collected from men themselves rather than their partners or victims, were based on self-report. Self-report data concerning substance use (marijuana and alcohol) has been found reliable (Mensch & Kandel, 1988; O'Malley, Bachman, & Johnston, 1983), but participants may have answered the substance use questions dishonestly. Secondary data analysis strategies

based on a study not originally designed to test the hypothesis could have used a better design and measures. Furthermore, although the percentage of men reporting sexually aggressive behaviors across time in this study (31.1%) coincides with previous published rates (Koss, Gidycz, & Wisniewski, 1987), it is possible that these behaviors were underreported in these data.

Second, although the questions concerning proximal substance use in relation to sexual activity teased apart the effects of drugs and alcohol, they did not tease apart relationships between specific drugs (e.g., marijuana, cocaine, methamphetamine, etc.). The questions concerning distal substance use separated the effects of alcohol, marijuana, and other drug use. In this case, it would also be helpful to further separate the effects of specific drugs. In both cases, extremely large samples would be needed due to low base-rates of non-marijuana illicit drug use within college populations, as indicated by data used in these analyses.

Finally, data for this study were collected at five time points over four years. There were seven months between the first and second time points and one year between each of the other time points. Although this does not affect the interpretation of the relationship between proximal substance use and sexual aggression, it limits the interpretation of the relationship between distal substance use and sexual aggression. More specifically, it is not possible to distinguish which behavior came first, the sexual aggression or the substance use.

Conclusions

This study has established strong links between both distal and proximal drug use and sexually aggressive behaviors, while controlling for the effects of alcohol use. The statistical strategy employed allowed the outcome variable to be predicted by multiple variables at the within-person level over time. This, in essence, collapsed the data into separate trajectories for each person in order to assess the nature of the relationships. In testing the first hypothesis, men's trajectories suggest that a man's level of proximal drug use highly predicts his level of sexual aggression within a sexual encounter. In testing the second hypothesis, men's trajectories suggest that distal marijuana use is highly related to sexually aggressive behavior. Furthermore, when compositional effects are assessed, men's trajectories are altered by the differences among the average distal marijuana use levels defined by level of sexual aggression. This indicates that broad between-person differences in marijuana use predict sexual aggression severity better than within-person differences. In testing the third hypothesis, distal other drug use predicts sexual aggression severity. The results of this study support the assertions that specific situations and lifestyles that involve increasing levels of drug use also tend to include increasing levels of sexual aggression in males.

REFERENCES

Abby, A., Ross, L. T., & McDuffie, D. (1994). Alcohol's role in sexual assault. In R. R. Watson (Ed.), *Drug and alcohol abuse reviews: Vol. 5. Addictive behaviors in women* (pp. 97-123). Totowa, NJ: Humana Press.

Abby, A., Zawacki, T., Buck, P. O., Clinton, A. M., & McAuslan, P. (2001). Alcohol and sexual assault. *Alcohol Research and Health, 25*, 43-51.

Berkowitz, A. (1992). College men as perpetrators of acquaintance rape and sexual assault: A review of recent research. *Journal of American College Health, 40,* 175-181.

Brecklin, L. R., & Ullman, S. E. (2002). The roles of victim and offender alcohol use in sexual assaults: Results from the National Violence against Women Survey. *Journal of Studies on Alcohol, 63,* 57-63.

Buddie, A. M., & Testa, M. (2005). Rates and predictors of sexual aggression among students and nonstudents. *Journal of Interpersonal Violence, 20,* 713-724.

Calhoun, K. S., Bernat, J. A., Clum, G. A., & Frame, C. L. (1997). Sexual coercion and attraction to sexual aggression in a community sample of young men. *Journal of Interpersonal Violence, 12,* 392-406.

Fals-Stewart, W., Golden, J., & Schumacher, J. A. (2003). Intimate partner violence and substance use: A longitudinal day-to-day examination. *Addictive Behaviors, 28,* 1555-1574.

Humphrey, J. A. (2000). Women's vulnerability to sexual assault from adolescence to young adulthood. *Journal of Adolescent Health, 27,* 419-424.

Kilpatrick, D. G., Acierno, R., Resnick, H. S., Saunders, B. E., & Best, C. L. (1997). A 2-year longitudinal analysis of the relationships between violent assault and substance use in women. *Journal of Consulting and Clinical Psychology, 65,* 834-847.

Koss, M. P., Gidycz, C. A., & Wisniewski, N. (1987). The scope of rape: Incidence and prevalence of sexual aggression and victimization in a national sample of higher education students. *Journal of Consulting and Clinical Psychology, 55,* 162-170.

Koss, M. P. (1982). Sexual experiences survey: a research instrument investigating sexual aggression and victimization. *Journal of Consulting and Clinical Psychology, 50,* 455-457.

Koss, M. P., & Dinero, T. E. (1988). Predictors of sexual aggression among a national sample of male college students. *Annals of the New York Academy of Sciences, 528,* 133-147.

Koss, M. P., & Gaines, J. A. (1993). The prediction of sexual aggression by alcohol use, athletic participation, and fraternity affiliation. *Journal of Interpersonal Violence, 8,* 94-108.

Koss, M., Gidycz, C., & Wisniewski, N. (1987). The scope of rape: Incidence and prevalence of sexual aggression and victimization in a national sample of higher education students. *Journal of Consulting and Clinical Psychology, 58*, 162-170.

Lackie, L., & de Man, A. F. (1997). Correlates of sexual aggression among male university students. *Sex Roles, 37*, 451-457.

Livingston, J. A., Buddie, A. M., Testa, M., & VanZile-Tamsen, C. (2004). The role of sexual precedence in verbal sexual coercion. *Psychology of Women Quarterly, 28,* 287-297.

Martino, S. C., Collins, R. L., & Ellickson, P. L. (2005). Cross-lagged relationships between substance use and intimate partner violence among a sample of young adult women. *Journal of Studies on Alcohol, 66*, 139-148.

Malamuth, N. M., Check, J. V., & Briere, J. (1986). Sexual arousal and response to aggression: Ideological, aggressive, and sexual correlates. *Journal of Personality and Social Psychology, 50*, 330-340.

Mensch, B. S. & Kandel, D. B. (1988). Underreporting of substance use in a national longitudinal youth cohort: Individual and interviewer effects. *Public Opinion Quarterly, 52*, 100-124.

Muehlenhard, C. L., & Linton, M. A. (1987). Date rape and sexual aggression in dating situations: Incidence and risk factors. *Journal of Counseling Psychology, 34,* 186-196.

O'Leary, K. D., & Schumacher, J. A. (2003). The association between alcohol use and intimate partner violence: Linear effect, threshold effect, or both? *Addictive Behaviors, 28,* 1575-1585.

O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1983). Reliability and consistency in self-reports of drug use. *International Journal of the Addictions, 18*, 805–824.

Ouimette, P. C. (1997). Psychopathology and sexual aggression in nonincarcerated men. *Violence and Victims, 12,* 389-395.

Pernanen, K. (1991). *Alcohol in human violence*. New York: Guilford.

Raudenbush, S. W., & Byrk, A. S. (2002). *Hierarchical linear modeling: Applications and data analysis methods.* Thousand Oaks, CA: Sage.

Rubenzahl, S. A., & Corcoran, K. J. (1998). The prevalence and characteristics of male perpetrators of acquaintance rape: New research methodology reveals new findings. *Violence Against Women, 4,* 713-725.

Seto, M. C., & Barbaree, H. E. (1995). The role of alcohol in sexual aggression. *Clinical Psychology Review, 15,* 545-566.

Smith, P. H., White, J. W., & Holland, L. J. (2003). A longitudinal perspective on dating violence among adolescent and college-age women. *American Journal of Public Health, 93,* 1104-1109.

Swartout, K. M. & White, J W. (2007). The typography of intimate partner violence: The co-occurrence of sexual and physical victimization and perpetration. Presented at the 53rd annual meeting of the Southeastern Psychological Association. May 21-24, 2007.

Testa, M. (2004). The role of substance use in male-to-female physical and sexual violence: A brief review and recommendations for future research. *Journal of Interpersonal Violence, 19,* 1494-1505.

The Carnegie Foundation (1987). *A Classification of Institutions of Higher Education*.

Ullman, S. E., & Brecklin, L. R. (2000). Alcohol and adult sexual assault in a national sample of women. *Journal of Substance Abuse, 11,* 405-420.

Ullman, S. E. (2003). A critical review of field studies on the link of alcohol and adult sexual assault in women. *Aggression and Violent Behavior, 8,* 471-486.

U.S. Department of Justice. (1998). *Alcohol and Crime*. (DHHS Publication No. NCJ 16-8632). Washington, DC: U.S. Government Printing Office.

White, J. W. & Smith, P. H. (2004). Sexual assault perpetration and reperpetration: From adolescence to young adulthood. *Criminal Justice and Behavior, 31*, 182-202.

APPENDIX

TABLE

Table 1

Men who reported marijuana use during each year of the study grouped by their reported level of sexual aggression

	Time-point				
	1st	2nd	3rd	4th	5th
Sexual Experience	*n*	*n*	*n*	*n*	*n*
Consensual	131 (31.3%)	170 (50.7%)	121 (49.2%)	60 (35.5%)	34 (38.2%)
Verbal Coercion	28 (33.7%)	16 (43.2%)	14(56%)	5 (29.4%)	0
Unwanted Contact	24 (53.3%)	13 (54.2%)	10 (76.9%)	2 (40%)	1 (100%)
Attempted Rape	4 (44.4%)	5 (83.3%)	4 (80%)	0	0
Rape	23 (52.3%)	15 (75%)	10 (83.3%)	8 (66.7%)	0

Note. Percentages represent proportion of men using marijuana within each category of sexual experience at each time-point