

ALCOHOL USE, TRAIT ANGER, AND INTIMATE PARTNER VIOLENCE
PERPETRATION IN COLLEGE STUDENT COUPLES

by

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ABSTRACT

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Intimate Partner Violence (IPV) is a significant public health problem, and risk for IPV is often highest among young adults. Numerous studies have found alcohol use to temporally precede and increase the risk for IPV perpetration. Trait anger is also associated with greater levels of physical, sexual, and psychological IPV perpetration. Daily diary research using one member of the dyad has found that alcohol is associated with increased physical IPV perpetration among men high, but not low, in levels of trait anger. However, IPV is a dyadic process that is impacted by the behavior of both partners, and little is known about whether alcohol use and trait anger may interact to predict IPV in couples. The present thesis utilized a sample of 181 couples between the ages of 18-25 years old to examine alcohol use/problems and trait anger as predictors of physical, sexual, and psychological IPV perpetration. Data were analyzed using an Actor-Partner Interdependence (APIM) framework, allowing for both actor and partner effects to be examined. Results indicated that actor trait anger was associated with increased levels of psychological IPV perpetration ($B = 1.25, p < .001$). Both actor alcohol use/problems (ERR = 1.08, 95% CI = 1.01 – 1.16) and actor trait anger (ERR = 1.10, 95% CI = 1.02, 1.17) were associated with increased physical IPV perpetration. A significant interaction ($p < .001$) between partner alcohol use/problems and partner trait anger predicting sexual IPV perpetration indicated that at high levels of partner trait anger, partner alcohol use/problems were associated with lower

levels of actor sexual IPV perpetration (ERR = 0.81, 95% CI = 0.75 – 0.88). On the other hand, at low levels of partner trait anger, partner alcohol use/problems were associated with higher levels of actor sexual IPV perpetration (ERR = 1.08, 95% CI = 1.02 – 1.15). Findings highlight the importance of targeting alcohol use/problems and trait anger to reduce IPV in young adults.

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Introduction

Intimate Partner Violence (IPV), defined as physical, sexual, or psychological abuse by a dating or romantic partner, is a significant public health problem. Research suggests that risk for IPV peaks in young adulthood, making those aged 18-25 at an increased risk for experiencing IPV (Johnson et al., 2015). Rates of IPV among this age range are alarmingly high, with up to 30% reporting past year physical (e.g., hitting or punching a partner; Elmquist et al., 2016), up to 21% reporting past year sexual (e.g., insisting on sex with your partner when they don't want to; Peterson et al., 2018), and the majority (67-90%) reporting past year psychological IPV (e.g., insulting, swearing, or shouting at partner; Shorey, Corenlius, & Bell, 2008; Wolford-Clevenger et al., 2016). Men report higher levels of sexual IPV perpetration; however, men and women report similar rates of physical and psychological IPV perpetration (Straus, 2004). The high prevalence and increased risk for IPV during young adulthood necessitates a better understanding of risk factors for IPV during this critical time period (Johnson et al., 2015). Experiencing IPV is associated with multiple short- and long-term negative outcomes in both men and women including increased risk for mental illness, substance use, developing a chronic disease (e.g., chronic pain or severe headaches), and injury (Coker et al., 2002). Among college students, victims of IPV report increased levels of depressive symptoms (Sabina & Straus, 2008) and suicidal ideation (Wolford-Clevenger et al., 2016). Furthermore, young adults that experience more than one type of IPV are at an even greater risk for posttraumatic stress (Sabina & Straus, 2008). College students experiencing IPV also report less confidence in their academic abilities, higher levels of stress related to college, decreased commitment to their institution, and less diligence related to meeting the demands of college (Banyard et al., 2020). Therefore, it is critical that risk factors for IPV in young adults are well understood in an effort to improve

interventions for IPV, thereby reducing the prevalence and associated negative outcomes. In the present thesis, I examined the interactive effects of alcohol use and problems and trait anger in predicting young adult couples' risk for IPV.

Alcohol-Related IPV

Alcohol use is prevalent among college-aged young adults, with approximately half (48-55%) consuming alcohol at least once in the past thirty days (Schulenberg et al., 2021) and approximately 40% reporting at least one episode of heavy episodic drinking (five or more drinks for men, four or more for women) in the past thirty days (Hingson et al., 2009). Heavy alcohol use in this age range is associated with numerous negative outcomes including academic consequences (e.g., missed classes, lower grades), injuries, sexual assault, cognitive deficits, and changes in brain functioning (White & Hingson, 2013).

Given the high rates of alcohol use among college age young adults, it is not surprising that alcohol and IPV are robustly linked in college students. A review of the literature on dating violence in college-aged students underscored that numerous studies established a relationship between alcohol use and IPV (Shorey, Stuart, & Cornelius, 2011). Furthermore, meta-analyses have consistently reported a significant relationship between alcohol use and IPV, such that greater levels alcohol use is associated with higher incidence of IPV (Foran & O'Leary, 2008; Rothman et al., 2012). Additionally, research has demonstrated that frequency of alcohol use is associated with IPV perpetration for both men (Luthra & Gidycz, 2006) and women (DuRant et al., 2007). Multiple daily diary studies have been conducted to establish the temporal precedence of alcohol-related IPV (Moore et al., 2011; Testa & Derrick, 2014). In one 90-day daily diary study using a sample of college aged males, physical and sexual IPV perpetration was more likely to occur following alcohol use (Shorey, Stuart, McNulty, & Moore, 2014). The same study

found that psychological aggression was only more likely to occur following heavy (five or more drinks) alcohol use (Shorey, Stuart, McNulty, & Moore, 2014). Additional daily diary research suggests that the likelihood of perpetrating physical or psychological IPV increased with each additional alcoholic drink consumed (Moore et al., 2011). The robust literature on this topic has led some to conclude that alcohol is a contributing *cause* of IPV (Leonard, 2005; Leonard & Quigley, 2017).

Despite evidence that there is a robust link between alcohol and IPV, alcohol use alone is neither a “necessary nor sufficient” cause of IPV (Leonard, 2005). Consequently, an individual using alcohol will not always perpetrate IPV, nor will alcohol always be involved in IPV perpetration. Instead, alcohol may interact with other individual risk factors to increase someone’s odds of perpetration (Leonard, 2005). Research investigating individual difference factors that increase or decrease the likelihood that alcohol use results in IPV is necessary.

Trait Anger and IPV

Anger, one of the most commonly experienced emotions, is considered to be the motivation for numerous forms of aggression (Averill, 1983). Research suggests that those who are high in trait anger, defined as those that are likely to respond to a variety of situations with anger, may be more prone to responding with aggression when experiencing anger than those who are low in trait anger (Norlander & Eckhardt, 2005; Deffenbacher et al., 1996). It is theorized that anger increases aggressive behavior in numerous ways. First, individuals may view their experience of anger as a justification of aggression, and after numerous scenarios where anger results in aggression, the individual may develop a pattern of behavior (Anderson & Bushman, 2002). Furthermore, anger increases arousal levels and may interrupt inhibitory

cognitive processes that would prevent aggression (Anderson & Bushman, 2002; Norlander & Eckhardt, 2005).

Given the relationship between anger and aggression, anger has been the focus of numerous studies investigating risk factors for IPV. Higher levels of trait anger have been associated with increased perpetration of all three types of IPV (Armenti et al., 2018). A meta-analysis synthesizing the findings of 33 studies assessing the relationship between anger constructs (including but not limited to, trait anger) and IPV perpetration in men found that IPV perpetrators reported higher levels of anger than non-violent men ($d = 0.51$; Norlander & Eckhardt, 2005). Additionally, when looking within men who have a history of IPV perpetration, those that perpetrated more severe IPV had higher anger levels than those that perpetrated less severe IPV (Norlander & Eckhardt, 2005). This suggests that trait anger may not just increase one's overall risk for IPV perpetration, but it may also result in someone being more likely to perpetrate *severe* IPV. This link between IPV and anger has also been established in women and young adults. For instance, trait anger has been found to be associated with increased psychological IPV perpetration in undergraduate women (Shorey, Cornelius, & Idema, 2011) and a study of young adults (ages 22-29) found both trait anger and relationship-based anger (feeling frustrated, hostile, or upset last time they were with their partner) to be significantly associated with reports of IPV perpetration (Giordano et al., 2016).

Theoretical Considerations: I³ Theory

Alcohol-related IPV has been widely conceptualized within the I³ (pronounced I-cubed) theory (Finkel, 2007). This theory provides a framework to understand how impelling and inhibiting (or disinhibiting) factors interact to predict one's risk for IPV perpetration when faced with an instigating factor (e.g., an argument with their partner; Finkel & Hall, 2018). Research

has identified numerous impelling and inhibiting factors, but they can be widely characterized as distal, dispositional, relational, or situational factors that increase (impelling) or decrease (inhibiting) an individual's risk for aggression (Finkel & Hall, 2018). Alcohol is a (dis)inhibiting factor, such that it reduces the likelihood that an individual can counteract impelling factors (e.g., trait anger) when faced with instigation (e.g., an argument; Finkel, 2007). An individual with more impelling and disinhibiting factors will be at a higher risk for IPV perpetration than someone with fewer impelling and disinhibiting factors. Thus, according to the I³ theory, one's risk for IPV is greatest when an individual is high in both impelling and disinhibiting factors.

Trait anger is one impelling factor that has been found to increase risk for alcohol-related IPV (Shorey et al., 2017). A daily diary study with college aged men found high trait anger and partner-specific anger management deficits to moderate the relationship between alcohol use and physical IPV (Shorey et al., 2017). Specifically, any alcohol use was associated with increased physical perpetration at high, but not low, levels of trait anger. The opposite pattern was found for anger management, such that alcohol use was associated with increased odds of physical IPV perpetration at low levels of anger management, but not at high levels. The same study found a different pattern for the relationship between alcohol use and sexual IPV perpetration, such that heavy alcohol use was associated with increased sexual aggression at low, but not high, levels of trait anger (Shorey et al., 2017). Furthermore, alcohol use (any use and heavy use) was more strongly associated with sexual IPV perpetration at high, but not low, levels of anger management. Notably, trait anger did not moderate the relationship between alcohol use and psychological IPV. The authors hypothesize that anger may not play a role in facilitating alcohol-related sexual IPV perpetration due to the often premeditated rather than reactionary nature of sexual aggression (Shorey et al., 2017). Additional daily diary research with college

aged women found alcohol use to be associated with increased odds of both physical and psychological aggression in those high in daily angry affect (Shorey, Stuart, Moore, & McNulty, 2014). Taken together, these studies suggest that those high in trait anger are at an increased risk for perpetrating alcohol-related IPV. However, both of these studies were limited to only one member of the dyad. This body of literature calls for increased research to understand the relationship between alcohol use, anger, and IPV perpetration in dyads.

Dyadic Approach to IPV Research

IPV is a dyadic process that involves both partners (Testa & Derrick, 2014). Therefore, each partner has the potential to contribute the couples' overall risk for violence and research on IPV should take this interdependent relationship into account (Leonard, 1993). Research suggests that one partner's appraisals of their own and their partner's actions interact to predict IPV, and these factors appear to be reciprocal and interdependent (Leonard, 1993). As such, if one individual has a trait or behavior that is associated with increased risk for IPV, that may increase the risk for IPV in the other partner as well. For example, when considering alcohol, if one partner drinks heavily and the other does not, this may promote discord in the relationship that could result in IPV (Leonard, 1993). Research assessing the impact of alcohol use on risk for IPV has found an association between one member of the couple's alcohol use and the other member's IPV perpetration (Eckhardt et al., 2019).

Dyadic risk can also be considered within the I³ model, such that a couple's risk for IPV would be greatest when a member of the dyad has strong instigating factors, strong impelling factors, and weak inhibiting (or strong disinhibiting) factors (Finkel, 2014). Any combination of these factors in one member of the dyad has the potential to increase risk for IPV in either member of the dyad, and all three factors in each dyad member would be considered the "perfect

storm” for IPV (Finkel, 2014). Theoretically, one partner’s alcohol use and trait anger have the ability to impact the other partners’ perpetration, necessitating a dyadic approach to understanding this relationship. Previous dyadic research aimed at understanding the roles of alcohol use and anger in predicting IPV perpetration following IPV victimization found different effects for men and women. In women, results suggested that anger may mediate the relationship between victimization and subsequent IPV perpetration. On the other hand, problematic alcohol use, and not anger, was found to mediate the relationship between victimization and perpetration in men (Sprunger et al., 2015). Given the role that trait anger appears to play in mediating the relationship between victimization and perpetration in women but not men, it was hypothesized that anger may be a stronger impelling factor for women (Sprunger et al., 2015). However, this study was conducted using a community-based sample with a mean age of 32.73 ($SD = 10.49$), thus limiting generalizability to young adult couples.

Another dyadic study conducted by Grom and colleagues (2021) utilized lab-based alcohol administration to understand the roles of alcohol use and trait anger in IPV perpetration in a sample of young adult couples that endorsed a pattern of heavy episodic drinking (4 or more beverages per episode for women, 5 or more for men) at least twice/week for the past year. A shock-based aggression paradigm was used to simulate IPV perpetration. Results indicated an interaction that was approaching significance ($p = .05$) between trait anger and alcohol use, such that alcohol intoxication was associated with higher levels of IPV perpetration at low, but not high, levels of trait anger. The authors noted that these findings are contrary to previous research that suggests alcohol is more strongly associated with aggression in those with high levels of trait anger (Giancola, 2002; Shorey, Stuart, Moore, & McNulty, 2014). Furthermore, lab-based aggression paradigms have been criticized for their content validity and poor generalizability to

real world aggression (McCarthy & Elson, 2018). Thus, these findings may not extend to reports of IPV perpetration. Additional research is needed to better understand the roles of alcohol use and trait anger in predicting IPV perpetration in dyads, specifically in young adults.

Present Study

College-aged young adults are at a significant risk for experiencing IPV and associated negative outcomes. Previous research has demonstrated that alcohol may be a contributing cause of IPV, and alcohol use often temporally precedes physical, psychological, and sexual IPV perpetration. Additionally, the literature on trait anger as a risk factor for IPV perpetration is robust, with ample evidence that individuals with high levels of trait anger are at an increased risk for IPV perpetration. Consistent with the I³ theory, previous research suggests that alcohol use is associated with increased IPV among those also high in trait anger. However, literature assessing this relationship using data from both members of the couple is limited. Dyadic theory suggests that risk factors in one individual may impact the dyad's overall risk for IPV perpetration by creating an environment in which conflict is escalated. Research focused on the dyad, and partner differences within the dyad, is critical to better understanding couple's overall risk. Thus, the present study was designed to assess the roles of alcohol use and problems and trait anger in predicting IPV perpetration by both members of the dyad. Analyses controlled for individual's drug use and relationship length, two known correlates of IPV perpetration (Ganson et al., 2021; Kennedy et al., 2018). The present study used pre-existing, cross-sectional dyadic data that included assessments of alcohol use and problems, trait anger, and IPV.

Study Aims

Consistent with the I³ theory and previous research, the following aims and hypotheses were proposed:

Aim 1: Examine the effect of alcohol use and problems and trait anger on the risk of IPV perpetration.

Hypothesis 1: The alcohol use and problems and trait anger of one partner will be associated with the other partner's IPV perpetration.

Aim 2: To examine whether trait anger moderates the association between alcohol use and problems and IPV perpetration.

Hypothesis 2a: Trait anger will moderate the relationship between alcohol use and problems and IPV perpetration, such that one's own alcohol use and problems will be more strongly associated with their IPV perpetration when they are high, relative to low, in trait anger.

Hypothesis 2b: Partner's alcohol use and problems and trait anger will interact to predict the other dyad member's IPV, such that partner's alcohol use and problems will be more strongly associated with the other dyad member's IPV perpetration when the partner is also high, relative to low, in trait anger.

The present study will contribute to the growing literature on trait anger and alcohol-related IPV in young adult couples. Additionally, results from this study will inform the direction of future research on trait anger and alcohol use and problems.

Method

Participants

A sample of 181 college-age couples (362 individual participants) were recruited from Ohio University for the study. To be eligible, couples had to have been between 18-25 years of age, dating exclusively for at least one month, have a minimum of 2 contact days per week and live within 250 miles from one another, be an Ohio University student (non-graduate), and one

of the partners must have consumed alcohol in the past month. Couples were excluded if either dyad member had children or were a lifelong abstainer of alcohol. The majority (52.5%) of the sample identified as female. There were 9 same-sex couples, all comprised of women. The mean relationship length was 19.29 months ($SD = 16.88$) and the mean age was 19.76 ($SD = 1.47$). The sample was predominantly White (92.2%) and Non-Hispanic (95.6%). The sample also included individuals that identified as multiracial (4.7%), Black/African American (2.5%), and American Indian or Alaska Native (0.6%).

Procedure

Couples were recruited in two primary ways. First, the study was listed on the Ohio University's Psychology Experiment Sign-up System. This system facilitates participation in research of undergraduate students enrolled in introductory psychology courses. Students are given extra credit or course credit for their participation. Second, recruitment flyers and advertisements were posted on and off campus with study information. Interested couples were screened for eligibility, and eligible couples were scheduled for a baseline assessment. At the baseline assessment, both members of the couple came to the laboratory for approximately 1.5 hours. Couples were separated and eligibility was confirmed, consent was obtained, and each member of the couple filled out a battery of measures. The data used for the present study was collected as part of a broader, longitudinal daily diary study. Participants went on to complete 60 days of daily diary assessments. However, this data was not used in the current study.

Participants were given the option to choose either course credit assigned through the Ohio University's Psychology Experiment Sign-up System or \$20.00 for their participation in the assessment.

Measures

Demographic Questionnaire. A demographic questionnaire was utilized to gather information on age, gender, sexual orientation, race, ethnicity, relationship status, relationship length (in months), and student status.

Alcohol Use and Problems. The Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993) was used to assess alcohol use and problems. The AUDIT is a 10-item measure that asks about frequency of use and associated impairment. Scores range from 0-40, with 1-7 indicating low risk consumption, 8-14 indicating harmful or hazardous use, and 15+ indicating a likelihood of alcohol dependence. The first three items assess frequency of alcohol use, the number of alcoholic beverages typically consumed when drinking, and frequency of consuming 6 or more drinks on one occasion. The remaining 7 items assess past year alcohol related problems. An example item from the AUDIT is, “During the past year, how often have you had a feeling of guilt or remorse after drinking?”

Validity of the AUDIT has been assessed in college age populations and research suggests that it is a valid and reliable measure to assess alcohol use and problems in this population (Kokotailo et al., 2004). The AUDIT has demonstrated test re-test reliability over two weeks ($r = .64$ and $r = .92$) and 6 weeks ($r = .81$; Reinert & Allen, 2002). Using the recommended cutoff score of 8 to identify high risk consumers, a study using a sample of the general population ($n = 457$) found a sensitivity score of .70 and a specificity of .96 (Selin, 2003). By this standard, 91% of the sample received the same classification at time 2 (either high or low risk consumers) as time 1 (Selin, 2003). The internal consistency in the current sample was good ($\alpha = .74$).

Drug Use. The Drug Use Disorders Identification Test (DUDIT; Stuart et al., 2003) was used to assess substance use. The DUDIT is a 14-item measure modeled after the AUDIT

(Saunders et al., 1993). The first 7 items ask about use of drugs, including cannabis, cocaine, hallucinogens, stimulants, medications not prescribed by a doctor, and other substances (e.g., poppers, steroids). There are 7 response options that range from “never” to “4 or more times a week.” The remaining 7 items assess past year drug use related problems. An example item from the DUDIT is, “How often during the past 12 months have you found that you were not able to stop using drugs once you had started?” Responses are summed, and higher scores indicate greater drug use and problems. The DUDIT has been demonstrated to have adequate reliability ($\alpha = .83$; Stuart et al., 2003). The internal consistency in the current sample was good ($\alpha = .73$).

Trait Anger. Trait anger was assessed using the Trait Anger subscale of the State- Trait Anger Expression Inventory (STAXI-2; Spielberger, 1999). This subscale is comprised of 10 items (e.g., “When I get frustrated, I feel like hitting someone”) with response options on a 4-point Likert scale from “Almost Never” to “Almost Always.” Participants are instructed to rate how they “generally feel”. Items are summed and higher scores on this scale indicate higher levels of trait anger. The STAXI-2 has been validated in undergraduate college samples, and has demonstrated strong concurrent validity (Lievaart et al., 2016). Additionally, the Trait Anger scale of the STAXI-2 was shown to have good test re-test reliability in a college student population ($r = .78$) with re-test after 7 to 44 days (Lievaart et al., 2016). The internal consistency in the current sample was good ($\alpha = .81$).

IPV Perpetration. The Revised Conflict Tactics Scales (CTS2; Straus et al., 1996) was used to assess IPV perpetration and victimization. The CTS2 is a self-report measure comprised of 39 items that are asked for both perpetration (e.g., “I slapped my partner”) and victimization (e.g., “My partner did this to me”). Due to each item being asked in the context of perpetration and victimization, participants answer a total of 78 questions. The CTS2 has 5 scales that

measure negotiation (e.g., “I showed my partner I cared even though we disagreed”), psychological aggression (e.g., “I shouted or yelled at my partner”), physical assault (e.g., “I punched or hit my partner with something that could hurt”), sexual coercion (e.g., “I used threats to make my partner have oral or anal sex”), and injury (e.g., “I had a sprain, bruise, or small cut because of a fight with my partner”). For the present proposal, only the psychological aggression, physical assault, and sexual coercion scales will be used. Individuals are asked to respond how frequently each event occurred in the context of their current or most recent dating relationship. There are 8 response options: this never happened; once in the past year; twice in the past year; 3-5 times in the past year; 6-10 times in the past year; 11-20 times in the past year; more than 20 times in the past year; and not in the past year, but it did happen before. The CTS2 is scored by summing the midpoint of each item (e.g., 3-5 times is scored as 4) to create a total score. Higher scores reflect more frequent IPV perpetration.

The CTS2 has been shown to be a valid and reliable measure for assessing IPV perpetration and victimization in couples. The subscales have demonstrated good internal reliability with coefficients ranging from 0.79 to 0.95, and a review of 41 papers demonstrated a mean alpha coefficient of 0.77 (Chapman & Gillespie, 2019). The internal consistencies for the current sample were .64 for psychological IPV perpetration, .41 for physical IPV perpetration, and .38 for sexual IPV perpetration. The internal consistencies of IPV measures are impacted by significant percentages of the sample reporting no or limited violence, thus skewing the data. This results in low internal consistencies, rendering internal consistencies a poor indicator of psychometric properties of IPV measures (Ryan, 2013).

Sample Size Determination

The present study used pre-existing data. Therefore, the sample size was determined via a power analysis for the original study aims. The APIMPower program was used to calculate power for the present cross-sectional main effects analyses (Ackerman & Kenny, 2019). Given the current sample size ($N = 181$ couples) and assuming a moderate correlation ($r = 0.3$) between actor and partner variables and a moderate correlation ($r = 0.3$) between errors, there is .83 power to detect an actor and partner effect of size .11. Therefore, the sample of 181 dyads is suited to detect small effect sizes. For interactive effects, there is little guidance published on determination of sample size for analyses that takes into account interactive effects for both the actor and the partner. As such, it is worth noting that previous dyad research on IPV had found significant interactive effects using APIM with significantly fewer couples (e.g., $N = 73$; Watkins et al., 2014) than the present study. Therefore, the sample of 181 dyads was expected to have ample power to detect main and interactive effects.

Statistical Analyses

To begin, bivariate correlations were conducted in SPSS (version 28) between predictor (alcohol use and problems, trait anger), control (drug use, relationship length), and outcome variables (physical, sexual, and psychological IPV perpetration). IPV variables have been shown to be skewed and overdispersed (Shorey et al., 2012); as such, each IPV perpetration variable was assessed for skew and kurtosis.

Primary data analyses were conducted in HLM7 using multilevel modeling in accordance with the Actor-Partner Interdependence Model (APIM; Cook & Kenny, 2005). APIM is a framework that allows for actor and partner effects to be statistically examined within dyads. Actor effects capture how one's own predictors (e.g., alcohol use and problems) affect their own outcomes (e.g., IPV perpetration). Partner effects capture how a partner's predictors (e.g., partner

alcohol use and problems) may affect actor's actions (e.g., actor IPV perpetration). Thus, actor (individuals own behaviors/traits predicting their IPV) and partner (individuals partner's behaviors/traits predicting their own IPV) effects were explored.

Previous research on romantic dyads has considered the dyad members to be distinguishable, meaning that there is a systematic or meaningful way to order the two members of the dyad (e.g., a male and female partner; Kenny & Ledermann, 2010). However, when there is no dichotomous variable to differentiate the members of the dyad, the dyads are considered indistinguishable (i.e., interchangeable). The current sample consists for 9 same-sex couples, rendering sex ineffective at distinguishing members of the couples. As such, the couples in the present study were considered indistinguishable in accordance with previous APIM studies that have included same-sex couples (e.g., Gilmour et al., 2021; Parsons et al., 2012). When dyads are considered indistinguishable, partners are randomly assigned to either actor or partner roles and their influence is to considered equal (Kenny & Ledermann, 2010). Furthermore, since there is no meaningful way to differentiate the dyad members (e.g., male or female), any effect is considered to be applicable to all individuals in the sample. Figure 1 displays an indistinguishable APIM model.

A Poisson distribution was specified for models with physical and sexual IPV perpetration, as these two variables were positively skewed (physical IPV skewness = 4.70, sexual IPV skewness = 4.36). Given the increased prevalence, psychological IPV was within the accepted range of skew (skewness = 1.84; West et al., 1995), and was modeled as a continuous variable. Each type of IPV (physical, sexual, and psychological) was examined in separate models and occurred in two steps. To analyze the data for Aim 1, actor and partner main effects of alcohol use and problems and trait anger were included as independent variables in three

separate models (one for each type of IPV). To analyze data for Aim 2, actor and partner interactions (alcohol use and problems x trait anger) were added to each of the three models (one for each type of IPV). Alcohol use and problems and trait anger were mean centered and interaction terms were created by multiplying alcohol and anger together. In all models, relationship length and drug use were controlled for by grand centering the variables and including drug use in level 1, and relationship length in level 2. Consistent with recommendations for examining moderation (Aiken et al., 1991), main effect models were only interpreted if the interaction(s) were not significant. Significant interactions were decomposed at high (+1 SD) and low (-1) levels of anger. Gender differences in the main effects of alcohol use and problems and trait anger on IPV were examined in three models (one for each type of IPV), with gender serving as a moderator of these associations. Gender interaction terms were created by multiplying actor gender by the actor predictor variable (alcohol use and problems and trait anger) for the actor interaction, and partner gender by partner predictor variable (alcohol use and problems and trait anger) for the partner interaction.

In total, 9 models were examined. To correct for Type I error, a Benjamini-Hochberg correction was used (Benjamini & Hochberg, 1995; Benjamini & Yekutieli, 2001). For each model, p values were ranked in order by value from lowest to highest. Then, the Benjamini-Hochberg critical value was calculated using the formula $(i/m)Q$. Value i = the p value rank, m = the number of tests conducted, and Q = the p value 0.05. Original p values were then compared to the calculated p values, and the variable with the highest original p value that was lower than the calculated p value was selected as the cutoff point. All p values including and below this (i.e., ranked above) were considered significant.

Results

Descriptive Statistics

The majority (82.5%) of participants reported past year psychological IPV perpetration, 24.9% reported past year physical IPV perpetration, and 32.7% reported past year sexual IPV perpetration. Nearly half (45.8%) of participants met criteria for harmful or hazardous drinking using the recommended cut-off score of 8 on the AUDIT (Saunders et al., 1993). Nearly two-thirds (62.2%) of participants endorsed some drug use.

Bivariate correlations between variables (Table 1) demonstrated that alcohol use and problems scores were significantly and positively correlated with drug use scores, psychological IPV perpetration, physical IPV perpetration, sexual IPV perpetration, and trait anger scores. Relationship length was significantly and positively correlated with psychological IPV perpetration. Trait anger was significantly and positively correlated with drug use, psychological IPV perpetration, and physical IPV perpetration. Drug use was significantly and positively correlated with psychological IPV perpetration and sexual IPV perpetration. Physical, sexual, and psychological IPV perpetration were all significantly and positively related to one another.

APIM analyses

Psychological Aggression. The main and interactive effects of alcohol use and problems and trait anger on the risk for psychological IPV perpetration were examined (Table 2). Actor, but not partner, trait anger was significantly associated with increased psychological IPV perpetration. Neither actor or partner alcohol use and problems were associated with psychological IPV perpetration. Drug use was not significantly associated with psychological IPV perpetration. Relationship length was significantly associated with psychological IPV

perpetration. There were no significant interactions between actor or partner alcohol use and problems and trait anger in predicting psychological IPV perpetration.

Physical Aggression. Main effect analyses for physical IPV perpetration demonstrated a significant association between actor, but not partner, trait anger and physical IPV perpetration (Table 2). Actor alcohol use and problems were associated with increased incidence of physical IPV perpetration. Partner alcohol use and problems were not significantly associated with physical IPV perpetration. Relationship length was significantly associated with physical IPV perpetration. Drug use was not significantly associated with physical IPV perpetration. There were no significant interactions between actor or partner alcohol use and problems and trait anger in predicting physical IPV perpetration.

Sexual Aggression. Analyses revealed a significant interaction ($p < .001$) for partner alcohol use and problems and partner trait anger in predicting actor sexual IPV perpetration (see Table 2). Decomposition of this interaction indicated that partner alcohol use and problems were associated with *lower levels* of actor sexual IPV perpetration at high levels of partner trait anger (ERR = 0.81, 95% CI = 0.75 – 0.88). On the other hand, partner alcohol use and problems were associated with higher levels of actor sexual IPV perpetration at low levels of partner trait anger (ERR = 1.08, 95% CI = 1.02 – 1.15). Actor alcohol use and problems were associated with increased sexual IPV perpetration. Both actor and partner drug use were significantly associated with sexual IPV perpetration in this model. Trait anger and relationship length were not significantly associated with sexual IPV perpetration, nor was the interaction between actor alcohol use and problems and actor trait anger.

Gender Effects. To examine potential gender differences, interactions between actor gender and actor predictor variables (e.g., actor gender X actor trait anger), and partner gender

and partner predictor variables (e.g., partner gender X partner alcohol), were conducted for each IPV outcome. No significant interactions were observed for psychological or physical IPV. For sexual IPV, results indicated that the relationship between actor trait anger and actor sexual IPV perpetration differed as a function of gender (ERR = 0.85, 95% CI = 0.78 – 0.92). For men, one's own (actor) trait anger was significantly associated with increased sexual IPV perpetration (ERR = 1.12, 95% CI = 1.05 – 1.17). For women, one's own (actor) trait anger was significantly and *negatively* associated with sexual IPV perpetration (ERR = 0.94, 95% CI = 0.89 – 1.00). Furthermore, the relationship between partner trait anger and actor sexual IPV perpetration differed as a function of partner gender (ERR = 1.11, 95% CI = 1.01 – 1.23). For men, there was no significant partner effect of trait anger (ERR = 0.96, 95% CI = 0.89 – 1.04) on sexual IPV perpetration. For women, there was a significant partner effect of trait anger (ERR = 1.07, 95% CI = 1.01 – 1.13), such that when one's partner is female, partner trait anger is associated with increased actor sexual IPV perpetration.

Benjamini-Hochberg. A Benjamini-Hochberg correction was used to account for the number of analyses conducted. After the correction, all significant findings reported remained significant. As such, original *p* values were retained for clarity.

Discussion

Previous studies have established a robust relationship between alcohol and IPV perpetration among young adults (Shorey, Stuart, & Cornelius, 2011), with some going as far as to say that alcohol is a contributing cause of IPV (Leonard, 2005; Leonard & Quigley, 2017). Further, the relationship between trait anger and IPV perpetration has been studied extensively, with ample support that high levels of trait anger are associated with all three types of IPV perpetration (physical, sexual, and psychological; Armenti et al., 2018). Research examining

only one member of the dyad has demonstrated that trait anger is an impelling factor that increased the risk of alcohol-related IPV (Shorey et al., 2017). However, the research on trait anger and alcohol-related IPV using a dyadic framework, that accounts for how the traits/behaviors of one partner affect the other partner's IPV perpetration, has been limited. Thus, the present study examined the roles of trait anger and alcohol use and problems in predicting physical, sexual, and psychological IPV perpetration using a dyadic framework with young adult couples.

Results from the present study indicated that one's own trait anger was associated with increases in one's own psychological IPV perpetration. This finding is consistent with previous research that found trait anger to be associated with psychological IPV perpetration (Shorey, Cornelius, & Idema, 2011). Additionally, this finding is aligned with the I³ theory (Finkel, 2007), such that one's own trait anger acts as an impelling factor to increase risk for IPV perpetration. Contrary to study hypotheses, one's partner's trait anger was not significantly associated with one's own psychological IPV perpetration. Despite literature that suggests that an impelling trait in one partner increases the couple's overall risk for violence (Finkel, 2014), results from the present study suggest that one's partner trait anger alone may not be a strong enough impelling factor for one's own IPV perpetration. Of note, given the cross-sectional nature of the present study, these risk factors for IPV were not able to be examined in the face of an instigating factor (e.g., how do couples respond during conflict or an argument; Finkel, 2007). Additionally, one's own alcohol use and problems and one's partner's alcohol use and problems were not associated with increased psychological IPV perpetration. Despite previous research finding an association between alcohol use and psychological IPV perpetration (Testa & Derrick, 2014), one study found risk for psychological IPV perpetration to only increase after *heavy* alcohol use (5 or more

drinks; Shorey, Stuart, McNulty, & Moore, 2014). Future research should examine the relationship between heavy alcohol use, trait anger, and psychological IPV perpetration in young adult couples.

The present results also indicated that higher levels of alcohol use and problems in one partner were associated with an increase in one's own physical IPV perpetration. This finding is consistent with previous research in college-aged young adults (Foran & O'Leary, 2008; Rothman et al., 2012). In addition, these findings support the I³ theory which suggests the alcohol is a disinhibiting factor that increases one's risk for IPV perpetration (Finkel, 2007). Contrary to the present study's hypothesis, one's partner's alcohol use and problems did not increase one's own risk for physical IPV perpetration. Given the interdependent nature of dyads, it was expected that a disinhibiting factor in one member of the couple would promote discord and increase the risk of the other dyad member perpetration IPV (Finkel, 2014; Leonard, 1993). Further, previous research has found an association between one's partner's alcohol use and own's own IPV perpetration (Eckhardt et al., 2019). It is worth noting that the cross-sectional nature of the present study may limit our ability to understand the temporal association or event-level association between one partner's alcohol use and the other's IPV perpetration. Overall, these findings suggest that IPV interventions should target reducing one's own alcohol consumption, thereby having the protentional to reduce one's own physical IPV perpetration. Consistent with prior research (Maldonado et al., 2015), one's own trait anger was associated with increased physical IPV perpetration. Similar to psychological IPV perpetration, this suggests that one's own anger, but not one's partner's anger, is a sufficient impelling factor for increasing one's risk for physical IPV perpetration (Finkel, 2007).

In regards to sexual IPV, a significant interaction between one's partner's alcohol use and problems and trait anger suggested that the relationship between one's partner's alcohol use and problems and one's own sexual IPV perpetration differed as a result of one's partner's level of trait anger. When one's partner has high levels of trait anger, their alcohol use and problems are associated with lower levels of one's own sexual IPV perpetration. On the other hand, when one's partner has low levels of trait anger, their alcohol use and problems are associated with higher levels of one's own sexual IPV perpetration. This finding is contrary to the present study's hypothesis. Further, it is not consistent with the I³ theory that would suggest that the combination of alcohol use (disinhibiting) and trait anger (impelling) increases one's risk for IPV (Finkel, 2007). However, this finding is consistent with a daily diary study of college-aged men that found alcohol to increase the likelihood of sexual IPV perpetration in men with low levels of trait anger, but not high (Shorey et al., 2017). Furthermore, research suggests that sexual gratification may be a primary motivator in sexual aggression, although anger does play a role in motivating some (Reid et al., 2014). Future research should aim to delineate when anger plays a role in sexual IPV perpetration, and what factors may increase the risk for alcohol-related sexual IPV perpetration.

The present results also indicated significant gender differences in the relationship between trait anger and sexual IPV perpetration. For men, one's own trait anger was significantly and positively associated with one's own sexual IPV perpetration. However, when one's partner was male, male partner trait anger was not significantly associated with one's own (actor) sexual IPV perpetration. For women, one's own trait anger was negatively associated with one's own sexual IPV perpetration. When one's partner was female, however, female partner trait anger was positively associated with one's own (actor) sexual IPV perpetration. Men's own trait anger

predicting increases in their own sexual IPV perpetration is consistent with prior research that has found higher levels of trait anger among male perpetrators of IPV (Norlander & Eckhardt, 2005). The results from this study suggest that having a female partner high in trait anger is also an impelling factor that increases one's own risk for sexual IPV perpetration, consistent with the I³ theory (Finkel, 2007). However, having a male partner high in trait anger does not appear to be a strong enough impelling factor for one's own IPV perpetration. Previous research on anger and IPV perpetration in young adults has found no significant gender differences (Giordano et al., 2016), thus the finding that women's trait anger is negatively associated with sexual IPV perpetration is novel. However, there is limited research examining these gender differences specifically in sexual IPV perpetration. Given the gender differences in sexual IPV perpetration, such that men perpetrate more than women (Straus, 2004), additional research is needed to better understand these gender differences as they relate specifically to sexual IPV perpetration. Further, the combination of different gender and same gender couples in the sample make it less clear how these gender differences should be interpreted. Results should be considered preliminary and future research should aim to replicate these results in both same gender and different gender couples.

This study has a number of limitations that should be considered. First, the study was cross-sectional in nature, thereby limiting our ability to draw causal or temporal associations between couple's trait anger, alcohol use and problems, and IPV perpetration. Thus, the current study can only be used to inform associations between behaviors. The current sample reported significantly higher levels of alcohol use than those typically seen in college student samples (e.g., Selkie et al., 2015; Shorey et al., 2015), perhaps reducing the generalizability to those not in a high alcohol consumption setting. Implications of this study are also limited by the

demographics of this sample; specifically, the sample is predominantly heterosexual (95.0%) and predominantly white (92.2%). Future research is necessitated in diverse populations, as results may not extend to sexual, gender, and racial/ethnic minority couples.

The results from this study highlight several directions of future research on alcohol use, trait anger, and IPV perpetration in young adult couples. First, as previously mentioned, future research is needed that can provide insight on the time-course of alcohol, trait anger, and IPV. Longitudinal, event-level studies (e.g., ecological momentary assessment or daily diary) would provide crucial information on the potential temporal associations. Prior research on alcohol-related IPV has underscored the importance of using intensive, longitudinal designs with couples (Testa & Derrick, 2014). Furthermore, the present study aimed to understand the role of trait anger, rather than state anger, in impelling the relationship between alcohol use and IPV. Whereas trait anger is a relatively stable individual difference, state anger occurs in response to a situation, fluctuates, and is short-lived compared to trait anger (Deffenbacher et al., 1996). IPV research has largely focused on trait anger due to its stable nature and the ability to conceptualize it as how likely an individual is to respond to a situation with anger. However, future event-level research should examine the relationship between state anger, alcohol use, and IPV to gain a better understanding of how anger in the moment impels alcohol-related IPV. A daily diary study with only one member of the dyad found alcohol to be positively associated with psychological and physical aggression at high, but not low, levels of state angry affect (Shorey, Stuart, Moore, & McNulty, 2014). Findings have not been replicated in couples. Finally, the present study was unable to examine the three-way interaction between alcohol use and problems, trait anger, gender, and IPV perpetration due to our sample size and limited power. Future research should

include a larger sample size that allows for gender differences to be examined within the interaction of trait anger and alcohol use predicting IPV perpetration.

In summary, the present study was the first study to examine the relationship between alcohol use and problems, trait anger, and IPV perpetration in college student couples. Results indicated that actor alcohol use and problems were significantly and positively related to actor physical IPV perpetration. Furthermore, actor trait anger was significantly and positively related to physical IPV perpetration and psychological IVP perpetration. Finally, results indicated an interactive effect of trait anger when looking at the association between partner alcohol use and problems and actor sexual IPV perpetration. At high levels of partner trait anger, partner alcohol use and problems were associated with *decreased incidence* of sexual IPV perpetration. At low levels of partner trait anger, partner alcohol use and problems were associated with increased incidence of sexual IPV perpetration. Future research is necessary to replicate and extend these findings.

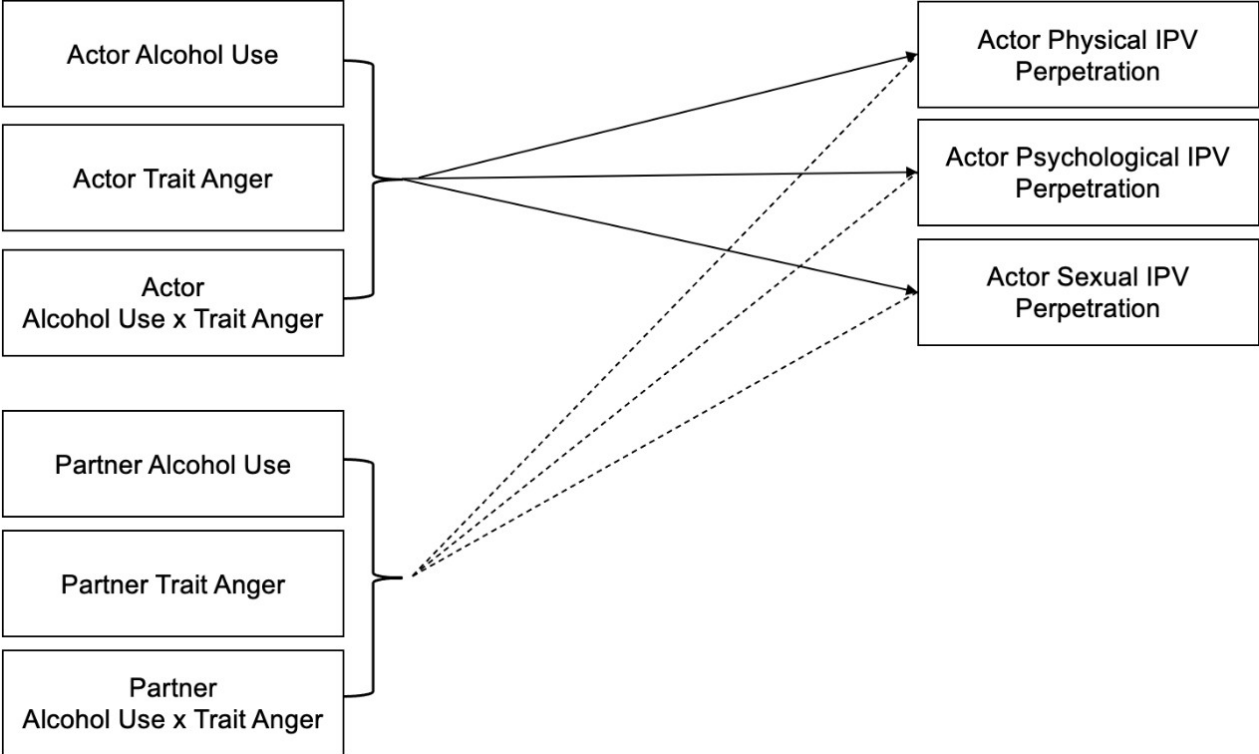


Figure 1. APIM model for predicting IPV perpetration. Solid lines depict actor effects. Dotted lines depict partner effects.

Table 1.

Zero-Order Correlations for Study Variables

	1	2	3	4	5	6	7
1. Alcohol Use and Problems	-	-0.02	0.19**	0.30**	0.12*	0.17**	0.11*
2. Relationship Length		-	0.50	-0.08	0.20**	0.09	0.02
3. Trait Anger			-	0.23**	0.42**	0.21**	0.06
4. Drug Use				-	0.14**	0.10	0.19**
5. Psychological IPV Perpetration					-	0.45**	0.19**
6. Physical IPV Perpetration						-	0.19**
7. Sexual IPV Perpetration							-
Mean	7.57	19.07	17.52	3.09	11.92	1.20	3.61
<i>SD</i>	4.43	16.94	4.67	4.70	15.22	3.50	9.27

Note: IPV = intimate partner violence

* $p < .05$, ** $p < .01$

Table 2.

Main and Interactive Effects of the Association Between Alcohol Use, Trait Anger, and IPV Perpetration

	<i>t</i>	B	<u>Physical IPV Perpetration</u>		
			<i>SE</i>	ERR	95% CI
Main effects model:					
Actor's AUDIT	2.35*	0.08	0.03	1.08	[1.01, 1.16]
Partner's AUDIT	-0.81	-0.02	0.03	0.98	[0.93, 1.03]
Actor's Trait Anger	2.68**	0.09	0.03	1.10	[1.02, 1.17]
Partner's Trait Anger	-0.00	-0.00	0.04	1.00	[0.93, 1.07]
Actor's Drug Use	0.69	0.01	0.01	1.01	[0.98, 1.04]
Partner's Drug Use	0.63	0.01	0.01	1.01	[0.98, 1.04]
Relationship Length	2.30*	0.02	0.01	1.01	[1.00, 1.03]
Interaction model:					
Actor's AUDIT	2.65**	0.12	0.04	1.12	[1.03, 1.23]
Partner's AUDIT	-2.08*	-0.06	0.03	0.94	[0.88, 1.00]
Actor's Trait Anger	2.98**	0.12	0.04	1.13	[1.04, 1.23]
Partner's Trait Anger	-0.53	-0.02	0.04	0.98	[0.90, 1.06]
Actor's Drug Use	0.19	0.00	0.07	1.00	[0.97, 1.04]
Partner's Drug Use	0.76	0.01	0.02	1.01	[0.98, 1.05]
Relationship Length	1.92 [†]	0.01	0.01	1.01	[1.00, 1.03]
Actor's AUDIT x Actor's Trait Anger	-0.81	-0.01	0.01	0.99	[0.97, 1.01]
Partner's AUDIT x Partner's Trait Anger	1.62	0.01	0.01	1.01	[1.00, 1.03]
			<u>Sexual IPV Perpetration</u>		
	<i>t</i>	B	<i>SE</i>	ERR	95% CI
Main effects model:					
Actor's AUDIT	3.74***	0.07	0.02	1.07	[1.03, 1.11]
Partner's AUDIT	-3.06**	-0.08	0.03	0.93	[0.88, 0.97]
Actor's Trait Anger	0.81	0.02	0.02	1.02	[0.98, 1.06]
Partner's Trait Anger	1.50	0.03	0.02	1.04	[0.99, 1.09]
Actor's Drug Use	6.17***	0.07	0.01	1.07	[1.05, 1.10]
Partner's Drug Use	1.61	0.02	0.01	1.02	[1.00, 1.05]
Relationship Length	0.78	0.00	0.01	1.00	[0.99, 1.02]
Interaction model:					
Actor's AUDIT	2.98**	0.06	0.02	1.06	[1.02, 1.11]
Partner's AUDIT	-2.40*	-0.06	0.03	0.94	[0.90, 0.99]
Actor's Trait Anger	0.20	0.00	0.02	1.00	[0.96, 1.05]
Partner's Trait Anger	0.64	0.01	0.02	1.01	[0.97, 1.06]
Actor's Drug Use	5.76***	0.06	0.01	1.07	[1.05, 1.09]
Partner's Drug Use	3.48***	0.05	0.01	1.05	[1.02, 1.08]
Relationship Length	0.80	0.00	0.01	1.00	[0.99, 1.02]

Actor's AUDIT x Actor's Trait Anger	-0.74	0.00	0.00	1.00	[0.99, 1.00]
Partner's AUDIT x Partner's Trait Anger	-5.88***	-0.03	0.01	0.97	[0.96, 0.98]
			Psychological IPV Perpetration		
	t	B	SE	ERR	95% CI
Main effects model:					
Actor's AUDIT	1.66	0.33	0.20	-	-
Partner's AUDIT	-0.48	-0.08	0.18	-	-
Actor's Trait Anger	5.54***	1.25	0.22	-	-
Partner's Trait Anger	1.40	0.23	0.16	-	-
Actor's Drug Use	-0.25	-0.04	0.16		
Partner's Drug Use	0.97	0.18	0.19		
Relationship Length	2.65**	0.16	0.06		
Interaction model:					
Actor's AUDIT	1.89	0.37	0.20	-	-
Partner's AUDIT	-0.31	-0.06	0.18	-	-
Actor's Trait Anger	5.52***	1.24	0.23	-	-
Partner's Trait Anger	1.39	0.22	0.16	-	-
Actor's Drug Use	-0.09	-0.01	0.17		
Partner's Drug Use	1.01	0.20	0.17		
Relationship Length	2.69**	0.16	0.06		
Actor's AUDIT x Actor's Trait Anger	-1.01	-0.04	0.04	-	-
Partner's AUDIT x Partner's Trait Anger	-1.15	-0.04	0.03	-	-

Note: SE = Standard Error; ERR = Event Rate Ratio; CI = Confidence Interval; IPV = intimate partner violence; a Poisson distribution was specified for physical and sexual IPV; psychological IPV was modeled as a continuous variable; A Benjamini-Hochberg correction was used to correct for Type I error. All p values remained significant after the correction. As such, original p values are reported here.

† $p = .057$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

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