

Predicting Rape Events: The Influence of Intimate Partner Violence History, Condom Use
Resistance, and Heavy Drinking

Natasha Katrine Gulati

A thesis
submitted in partial fulfillment of the
requirements for the degree of

Master of Science

University of Washington

2018

Committee:

William H. George

Mary Larimer

Program Authorized to Offer Degree:

Psychology

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Natasha Katrine Gulati

University of Washington

Abstract

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Natasha Katrine Gulati

Chair of the Supervisory Committee:

William H. George

Department of Psychology

Sexual aggression perpetration is a public health epidemic, and burgeoning research aims to delineate risk factors for individuals who perpetrate completed rape. The current study investigated physical and psychological intimate partner violence (IPV) history, coercive condom use resistance (CUR), and heavy episodic drinking (HED) as prospective risk factors for rape events. Young adult men (N = 430) ages 21-30 completed background measures as well as follow-up assessments regarding rape events perpetrated over the course of a three-month follow-up period. Negative binomial regression with log link function was utilized to examine whether these risk factors interacted to prospectively predict completed rape. There was a significant interaction between physical IPV and HED predicting completed rape; men with high HED and greater physical IPV histories perpetrated more completed rapes during follow-up. Moreover, psychological IPV and coercive CUR interacted to predict completed rape such that men with greater coercive CUR and psychological IPV histories perpetrated more completed rapes throughout the follow-up period. Findings suggest targets for intervention efforts and highlight the need to understand the topography of different forms of aggression perpetration.

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Sexual aggression is a public health epidemic; on average, there are approximately 322,000 victims of sexual aggression each year in the United States alone (Department of Justice, 2015). Sexual aggression is an inclusive term which refers to a range of sex acts that one individual may inflict on another, including unwanted sexual contact (i.e., kissing, touching), attempted rape, and completed rape (Koss, Gidycz, & Wisniewski, 1987; Koss, Heise, & Russo, 1994). Completed rape is specifically defined as nonconsensual vaginal, oral, or anal intercourse obtained through a variety of tactics including verbal coercion, force, threat of force, or when the victim is incapacitated or otherwise unable to give consent (Abbey & McAuslan, 2004). Victims of completed rape overwhelmingly identify as female; approximately 1 out of 6 American women report lifetime victimization through completed rape (National Institute of Justice, 2006; RAINN, 2017). Consequences for rape victims are myriad and may include post-traumatic stress disorder, substance abuse, anxiety, depression, emotional distress, and increased risk for sexually transmitted infections (STIs) (National Institute of Justice, 2006; Yuan, Koss, & Stone, 2006). Given the deleterious effects and associated health impacts for female victims, burgeoning research has focused on delineating risk factors for sexual violence amongst male perpetrators. While past studies have investigated sexual aggression perpetration broadly (i.e., utilizing composite outcome measures including sexual contact and/or attempted and completed rape; Abbey, Wegner, Woerner, Pegram, & Pierce, 2014; Jewkes, Nduna, Shai, & Dunkle, 2012; Voller & Long, 2010), few have assessed predictors of completed rape perpetration (Loh, Gidycz, Lobo, & Luthra, 2005). Thus, the present study sought to explore potential risk factors for completed rape events including intimate partner violence (IPV) history, coercive condom

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use resistance (CUR) history, and heavy drinking utilizing a prospective study design.

IPV History and Completed Rape

IPV refers to physical or psychological aggression inflicted by one dating partner on another. Physical IPV includes any action of physical violence against a partner, such as hitting or slapping, kicking, or throwing an object at one's partner (Murphy & O'Leary, 1989).

Psychological IPV refers to any direct or indirect non-physical act intended to upset a partner, and typically involves manipulation of one's partner, verbally insulting a partner, or purposefully making a partner jealous (Jenkins & Aubé, 2002; White & Koss, 1991). Research suggests that perpetrators of one form of aggression are also likely to perpetrate other forms of aggression and that many types of IPV are intercorrelated (Gyrch & Swan, 2012; Hamby & Grych, 2013).

However, aggression research often occurs in silos (Hamby, 2014; Hamby & Grych, 2013); thus, most studies have examined physical IPV and psychological IPV perpetration separately from sexual aggression perpetration, including completed rape. The implications of siloed research are vast, resulting in restricted progress in understanding why some individuals are at greater risk for perpetrating sexual violence and constraining integrated interventions for perpetrators (Gyrch & Swan, 2012). One investigation by Raj and colleagues (2006) found that men who perpetrated IPV in the past year were significantly more likely to report forcing sexual intercourse without a condom. However, this study utilized a composite measure of both physical and sexual IPV perpetration and did not examine physical IPV separately. Other studies (Basile & Hall, 2011; Tjaden & Thoennes, 2000) have noted strong correlations between physical IPV and psychological IPV as well as physical IPV and sexual aggression, though none have examined completed rape specifically. However, physical and psychological IPV have rarely been examined as predictors of subsequent sexual violence. Thus, the present study also aims to

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develop a more comprehensive topography of aggression by investigating prospective links between physical and psychological IPV and completed rape events.

Coercive CUR and Completed Rape

CUR refers to attempts to avoid using a condom while engaging in sexual intercourse with a partner who wants to use a condom (Davis et al., 2014a). While the broader construct of CUR includes both non-coercive and coercive tactics (Davis et al., 2014a; 2014b), the present study focuses only on coercive CUR, which occurs when men use aggressive or manipulative tactics to avoid using a condom. Coercive CUR tactics involve the threat of an unwanted outcome that is intended to constrain the other person's agency and ability to make an informed and consensual decision (Davis et al., 2014a). Examples of coercive CUR tactics include emotional manipulation (e.g., telling a woman how angry one would be if a condom was used during intercourse), deception (e.g., pretending to have been tested and not having any STIs), and stealthing (e.g., secretly removing a condom before or during intercourse). Past research has demonstrated that 42% of male, non-problem drinkers have utilized at least one coercive CUR tactic since adolescence (Davis, 2018).

Men typically exercise more control than their female partners over whether a condom is used during intercourse (Bowleg, Lucas, & Tschann, 2004; Kennedy, Nolen, Applewhite, & Waiter, 2007). As such, CUR typically occurs in situations that begin as consensual; however, these circumstances may become non-consensual over issues of condom negotiation. Sexual aggression and specifically, completed rape, may or may not involve CUR at all. Nonetheless, there is a well-documented and robust association between sexual risk behavior and sexual aggression in men (Davis, Neilson, Wegner, & Danube, 2018c; Peterson, Janssen, & Heiman, 2010). Research indicates that completed rape often does not involve condom use (Davis et al.,

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2012) and that men with sexual aggression histories felt more justified utilizing coercive strategies to obtain condomless sex than men without such histories (Abbey, Parkhill, Jacques-Tiura, & Saenz, 2009). In addition, experimental laboratory paradigms have elucidated sexual aggression perpetration severity as a predictor of men's CUR in hypothetical vignettes (Davis et al., 2016a; Davis et al., 2018c).

However, no research has examined coercive CUR history as a prospective predictor of completed rape. Moreover, it is possible that men with physical or psychological IPV histories who engage in coercive CUR may be at increased risk for perpetrating completed rape. Evidence suggests that men with a history of perpetrating physical IPV, for example, were more likely to report inconsistent or no condom use during intercourse with their female sex partners (Raj et al., 2006). Given that many types of aggression are interrelated (Basile & Hall, 2011; Gyrch & Swan, 2012), violence research may benefit from understanding how these factors, including coercive CUR, interact to influence completed rape perpetration.

Heavy Drinking and Completed Rape

Alcohol has long been recognized as a risk factor for sexual aggression perpetration (Abbey, 2002; Abbey et al., 2014). Heavy episodic drinking (HED) in males refers to consuming five or more alcoholic beverages in two hours. There are pharmacological and psychological explanations for the association between alcohol use and sexual violence (for a review, see Abbey et al., 2014). Alcohol myopia theory (Steele & Josephs, 1990), for example, posits that alcohol intoxication pharmacologically impairs attentional capacity, in which individuals pay attention to salient cues (e.g., sexual arousal) and disregard less salient cues (e.g., legal ramifications, STI risk). Research has found that perpetrators of sexual aggression consume high levels of alcohol in general and in sexual situations (Abby et al., 2001; Abbey & McAuslan,

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2004) and a large number of cross-sectional studies have found a direct, positive association between proximal and distal measures of alcohol use, including HED, and sexual aggression perpetration, including composite outcomes comprising completed rape (Abbey et al., 2014). Daily diary studies have found that sexual aggression was more likely on days in which HED occurred than on days when alcohol was not consumed (Shorey, Stuart, McNulty, & Moore, 2014). Moreover, approximately two-thirds of women who reported being raped as adults stated that the perpetrator was utilizing alcohol at the time of the rape (CDC, 2018). Very few studies have examined alcohol consumption as a prospective predictor of sexual aggression perpetration; those that have produced conflicting results. Problem drinking has been longitudinally associated with sexual aggression (Gidycz, Warkentin, & Orchowski, 2007) and heavy drinking also had a prospective, indirect effect on sexual aggression through sexual aggression norms (Thompson, Koss, Kingree, Foree, & Rice, 2011). However, in Testa & Cleveland's (2017) longitudinal examination of college men, an independent between-person effect of HED on sexual aggression did not emerge. More prospective research on the association between HED and completed rape is certainly needed. Given the extensive literature on alcohol's positive association with physical and psychological IPV (Rothman, Reyes, Johnson, & LaValley, 2012; Stappenbeck, Gulati, & Fromme, 2016) as well as CUR (Davis et al., 2016b), a conjunctive examination of these risk factors for completed rape is warranted.

Present Study

The purpose of the present study was to extend previous research and examine physical IPV, psychological IPV, coercive CUR, and HED as prospective predictors of completed rape during a 3-month follow-up period in a community sample of non-problem drinking men. In addition, we aimed to investigate coercive CUR and HED as potential moderators of the

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associations between physical and psychological IPV and completed rape. We hypothesized that physical IPV, psychological IPV, coercive CUR, and HED would be significantly positively associated with completed rape during follow-up. Moreover, we expected that coercive CUR and HED would each moderate the associations between physical IPV and completed rape and psychological IPV and completed rape. Thus, we expected that men with a) greater coercive CUR and greater physical IPV histories, b) greater coercive CUR and greater psychological IPV histories, c) greater HED and greater physical IPV histories, and d) greater HED and greater psychological IPV histories would perpetrate more completed rape during follow-up.

Additionally, we hypothesized that coercive CUR would interact with HED such that men with greater coercive CUR and greater HED would perpetrate more completed rape during follow-up. Furthermore, due to the risk nexus that exists between IPV, coercive CUR, and HED, we conducted exploratory analyses investigating a three-way interaction between physical IPV, coercive CUR, and HED predicting completed rape, as well as a three-way interaction between psychological IPV, coercive CUR, and HED predicting completed rape. Physical and psychological IPV were examined in separate three-way interactions because each form of IPV is distinct and may interact differentially with coercive CUR and HED to predict completed rape. This is the first known prospective investigation of these four risk factors for completed rape, emphasizing the need for comprehensive violence research that is inclusive of various types of aggressive behavior.

Method

Participants

Six hundred and thirty-six men ($M_{age} = 24.7$, $SD_{age} = 2.7$) were recruited from a metropolitan community in the Pacific Northwest. Participants were recruited via online and

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print advertisements for a research study on male-female social interactions and called the laboratory for an eligibility screener. Eligibility criteria included: a) men aged 21-30, b) single, non-problem drinker, c) interested in sexual relationships with women, and d) reported vaginal or anal intercourse without a condom at least once in the past year. Participants who met criteria for problem drinking and/or those who reported medical conditions, medications that contraindicated alcohol consumption, or an adverse reaction to alcohol in the past were excluded due to the alcohol administration procedure included in the full study protocol. Eighty-eight percent of the sample, or 562 participants provided data during the 3-month follow-up assessment period. Of this, 430 men reported engaging in sexual intercourse at least once during the follow-up period and were included in the present analyses. Approximately 67% of the sample was Caucasian, 16% Multiracial (or other), 9% African American/Black, 7% Asian/Pacific Islander, 1% Native American, and 9% Hispanic/Latino of any race. A large majority (83.4%) had at least some college-level education, approximately 52.7% were employed, and 30.0% stated that they were current full- or part-time students.

Procedure

Participants arrived at the laboratory, provided informed consent, and completed a battery of background questionnaires online in a private room. Participants completed measures regarding their demographics, physical and psychological IPV histories, alcohol use, and coercive CUR history. Next, participants completed an alcohol administration procedure as part of a larger study, though this experimental portion is not included in the present investigation. Participants were debriefed after the laboratory session and compensated \$15/hour for their time. Following the laboratory session, participants completed two online follow-up surveys that occurred six weeks and three months post-experiment. Participants were emailed a link to each

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follow-up survey, which instructed them to report on their sexual activity in the previous six-week period. Participants were compensated \$30 per follow-up survey, with a \$15 bonus for completing both follow-up surveys. Moreover, participants who completed both follow-up surveys were entered into prize drawings. All study procedures were approved by the University's Human Subjects Division.

Background Survey Measures

IPV history. The Dating Relationship Violence Questionnaire (Swahn, Simon, Arias, & Bossarte, 2008) was utilized to assess how often participants perpetrated physical and psychological IPV in the past year. Men completed nine items regarding acts of physical IPV (e.g., "hit or slapped a partner"; $\alpha = .74$) and eight items regarding acts of psychological IPV (e.g., "said things to hurt a partner's feelings on purpose"; $\alpha = .70$). Participants selected one of seven responses (0 = *This has never happened*; 1 = *Once in the past year*; 2 = *Twice in the past year*; 3 = *3-5 times in the past year*; 4 = *6-10 times in the past year*; 5 = *11-20 times in the past year*; 6 = *More than 20 times in the past year*) and items were scored according to recommendations by Straus and colleagues (1996). Response options were recoded to the midpoint of the range (e.g., option 3 was recoded to 4) and option 6 was recoded to 25. Physical and psychological IPV frequency subscales were created by summing participants' scores on the nine and eight items, respectively.

Coercive CUR. The Condom Use Resistance Survey (Davis et al., 2014b) was utilized to assess how often participants successfully avoided using condoms since age 14 with a woman who wanted to use one. Thirteen items asked men how many times (0 = *0 times* through 20 = *20 times* and 25 = *20+ times*) they utilized coercive tactics to obtain condomless sex with a woman. Tactics included emotional manipulation (3 items; e.g., "Telling her how angry you would be if

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she insisted on using a condom”), deception (4 items; e.g., “Pretending that you had been tested and did not have any STDs”), stealthing (1 item; e.g., “Agreeing to use a condom, but removing it before or during sex without telling her”), intentional condom breakage (2 items; e.g., “Agreeing to use a condom but intentionally breaking the condom when putting it on”), and force (3 items; e.g., “Preventing her from getting a condom by staying on top of her”). A coercive CUR history score was computed by summing responses to all thirteen items ($\alpha = .79$).

Alcohol use. HED frequency was assessed according to National Institute on Alcohol Abuse and Alcoholism Recommended Alcohol Questions (NIAAA, 2003) with the item, “During the last 12 months, how often did you have 5+ drinks containing any kind of alcohol within a two-hour period?” Participants selected one of ten responses (0 = *Not at all*; 1 = *1 to 2 times in the past year*; 2 = *3 to 11 times in the past year*; 3 = *Once a month*; 4 = *2 to 3 times a month*; 5 = *Once a week*; 6 = *Twice a week*; 7 = *3 to 4 times a week*; 8 = *5 to 6 times a week*; 9 = *Every day*).

Follow-up Survey Measures

Completed rape. A modified Timeline Followback (Sobell & Sobell, 1992) was utilized to assess days in which participants reported having sexual intercourse. Participants were shown a calendar of the past six-week period and selected the dates in which they engaged in sexual intercourse (vaginal, oral, or anal) with a partner. A day was defined as beginning at 6:00 am and finishing at 5:59 am the following morning.

For each day participants reported having sex, they were asked follow-up questions about their sexual encounters. Men indicated whether they utilized verbal coercion (3 items; “Overwhelmed her with continual arguments or pressure”; “Made promises or told her things you knew were untrue”; and “Showed her your displeasure by swearing, sulking, getting angry,

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or making her feel guilty”), incapacitation (1 item; “Engaged in sexual activity with her when she was passed out or too intoxicated to give consent or stop what was happening”), and force (1 item; “Used or threatened to use some degree of physical force”) to make their partner have sex when she did not want to. If any of these tactics were used, the event was considered completed rape. These events were summed over the 90-day follow-up period to create a total score representing the number of completed rape events perpetrated per participant over the course of three months.

Data Analytic Strategy

We utilized generalized linear models (GzLM) in SPSS version 19 to examine physical and psychological IPV, HED, and coercive CUR as risk factors for completed rape. The outcome variable, completed rape, refers to the number of rape events perpetrated per participant during the three-month follow-up period. This variable represents count data that was positively skewed and distributed non-normally. Rather than use transformations to reduce skew or dichotomize the outcome variable which reduced statistical power (Cohen, 1983), we followed recommendations outlined by Atkins & Gallop (2007) and utilized a negative binomial distribution and log link function to account for the nonnormality in the completed rape outcome variable. GzLMs with negative binomial distributions provide incidence rate ratios (IRRs), which are exponentiated regression coefficients and represent a standardized effect size.

Because we were interested in examining the effects of all four risk factors on completed rape during follow-up, in Model 1, we entered main effects of physical IPV, psychological IPV, HED, and coercive CUR. In the same model, we included all five, two-way interactions between the four predictor variables. Prior to creating interaction terms, all predictor variables were standardized to reduce potential heteroscedasticity. Furthermore, we conducted a second

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exploratory model in which we included the above main effects and interactions as well as two, three-way interactions between physical IPV, coercive CUR, and HED as well as psychological IPV, coercive CUR, and HED predicting completed rape during follow-up.

Results

Of the 430 men who reported engaging in sexual intercourse at least once during this time period, 183 (42.6%) reported perpetrating coercive CUR since age 14. A majority of participants (83.0%) indicated engaging in HED at least once per month. In addition, 244 men (56.7%) reported past year psychological IPV perpetration and 62 men (14.4%) reported past year physical IPV perpetration. Furthermore, 35 men (8.2%) perpetrated 81 completed rapes throughout the three-month follow-up period. The number of completed rapes per participant ranged from one to nine. Descriptive statistics and correlations for primary study variables are provided in Table 1.

In Model 1 (see Table 2), there was a significant interaction between physical IPV and HED; for individuals with high HED, follow-up completed rape increased as physical IPV frequency increased. Furthermore, there was a significant interaction between psychological IPV and coercive CUR; for individuals with high coercive CUR, follow-up completed rape increased as psychological IPV frequency increased. There were no other significant two-way interactions in Model 1.

Model 2 included all variables in Model 1 as well as two exploratory three-way interactions predicting completed rape (see Table 2). Psychological IPV and coercive CUR emerged as significant predictors of completed rape, and the interaction between physical IPV and HED remained significant. However, the interaction between psychological IPV and coercive CUR was no longer significant; this is likely due to a reduction in variance when

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including the three-way interactions. Neither of the exploratory three-way interactions were significant.

Discussion

The results of this investigation add to a limited body of research examining physical and psychological IPV histories in combination with coercive CUR and HED to prospectively predict completed rape. Eighty-one completed rapes occurred during the 90-day follow-up period by 8% of men included in the sample. Though an alarming statistic, this is consistent with past research suggesting that a minority of men perpetrate the majority of completed rapes (Gidycz, Orchowski, & Berkowitz, 2011; Lisak & Miller, 2002). Results demonstrate that psychological IPV, coercive CUR, and HED were more pervasive in this sample than physical IPV. Notably, four times as many men perpetrated past year psychological IPV than past year physical IPV, which is also consistent with prior findings (WHO, 2012). In addition, physical IPV and HED interacted such that men with high levels of physical IPV perpetration and high HED perpetrated more completed rape during the three-month follow-up period. Moreover, men who were high on coercive CUR and who perpetrated high levels of psychological IPV perpetrated more completed rape during follow-up. This was the first prospective investigation that analyzed the risk nexus for completed rape by including a novel risk factor, coercive CUR, alongside IPV and alcohol use.

The present study aimed to attain a more comprehensive understanding of the topography of different forms of aggression by identifying the types of men most likely to perpetrate rape based on their aggression histories. These findings highlight how different forms of aggression are connected and interrelated, and they serve as a preliminary step to answer calls to action from violence researchers who espouse integration among IPV, sexual aggression, and sexual risk

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research. Thus, the outcome variable in this study, completed rape, should not be examined in isolation without due consideration of other types of violence perpetrated in the past or currently being perpetrated. The results from this research point to a potential profile for men at greater risk for perpetrating completed rape—those with greater physical IPV histories who are heavier drinkers. This adds to a body of prospective evidence that heavy alcohol use may influence sexual aggression perpetration and specifically, completed rape. Though this may not seem entirely surprising given the correlated nature of physical IPV and sexual aggression, the prospective nature of the present study highlights the importance of assessing both forms in future research.

Novel to this study was the inclusion of coercive CUR, emphasizing an additional profile for men at higher risk for perpetrating completed rape—those with greater psychological IPV histories and greater coercive CUR histories. Notable in this interaction is the jointly manipulative nature of psychological IPV and utilizing coercive tactics, such as deception or emotional manipulation, to resist condoms during sexual intercourse. Though these calculating acts may on the surface seem less severe than overt physical IPV, which is more commonly associated with sexual aggression (Basile & Hall, 2011), our results suggest that they in no way mitigate risk for completed rape. On the contrary, these findings demonstrate that sexual coercion and sexual risk do not necessarily occur in isolation. Condomless sex also implies greater risk for STIs and pregnancy (CDC, 2017), which should be taken into consideration when examining sexual aggression perpetration and completed rape specifically. However, it is important to note that the interaction between psychological IPV and coercive CUR disappeared in model 2 when additional exploratory interactions were included. Thus, this finding should be interpreted cautiously and future research should seek to replicate these results. Moreover, future

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research would benefit from utilizing latent profile analysis to delineate aggression profiles for perpetrators based on their aggression histories, including IPV perpetration, coercive CUR, and other forms of violence not included in the present analysis such as bullying or peer aggression.

Integrated violence research can inform intervention and prevention programming. For interventions to be effective, we must consider that perpetrators of rape may have also been perpetrators in other contexts, utilizing different forms of aggression. Most intervention programs, for example, focus on a single form of violence, even though it is likely that the effectiveness of an intervention program should take into account other types of aggression the individual has perpetrated (Gyrch & Swan, 2012; Hamby & Grych, 2013). Questions remain about what these interventions could look like and how targeted they need to be. The results of this study point to integrated programs targeting multiple forms of violence including physical, psychological, and sexual aggression as well as sexual health, condom use, and alcohol use. All of the variables identified in the present investigation have the potential to be useful; however, our aggression research remains siloed and consequently, our interventions remain so as well.

There are limitations to the present study. This sample included men who are social drinkers and only those who have sex with women; thus, generalizability is limited. Moreover, completed rape was assessed via self-report which introduces the possibility that men may have responded in socially desirable ways (i.e., reporting that they did not engage in sexually aggressive behavior when they actually did). However, the present research attempted to address this by utilizing behaviorally-oriented questions to examine sexual aggression after men already stated that they had had sexual intercourse, and by utilizing online surveys to encourage more honest responding. While it is vital to understand the topography of different types of violence, we were not able to assess developmental trajectories of aggressive behavior in this study.

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Future research should seek to understand the genesis of different forms of aggression and how they coalesce or differentiate over time. Are there common historical patterns of violence among perpetrators of sexual aggression? A developmental lens is key to moving forward in this arena of research that has remained relatively stagnant. Also vital is a comprehensive understanding of underlying mechanisms contributing to sexual aggression perpetration; we envision combining mechanistic research with a systemic exploration of types of violence and how they interact. At the very least, future research should continue to pursue an integrative and inclusive topographic landscape of various forms of aggressive behavior.

References

- Abbey, A. (2002). Alcohol-related sexual assault: A common problem among college students. *Journal of Studies on Alcohol, 63*, 118-128.
- Abbey, A. & McAuslan, P. (2004). A longitudinal examination of male college students' perpetration of sexual assault. *Journal of Consulting and Clinical Psychology, 72*, 747-756.
- Abbey A., McAuslan P., Zawacki T., Clinton A. M., Buck P. O. (2001). Attitudinal, experiential, and situational predictors of sexual assault perpetration. *Journal of Interpersonal Violence, 16*, 784–807. doi:10.1177/088626001016008004
- Abbey, A., Wegner, R., Woerner, J., Pegram, S. E., & Pierce, J. (2014). Review of survey and experimental research that examines the relationship between alcohol consumption and men's sexual aggression perpetration. *Trauma, Violence, and Abuse, 15*, 265-282.
- Atkins, D. C., & Gallop, R. J. (2007). Rethinking how family researchers model infrequent outcomes: A tutorial on count regression and zero-inflated models. *Journal of Family Psychology, 21*, 726-735.
- Basile, K. C., & Hall, J. E. (2011). Intimate partner violence perpetration by court-ordered men: Distinctions and intersections among physical violence, sexual violence, psychological abuse, and stalking. *Journal of Interpersonal Violence, 26*, 230-253.
- Bowleg, L., Lucas, K. J., & Tschann, J. M. (2004). "The ball was always in his court": An exploratory analysis of relationship scripts, sexual scripts, and condom use among African American women. *Psychology of Women Quarterly, 28*, 70-82.
- Centers for Disease Control and Prevention (CDC) (2017). Condom effectiveness. Retrieved from <https://www.cdc.gov/condomeffectiveness/index.html>.

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Centers for Disease Control and Prevention (CDC) (2018). Sexual violence. Retrieved from <https://www.cdc.gov/violenceprevention/sexualviolence/index.html>.

Cohen, J. (1983). The cost of dichotomization. *Applied Psychological Measurement*, 7, 249-253.

Davis, K. C. (2018a). *Men's Coercive Condom Use Resistance: The Roles of Alcohol Intoxication, Sexual Aggression History, and Emotional Factors*. Invited talk at Recent Advances in Understanding and Preventing Alcohol-Related Sexual Assault, National Institute on Alcohol Abuse and Alcoholism, Bethesda, MD.

Davis, K. C., Danube, C. L., Neilson, E. C., Stappenbeck, C. A., Norris, J., George, W. H., & Kajumulo, K. F. (2016a). Distal and proximal influences on men's intentions to resist condoms: alcohol, sexual aggression history, impulsivity, and social-cognitive factors. *AIDS and Behavior*, 20, 147-157.

Davis, K. C., Gulati, N. K., Neilson, E. C., & Stappenbeck, C. A. (2018b). Men's coercive condom use resistance: The roles of sexual aggression history, alcohol intoxication, and partner condom negotiation. *Violence Against Women*.

Davis, K. C., Jacques-Tiura, A. J., Stappenbeck, C. A., Danube, C. L., Morrison, D. M., Norris, J., & George, W. H. (2016b). Men's condom use resistance: Alcohol effects on theory of planned behavior constructs. *Health Psychology*, 35, 178.

Davis, K. C., Kiekel, P. A., Schraufnagel, T. J., Norris, J., George, W. H., & Kajumulo, K. (2012). Men's alcohol intoxication and condom use during sexual assault perpetration. *Journal of Interpersonal Violence*, 27, 2790-2806.

Davis, K. C., Neilson, E. C., Wegner, R., Stappenbeck, C. A., George, W. H., & Norris, J. (2018c). Women's sexual violence victimization and sexual health: Implications for risk

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- reduction. In L.M. Orchowski and C. Gidycz (Eds). *Sexual Assault Risk Reduction: Theory, Research and Practice* (pp. 379 – 406). Philadelphia: Elsevier.
- Davis, K. C., Schraufnagel, T. J., Kajumulo, K. F., Gilmore, A. K., Norris, J., & George, W. H. (2014a). A qualitative examination of men's condom use attitudes and resistance: "It's just part of the game". *Archives of Sexual Behavior*, 43(3), 631-643.
- Davis, K. C., Stappenbeck, C. A., Norris, J., George, W. H., Jacques-Tiura, A. J., Schraufnagel, T. J., & Kajumulo, K. F. (2014b). Young men's condom use resistance tactics: A latent profile analysis. *The Journal of Sex Research*, 51, 454-465.
- Department of Justice (2015). Office of Justice Programs, Bureau of Justice Statistics, National Crime Victimization Survey, 2010-2014.
- Gidycz, C. A., Orchowski, L. M., & Berkowitz, A. D. (2011). Preventing sexual aggression among college men: An evaluation of a social norms and bystander intervention program. *Violence Against Women*, 17, 720-742.
- Gidycz, C. A., Warkentin, J. B., & Orchowski, L. M. (2007). Predictors of perpetration of verbal, physical, and sexual violence: A prospective analysis of college men. *Psychology of Men and Masculinity*, 8, 79–94.
- Gyrch, J. & Swan, S. (2012). Toward a more comprehensive understanding of interpersonal violence: Introduction to the special issue on interconnections among different types of violence. *Psychology of Violence*, 2, 105-110.
- Hamby, S. (2014). Intimate partner and sexual violence research: Scientific progress, scientific challenges, and gender. *Trauma, Violence, and Abuse*, 15, 149-158.

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Hamby, S. & Grych, J. (2013). *The web of violence: Exploring connections among different forms of interpersonal violence and abuse*. Dordrecht, The Netherlands: Springer.

Jenkins, S., & Aubé, J. (2002). Gender differences and gender-related constructs in dating aggression. *Personality and Social Psychology Bulletin*, 28, 1106-1118. doi: 10.1177/01461672022811009

Jewkes, R., Nduna, M., Shai, N. J., & Dunkle, K. (2012). Prospective study of rape perpetration by young South African men: Incidence and risk factors. *PLOS one*.

Kennedy, S. B., Nolen, S., Applewhite, J., & Waiter, E. (2007). Urban African-American males' perceptions of condom use, gender and power, and HIV-STD prevention program. *Journal of the National Medical Association*, 99, 1395-1401.

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., Heise, L., & Russo, N. F. (1994). The global health burden of rape. *Psychology of Women Quarterly*, 18, 509-537.

Lisak, D., & Miller, P. M. (2002). Repeat rape and multiple offending among undetected rapists. *Violence and Victims*, 17, 73-84.

Loh, C., Gidycz, C. A., Lobo, T. R., & Luthra, R. (2005). A prospective analysis of sexual assault perpetration: Risk factors related to perpetrator characteristics. *Journal of Interpersonal Violence*, 20, 1325-1348.

Murphy, C. M., & O'Leary, K. D. (1989). Psychological aggression predicts physical aggression in early marriage. *Journal of Consulting and Clinical Psychology*, 57, 579–582. doi: 10.1037/0022-006X.57.5.579

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National Institute on Alcohol Abuse and Alcoholism (NIAAA). (2003). Task force on recommended questions of the National Council on Alcohol Abuse and Alcoholism. Recommended sets of alcohol consumption questions. Available at: <http://www.niaaa.nih.gov/Resources/ResearchResources/TaskForce.htm>. Accessed April 2011.

National Institute of Justice (2006). Extent, nature, and consequences of rape victimization: findings from the National Violence Against Women Survey. Retrieved from <https://stacks.cdc.gov/view/cdc/21950>

Peterson, Z. D., Janssen, E., & Heiman, J. R. (2010). The association between sexual aggression and HIV risk behavior in heterosexual men. *Journal of Interpersonal Violence*, 25, 538-556.

Raj, A., Santana, C., Marche, A., Amaro, H., Cranston, K., & Silverman, J. G. (2006). Perpetration of intimate partner violence associated with sexual risk behaviors among young adult men. *American Journal of Public Health*, 96, 1873-1878.

Rape, Abuse, and Incest National Network (RAINN) (2017). Victims of Sexual Violence: Statistics. Retrieved from <https://www.rainn.org/statistics/victims-sexual-violence>

Rothman, E. F., Reyes, L. M., Johnson, R. M., & LaValley, M. (2012). Does alcohol make them do it? Dating violence perpetration and drinking among youth. *Epidemiologic Reviews*, 34, 103-119. doi: 10.1093/epirev/mxr027

Shorey, R., Stuart, G., McNulty, J., & Moore, T. (2014). Acute alcohol use temporally increases the odds of male perpetrated dating violence: A 90-day diary analysis. *Addictive Behaviors*, 39, 365-368. doi:10.1016/j.addbeh.2013.10.025

Running head: PREDICTING RAPE EVENTS

- Sobell, L. C. & Sobell, M. B. (1992). Timeline Followback: A technique for assessing self-reported ethanol consumption. In J.P. Allen & R. Z. Litten (Eds.), *Measuring Alcohol Consumption: Psychosocial and Biological Methods* (pp. 41-72). Totowa, NJ: Humana Press. doi: 10.1007/978-1-4612-0357-5_3
- Stappenbeck, C. A., Gulati, N. K., & Fromme, K. (2016). Daily Associations Between Alcohol Consumption and Dating Violence Perpetration Among Men and Women: Effects of Self-Regulation. *Journal of Studies on Alcohol and Drugs*, 77, 150-159.
- Steele, C. M. & Josephs, R. A. (1990). Alcohol myopia: Its prized and dangerous effects. *American Psychologist*, 45, 921-933.
- Swahn, M.H., Simon, T.R., Arias, I., & Bossarte, R.M. (2008). Measuring sex differences in violence victimization and perpetration within date and same-sex peer relationships. *Journal of Interpersonal Violence*, 23, 1120-1138.
- Testa, M., & Cleveland, M. J. (2017). Does alcohol contribute to college men's sexual assault perpetration? Between- and within- person effects over five semesters. *Journal of Studies on Alcohol and Drugs*, 78. doi:10.15288/jsad.2017.78.TK
- Thompson, M. P., Koss, M. P., Kingree, J. B., Goree, J., & Rice, J. (2011). A prospective mediation model of sexual aggression among college men. *Journal of Interpersonal Violence*, 26, 2716–2734.
- Tjaden, P., & Thoennes, N. (2000). Full report of the prevalence, incidence, and consequences of violence against women (National Institute of Justice, Research Report, NCJ No. 183781). Washington, DC: U.S. Department of Justice.
- Voller, E. & Long, P. L. (2010). Sexual assault and rape perpetration by college men: The role of the big five personality traits. *Journal of Interpersonal Violence*, 25, 457-480.

Running head: PREDICTING RAPE EVENTS

World Health Organization (WHO) (2012). Understanding and addressing violence against women. Retrieved from

http://apps.who.int/iris/bitstream/handle/10665/77432/WHO_RHR_12.36_eng.pdf;jsessionid=8130409EA9F8EDF7DC5C4A79F0EAA212?sequence=1

Yuan, N. P., Koss, M. P., & Stone, M. (2006, March). The psychological consequences of sexual trauma. Harrisburg, PA: VAWnet, a project of the National Resource Center on Domestic Violence/Pennsylvania Coalition Against Domestic Violence. Retrieved from http://new.vawnet.org/Assoc_Files_VAWnet/AR_PsychConsequences.pdf

Table 1. Correlations and descriptive characteristics of study variables (N = 430)

	1.	2.	3.	4.	5.
1. Physical IPV frequency, past year	--				
2. Psychological IPV frequency, past year	.46**	--			
3. Coercive CUR frequency, since age 14	.04	.26**	--		
4. HED frequency, past year	-.01	-.02	.01	--	
5. Completed rape	.10*	.12*	.18**	.12*	--
<i>M</i>	0.7	4.7	4.4	3.4	0.2
(<i>SD</i>)	(3.4)	(9.1)	(10.9)	(1.9)	(0.9)

Note. IPV = intimate partner violence; CUR = condom use resistance; HED = heavy episodic drinking. * $p < .05$. ** $p < .01$

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Table 2. Results of the GzLM model examining the influence of physical IPV, psychological IPV, coercive CUR, and HED on completed rape during the 3-month follow-up assessment period.

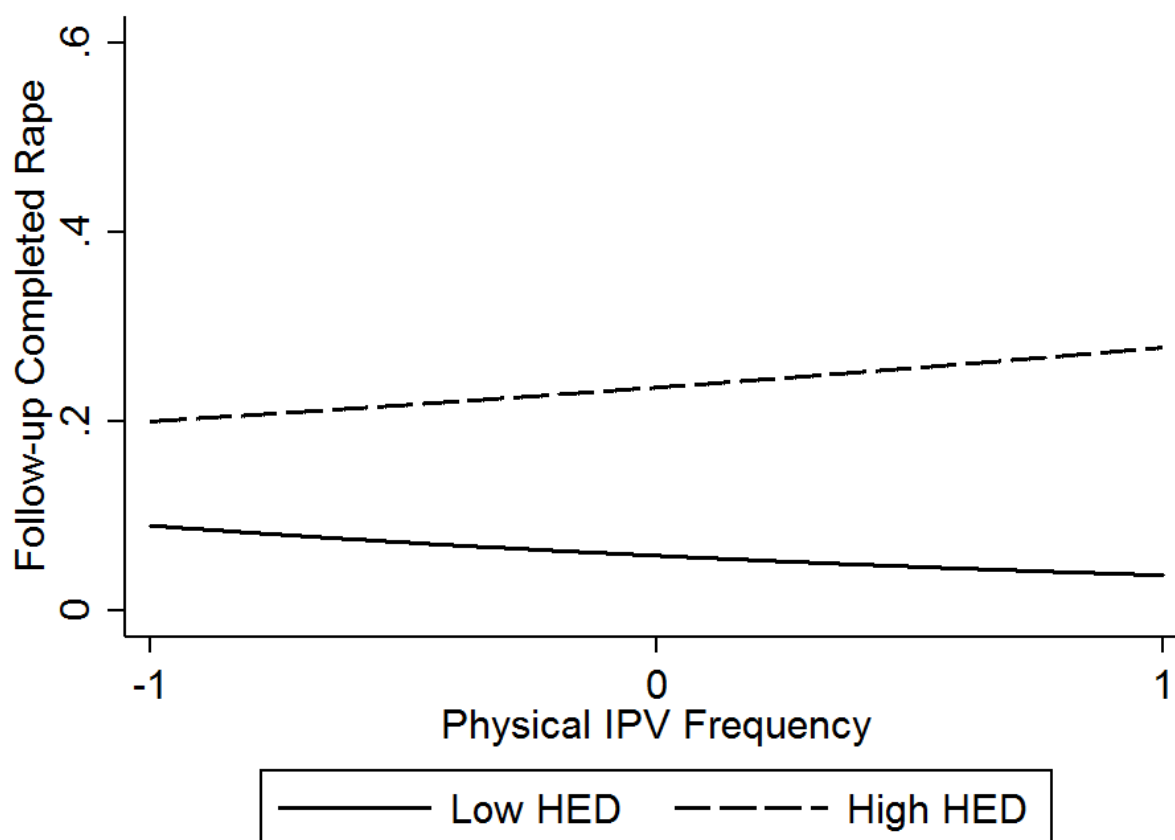
	Model 1		Model 2	
	<i>b</i>	IRR (95% CI)	<i>b</i>	IRR (95% CI)
Physical IPV	-0.13	0.88 (0.56, 1.38)	-0.21	0.81 (0.52, 1.27)
Psychological IPV	0.42***	1.52 (1.21, 1.90)	0.41***	1.50 (1.19, 1.89)
Coercive CUR	0.68***	1.97 (1.37, 2.82)	0.64***	1.89 (1.31, 2.75)
HED	0.70***	2.01 (1.48, 2.72)	0.69***	2.00 (1.47, 2.73)
Physical IPV x Coercive CUR	0.22	1.24 (0.95, 1.62)	0.02	1.02 (0.65, 1.59)
Physical IPV x HED	0.30*	1.35 (1.01, 1.79)	0.46*	1.58 (1.04, 2.40)
Psychological IPV x Coercive CUR	-0.25*	0.78 (0.61, 0.98)	-0.18	0.84 (0.65, 1.08)
Psychological IPV x HED	-0.03	0.97 (0.71, 1.32)	-0.10	0.91 (0.65, 1.27)
Coercive CUR x HED	-0.16	0.85 (0.61, 1.18)	-0.21	0.81 (0.55, 1.21)
Physical IPV x Coercive CUR x HED	--	--	0.53	1.70 (0.62, 4.67)
Psychological IPV x Coercive CUR x HED	--	--	0.11	1.12 (0.85, 1.47)

Note. IRR = incidence rate ratio; CI = confidence interval; IPV = intimate partner violence; CUR = condom use resistance; HED = heavy episodic drinking. * $p < .05$. *** $p < .001$.

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Figure 1. Physical IPV frequency and HED interact to predict completed rape during follow-up.

Estimated values of HED are plotted at ± 1 standard deviation from the mean. Physical IPV frequency is standardized such that it has a mean of 0 and a standard deviation of 1.



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Figure 2. Psychological IPV frequency and coercive CUR interact to predict completed rape during follow-up. Estimated values of coercive CUR are plotted at ± 1 standard deviation from the mean. Psychological IPV frequency is standardized such that it has a mean of 0 and a standard deviation of 1.

