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Childhood ADHD Potentiates the Association between Problematic Drinking and Intimate Partner Violence

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Abstract

Objective—Excessive alcohol consumption increases risk of perpetrating intimate partner violence (IPV). Attention-deficit hyperactivity disorder (ADHD) is associated with problematic drinking and IPV, but it is unclear whether problem drinkers with ADHD are more likely than those without ADHD to perpetrate IPV.

Method—We compared the strength of association between problem drinking trajectories and IPV perpetration among 19 to 24 year-old men with (n=241) and without (n=180) childhood ADHD.

Results—Men with ADHD who reported higher heavy episodic drinking or alcohol use problems at age 19, and slower decreases in alcohol use problems from age 19 to 24, were more likely to perpetrate IPV than problem drinkers without ADHD, among whom the same

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associations were non-significant. Associations between problem drinking and IPV were not attenuated in adults with ADHD upon controlling for antisocial personality disorder.

Conclusion—Study findings highlight the heightened risk of problem drinkers with ADHD perpetrating IPV.

More than one in three women in the U.S. report being physically abused by male romantic partners in their lifetime (Black et al., 2011). Women report more than five million incidents of intimate partner violence (IPV) each year, resulting in nearly two million injuries (more than 550,000 require medical attention) and eight million paid work days lost (National Center for Injury Prevention and Control, 2003). Nearly half of all women who experience IPV report that their first victimization occurred between the ages of 18 and 24 (Black et al., 2011), making emerging adulthood the developmental period of greatest risk for women to be victimized (Thompson et al., 2006). Notably, rates of problem drinking also peak during emerging adulthood (Substance Abuse and Mental Health Services Administration [SAMSHA], 2012) and excessive alcohol consumption is positively correlated with male-to-female IPV (Testa, 2005). Attention-deficit hyperactivity disorder (ADHD) has been shown to increase risk for IPV perpetration (Ehrensaft, Moffitt & Caspi, 2004; Wymbs et al., 2012) and alcohol abuse/dependence among emerging adults (Molina, 2011). However, no studies have investigated the co-occurrence of IPV perpetration and problem drinking among those with and without ADHD histories. The present investigation addressed this gap in the extant literature.

ADHD and IPV

Once considered a disorder of childhood (American Psychiatric Association, 1994), ADHD is now generally recognized as a chronic disorder with symptoms and impairment persisting for many into adulthood (Barkley, Murphy & Fischer, 2008). One of the most persistent areas of impairment for individuals with ADHD is interpersonal relationships. Consistent with social difficulties observed in childhood (Hoza, 2007), many individuals with ADHD have issues relating with others in adulthood (Barkley et al., 2008). In particular, adults with ADHD report lower romantic relationship satisfaction and higher rates of separation/divorce than those without ADHD (Eakin et al., 2004; Kessler et al., 2006). Their partners have identified specific behaviors consistent with symptoms of ADHD, including impulsivity (e.g., saying things without thinking), as well as anger management problems (e.g., blowing up inconsistently) that spark discord in their relationships (Robin & Payson, 2002).

Research indicates that elevated impulsivity and anger-control problems increase the likelihood of male-to-female IPV (Capaldi, Knoble, Shortt, & Kim, 2012; Holtzworth-Monroe & Stuart, 1994). Adults with ADHD are theoretically at risk of perpetrating IPV given their often chronic impulsivity and anger management difficulties. As expected, studies have shown that emerging adult (aged 18–26) men diagnosed with ADHD in childhood are more likely to report perpetrating physical IPV than those without ADHD histories (Ehrensaft, Moffitt, & Caspi, 2004; Wymbs et al., 2012). The risk of men with ADHD histories perpetrating IPV may be due to their symptoms of antisocial personality disorder (APD), which are not only common among those with ADHD (Barkley et al., 2008) but also are robust predictors of IPV, especially in the context of heightened impulsivity

(Holtzworth-Munroe & Stuart, 1994). Indeed, Wymbs and colleagues (2012) showed that the association between ADHD and IPV perpetration was attenuated after accounting for the contribution of APD. Although emerging adult men with ADHD appear to be at risk of perpetrating IPV, studies are needed to identify correlates of IPV beyond APD that may increase their likelihood of behaving aggressively.

ADHD and Problem Drinking

Consumption of alcohol, particularly excessive consumption, is commonly associated with male-to-female IPV in non-referred populations (Capaldi et al., 2012). This is notable given numerous studies indicating that individuals with ADHD, owing to their long-standing difficulties with cognitive and behavioral self-control (Tarter, Kirisci, Habeych, Reynolds, & Vanyukov, 2004), are at risk of developing alcohol use disorders (Molina, 2011). That said, emerging adults with ADHD histories do not consistently have greater rates of alcohol use or abuse than those without ADHD histories. In the Pittsburgh ADHD Longitudinal Study, no differences were found in the rates of problematic drinking (e.g., having 5 or more drinks in one setting) between emerging adults with and without childhood ADHD (Molina, Pelham, Gnagy, Thompson, & Marshal, 2007). Molina and colleagues found that only those with ADHD in childhood *and* concurrent APD were more likely to drink excessively than those without ADHD histories. Other studies have found similar results, emphasizing the importance of considering APD when examining the drinking behavior of individuals with ADHD (Fischer, Barkley, Smallish, Fletcher, 2002). However, little is yet known about whether problem drinkers with childhood ADHD, irrespective of APD comorbidity, are more likely to be impaired in other domains than those without childhood ADHD, such as relations with romantic partners.

ADHD, Problem Drinking and IPV

Young adults diagnosed with ADHD in childhood are at risk of stronger associations between problematic drinking and IPV than those without ADHD histories for two reasons. First, due to shared genetic etiology (Kendler, Prescott, Myers, & Neale, 2003), substance use, aggression, and impulsivity comprise an externalizing behavior spectrum in adulthood (Krueger, Markon, Patrick, Benning & Kramer, 2007). As with adolescents (Jessor, 1987), young adults exhibiting *any* behavior on the externalizing spectrum tend to engage in *multiple* behaviors. For example, impulsivity—specifically, behavioral disinhibition—has been shown to be positively associated with both aggression and alcohol use (Latzman, Vaidya, Clark, & Watson, 2011). Given their difficulties with behavioral disinhibition (Nigg, Butler, Huang-Pollack, & Henderson, 2002), young adults with ADHD histories may be more likely to demonstrate associations between problem drinking and IPV than those without histories of ADHD.

Second, individuals with behavioral disinhibition difficulties have limited capacities to inhibit impulsive aggression, particularly in the context of alcohol use (Giancola, 2000). That is, young adults with inhibitory control deficits (and lower thresholds for aggression) are more likely to be violent under the influence of alcohol than those with appropriate inhibitory control (and higher thresholds for aggression; Giancola, Godlaski, & Roth, 2012;

Schumacher, Coffey, Leonard, O’Jile, & Landy, 2013). Problems with behavioral disinhibition enhance the susceptibility of adults with ADHD to the disinhibitory effects of alcohol (Weafer, Fillmore, & Milich, 2009), which would appear to enhance the risk of problem drinkers with ADHD perpetrating IPV. Nonetheless, the strength of association between problem drinking and IPV perpetration has not been compared between young adults with and without ADHD.

There is also a need to explore whether *trajectories* of problematic drinking and IPV perpetration are differentially associated between young adults with and without ADHD histories. Among typically developing adults, rates of problem drinking typically follow a curvilinear trajectory, with levels rising through the teen years, peaking around age 22 or 23, and falling precipitously thereafter (SAMSHA, 2012). However, there is substantial variability in the timing of problem drinking initiation and in the acceleration/deceleration of problem drinking over time. To this end, evidence suggests that problem drinking begins earlier and desists later among individuals with childhood ADHD than those without ADHD histories (Molina, 2011). Early initiation and persistence of problem drinking among individuals with ADHD is concerning because both factors may increase risk of IPV perpetration. Indeed, Hussong and colleagues (2004) reported that early heavy alcohol use identified emerging adults on a long-term course of elevated antisocial behavior (including aggression), while persistent problem drinking hindered developmentally-appropriate desistance of antisocial behavior during young adulthood. Still, it remains unclear whether high initial levels, or persistence, of problem drinking are differentially associated with IPV perpetration among individuals with and without ADHD.

Finally, if problem drinking trajectories are found to be associated with IPV perpetration among adults with ADHD, it remains to be seen whether associations remain when accounting for APD. Antisociality, like behavioral disinhibition, is predictive of elevated rates of alcohol use disorders (Hasin et al., 2011) and IPV in young adulthood (Capaldi et al., 2012). Moreover, the presence of APD may identify individuals with ADHD most likely to engage in excessive drinking (Molina et al., 2007) and IPV perpetration (Wymbs et al., 2012). However, it is unclear whether APD predicts IPV perpetration among young adults with childhood ADHD beyond early or persistent problematic drinking.

Study Goals and Hypotheses

This study examined whether excessive alcohol consumption and IPV perpetration were differentially associated in emerging adult men with and without childhood ADHD diagnoses. Using data from a large longitudinal study of individuals with and without ADHD histories (Molina et al., 2007; Molina et al., 2012), we investigated whether childhood ADHD moderated prospective associations between initial levels of, and change over time (ages 19 to 24) in, self-reported problem drinking (sp. heavy episodic drinking, alcohol use problems) and IPV rates. We hypothesized that young men diagnosed with ADHD in childhood and reporting higher initial levels of, and persistence in, problem drinking would also report higher rates of IPV perpetration than problem drinkers without ADHD histories. We also expected that, for young men with ADHD, the strength of the

association between problem drinking and IPV perpetration histories would be attenuated significantly by accounting for the contribution of APD.

Method

Participants

ADHD group—Participants with childhood ADHD were recruited from a pool of 516 study-eligible participants diagnosed with DSM-III-R or DSM-IV ADHD and treated in western Pennsylvania from 1987 to 1996. Of the 516, 493 could be reached an average of 8 years later and were invited to participate in a longitudinal follow-up study (Molina et al., 2007). Of those invited, 364 enrolled in the follow-up study. Participants were admitted on a rolling basis between the years 1999–2003 and completed their first follow-up interview immediately upon enrollment.

All young adults with childhood ADHD participated in the Summer Treatment Program for children with ADHD (Pelham, Fabiano, Gnagy, Greiner, & Hoza, 2005). Diagnostic information for the participants with ADHD histories was collected at initial referral to the clinic in childhood using parent and teacher DSM-III-R and DSM-IV symptom ratings scales (DBD; Pelham, Gnagy, Greenslade, & Milich, 1992) and a semi-structured diagnostic interview administered to parents by a doctoral-level clinician. The interview consisted of the DSM-III-R or DSM-IV descriptors for ADHD, ODD, and CD with supplemental probe questions regarding situational and severity factors as well as functional impairment. Following DSM guidelines, diagnoses of ADHD, ODD, and CD were made if a sufficient number of symptoms and clinically-significant impairment was endorsed across parents and teachers to result in diagnosis. Two doctoral-level clinicians independently reviewed all ratings and interviews to confirm diagnoses and when disagreement occurred, a third clinician reviewed the file and the majority decision was used. Exclusion criteria for participants with ADHD histories was assessed in childhood and included a full-scale IQ < 80, a history of seizures, neurological problems, pervasive developmental disorder, schizophrenia, and/or psychotic or organic mental disorders.

Participants in the follow-up study were compared with the eligible individuals who did not enroll in the follow-up study on demographic and diagnostic variables collected at baseline. Only one of 14 comparisons was statistically significant ($p < .05$): participants had a slightly lower average CD symptom rating at baseline as indicated by a composite of parent and teacher ratings than those who did not participate (participants $M = 0.43$, non-participants $M = 0.53$).

Non-ADHD group—Two hundred forty participants without ADHD were recruited from western Pennsylvania between 1999 and 2001. These individuals were recruited from several sources, including pediatric practices (40.8%), advertisements in local newspapers (27.5%), local universities and colleges (20.8%), and other methods (10.9%), such as public schools and word of mouth. Non-ADHD participant recruitment lagged three months behind the ADHD group enrollment in order to facilitate efforts to obtain demographic similarity (discussed below). A telephone screening interview was administered to parents of potential non-ADHD participants to gather basic demographic characteristics, history of diagnosis or

treatment for ADHD and other behavior problems, presence of exclusionary criteria as previously listed for the ADHD group, and a checklist of ADHD symptoms. Young adults (aged 18+) also provided self-report of ADHD symptoms. ADHD symptoms were counted as present if reported by either the parent or the young adult. Non-ADHD individuals meeting DSM-III-R criteria for ADHD, either currently or historically, were immediately excluded from study consideration.

If a potential non-ADHD participant passed the initial phone screen, staff members met to determine whether he/she was demographically appropriate for the study. A non-ADHD participant was deemed study-eligible if his/her enrollment increased the non-ADHD group's demographic similarity to the ADHD group in terms of age, gender, race, and parent-education level. Ultimately, the two groups were equivalent on these demographic variables.

Subsample for the current study—For the current study, 421 male participants (241 with childhood ADHD; 180 without childhood ADHD) aged 19 to 24 during the second to seventh annual interviews of the longitudinal study provided data for the present study. Males were the focus of this study for two main reasons: 1) victims of male IPV perpetration experience much worse outcomes (e.g., injuries, psychological maladjustment) than victims of female IPV perpetration (for review, see Caldwell, Swan, & Woodbrown, 2012) and 2) the vast majority of the 19 to 24 year-olds with eligible data for this study were male (88.5%), which is consistent with the typical gender ratio in ADHD diagnoses. Moreover, because rates of excessive alcohol consumption and IPV peak during emerging adulthood (Black et al., 2011; SAMSHA, 2012), we focused our analyses on this developmental period. We did not include data from the first wave of the longitudinal study because IPV data from this wave were published previously (Wymbs et al., 2012).

As expected, given the group matching procedure, participants with and without childhood ADHD in the present study did not differ significantly in age, race, or parent education level. However, as reported previously for the full sample (Molina et al 2012), young adults with childhood ADHD were less likely to have reported at least some college experience at the initial follow-up assessment (27.5% of ADHD group vs. 40.8% of non-ADHD group; $\chi^2 = 8.16, p < .01$). Odds of reporting at least one romantic relationship from ages of 19 to 24 did not differ among young adults with and without ADHD histories (88.8% vs. 92.2%; $\chi^2 = 1.38, p = .24$).

Procedure

Annual follow-up interviews with all participants were conducted by post-baccalaureate research staff. Interviewers were not blind to the presence or absence of ADHD histories, but they were trained to avoid bias in data collection. Many of the questionnaires were completed privately by participants, which helped to minimize interviewer contamination. Informed consent was obtained and all participants were assured of confidentiality of all disclosed material except in cases of impending danger or harm to self or others.

Measures

IPV—The Conflict Tactics Scale (CTS; Straus, 1979) is a widely-used instrument assessing aggression in romantic relationships. The CTS includes a 5-item subscale assessing the frequency (0 = Never to 5 = More than once per month) of violence directed towards romantic partners within the past year (e.g., threw something at partner; pushed, grabbed, shoved partner). The violence subscale has well-established internal consistency and has good content and construct validity (Straus, 1979). Participants completed the CTS at every time point they reported being in a romantic relationship within the past 6 months. Per procedures described below, we attempted to model the trajectory of physical IPV from age 19 to 24. However, owing to the preponderance of “zeroes” (i.e. participants rating that they were “never” violent), especially among the men without ADHD histories, we could not fit a growth model to the data. Attempts to fit intercept-only and zero-inflated Poisson growth models also failed. For these reasons, we proceeded with aggregating IPV across age. IPV rates across ages 19 to 24 were calculated by determining the average item response at each age, summing these averages across ages, and dividing the sum total by the number of time points with violence data (ADHD group: $M=.12$, $SD=.36$, NonADHD group: $M=.02$, $SD=.11$).

Problem Drinking—Heavy episodic drinking and alcohol use problems were predictor variables in this study. Heavy episodic drinking was assessed annually with a structured paper-and-pencil substance use questionnaire (SUQ; Molina et al., 2007), which is an adaptation of two psychometrically-sound measures: the Health Behavior Questionnaire (Jessor, Donovan, & Costa, 1989) and the National Household Survey of Drug Abuse interview (NHSDA, 1992). Pertinent to the current study is the SUQ item assessing frequency of heavy episodic drinking in the past 12 months (“In the past 12 months, how often did you drink five or more drinks when you were drinking?”). Item responses ranged from 0 “not at all” to 11 “Several times a day.”

Alcohol use problems were assessed annually using a highly structured paper and pencil version of the Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1996). The Highly Structured SCID (HSSCID) was adapted for the longitudinal study to include substance abuse and dependence symptoms relevant for adolescents, and to be commensurate with DSM-IV diagnostic criteria. The HSSCID asks respondents to indicate whether they experienced any impairment in a variety of domains (e.g., occupation, interpersonal relations) owing to alcohol use in the past 12 months. Responses affirming impairment were summed to create a composite alcohol use problem score. For the purpose of the current study, items related to romantic relationship functioning (i.e. problems with girlfriend, fighting) were not included in the total score to prevent unnecessary overlap between this measure and that of intimate partner violence. Participant summary scores ranged from 0 to 16 (out of a possible 28).

APD—At the first follow-up interview, young adults with childhood ADHD and their mothers reported symptoms of antisocial personality disorder (APD) via the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First, Gibbon, Spitzer, & Williams, 1997). APD diagnoses were determined by summing the frequency of

clinically-significant symptoms of APD (out of 7) across the ratings provided by young adults and/or their mothers. For the current study, one item measuring “irritability and aggressiveness with others” was deleted from the APD symptom total given its potential overlap with IPV. Individuals with childhood ADHD histories with three or more APD symptoms, as well as histories of being diagnosed with CD in childhood, met criteria for APD (13.3% of ADHD group).

Analytic Overview

A series of longitudinal growth curve models was estimated to assess whether associations between initial levels of (at age 19), and change rates over time in (across ages 19 to 24), problem drinking and IPV differed between young adult males with and without childhood ADHD. First, unconditional linear growth models were tested with the whole sample (irrespective of ADHD status) to determine growth patterns that best fit problem drinking (i.e. heavy episodic drinking and alcohol use problems) from ages 19 to 24. Then, within a multiple group framework, we investigated whether associations between problem drinking trajectories and IPV rates differed between young adults with and without ADHD histories. Model comparisons were carried out by equating one parameter at a time in sequence between those with and without childhood ADHD. Prospective associations between problem drinking and IPV were assumed to be different between those with and without ADHD histories if constraining specific paths caused model fit to be significantly worse, as evaluated by the Satorra-Bentler scaled chi-square difference test (Muthén & Muthén, 2010). In the event that associations between problem drinking growth trajectories and IPV rates were stronger among young adults with ADHD histories, follow-up analyses were conducted with the ADHD group to examine whether the same paths remained significant when controlling for APD. In these models, paths from APD to the intercept and slope of the problem drinking variable as well as paths from APD to IPV rates were included. These tests were only conducted with the ADHD group as there were too few APD diagnoses among individuals without ADHD.

All modeling was conducted with *Mplus* 6.1 (Muthén & Muthén, 2010) using the maximum likelihood estimator robust to non-normality (MLR). We used full information maximum likelihood estimation to accommodate the missing data arising from rearranging the data according to age. As we have done previously (Molina et al., 2012), problem drinking and IPV were modeled by age rather than by “wave” or number of the annual assessment (i.e., “wave 1, wave 2” etc.). For example, for those who were 19 years old at wave 2 and completed their questionnaires across all 6 waves (through Wave 7), their levels of problem drinking and IPV at ages 19, 20, 21, 22, 23, and 24 were included in the analyses. The following numbers of young adults with and without childhood ADHD provided data at ages 19 (n = 122 and 115), 20 (n = 127 and 123), 21 (n = 147 and 125), 22 (n=145 and 110), 23 (n=127 and 99), and 24 (n = 103 and 76).

Results

Unconditional Growth Models

A linear growth trajectory fit the data for heavy episodic drinking, $\chi^2(16) = 19.91$, $p = .22$, RMSEA = .02, CFI = .99. The mean of the intercept was significant ($M = 3.19$, $SE = .15$, $p < .01$), suggesting that participants engaged in heavy drinking, on average, 8–11 times during the last year at age 19. The variance of the intercept was also significant ($M = 6.24$, $SE = .48$, $p < .01$), indicating that there were significant individual differences in heavy drinking at age 19. The mean of the growth rate (slope) of heavy drinking was statistically non-significant ($M = .06$, $SE = .04$, $p = .12$), but the variance of the slope was significant (variance = .10, $SE = .04$, $p < .05$). Thus, although heavy drinking, on average, did not change with age, some demonstrated an increase and others showed a decrease in heavy drinking. The correlation between the intercept and slope of heavy drinking was significant ($r = -.34$, $p < .05$), indicating that higher initial levels of heavy drinking were associated with decreases in heavy drinking over time.

A linear growth trajectory also fit the data for alcohol use problems, $\chi^2(16) = 17.22$, $p = .37$, RMSEA = .01, CFI = 1.00. The mean of the intercept was significant ($M = 2.47$, $SE = .17$, $p < .01$), suggesting that participants endorsed, on average, more than 2 problems due to alcohol use during the last year at age 19. The variance of the intercept was also significant ($M = 7.07$, $SE = 1.02$, $p < .01$), indicating significant individual differences in alcohol use problems at age 19. The mean and the variance of the alcohol use problem slope were also statistically significant. Specifically, alcohol use problems, on average, tended to decrease with age ($M = -.11$, $SE = .05$, $p < .05$) and there were significant individual differences around this gradual decrease (variance = .24, $SE = .07$, $p < .01$). The correlation between the intercept and slope of alcohol use problems was significant ($r = -.60$, $p < .01$), indicating that higher initial levels of alcohol use problems were associated with greater decreases in problems over time.

Within a multiple group framework, growth in heavy episodic drinking and alcohol use problems (in separate models) were compared across young adult males with and without ADHD histories. Consistent with prior findings from cross-sectional analyses at the first follow-up interview (Molina et al., 2007), average initial levels, average growth rates, and individual differences around the intercepts and slopes in heavy drinking and alcohol use problems during young adulthood were not significantly different between the ADHD and non-ADHD groups.

Relations between Heavy Episodic Drinking and Intimate Partner Violence

The initial multiple group model, with all parameters free to vary across groups, fit the data well, $\chi^2(40) = 52.41$, $p = .09$, RMSEA = .04, CFI = .98. There was not a significant decrement in fit when the means and variances of the heavy episodic drinking intercept and slope, as well as the correlation between intercept and slope, were individually fixed to be equal across groups, $\chi^2(45) = 59.80$, $p = .07$, RMSEA = .04, CFI = .97. However, when the path from the heavy drinking intercept to IPV rate was constrained to be equal across groups, model fit became significantly worse, $\chi^2(1) = 17.52$, $p < .01$, indicating

differential relations as a function of ADHD. Heavy drinking at age 19 was significantly associated with IPV rates for males with, but not for males without, childhood ADHD (Figure 1). Constraining the path from the slope of heavy drinking to IPV rate did not worsen model fit, $\chi^2(1) = 0.58, p > .30$.

Among those with ADHD histories, the model including APD diagnosis as a predictor of heavy episodic drinking trajectories and IPV rates fit the data very well, $\chi^2(24) = 27.41, p = .29$, RMSEA = .03, CFI = .99. The intercept of heavy drinking continued to predict IPV rates ($\beta = .25, p < .01$) over and above APD, which was not associated with IPV rate ($\beta = .01, p = .94$).

Relations between Alcohol Use Problems and Intimate Partner Violence

The multiple group model with all parameters freed to vary across groups fit the data well, $\chi^2(40) = 44.90, p = .27$, RMSEA = .02, CFI = .99. Fit did not worsen significantly when the means and variances of the alcohol use problem intercept and slope, or the correlation between intercept and slope, were individually fixed to be equal across groups, $\chi^2(45) = 55.60, p = .13$, RMSEA = .03, CFI = .97. When the paths from the intercept and slope of alcohol use problems to IPV rates were each constrained to be equal across groups, model fit worsened for each constraint (intercept: $\chi^2(1) = 5.87, p < .05$; slope: $\chi^2(1) = 11.27, p < .01$), indicating differential relations between groups with and without childhood ADHD for each path. Alcohol use problems at age 19 were only associated with IPV rates for males with childhood ADHD (Figure 2). In addition, slower decreases in alcohol use problems from ages 19–24 were associated with more frequent IPV for males with, but not without, childhood ADHD (Figure 2).

Among young adults with ADHD histories, the model including APD diagnosis as a predictor of alcohol use problem trajectories and IPV rates fit the data very well, $\chi^2(24) = 23.29, p = .50$, RMSEA = .00, CFI = 1.00. The intercept ($\beta = .32, p < .01$) and slope ($\beta = .37, p < .05$) of alcohol use problems continued to predict IPV rates over and above APD, which was not associated with IPV rate ($\beta = .01, p = .90$).

Discussion

In this study, we examined the association between excessive alcohol consumption and IPV perpetration during emerging adulthood among men with and without childhood histories of ADHD. Problem drinking was commonplace in both groups, with participants reporting heavy episodic drinking nearly once per month and having multiple alcohol use problems, on average, at age 19. ADHD group differences were not found in frequency of heavy drinking or in alcohol-related problems at age 19, nor were there ADHD group differences in the trajectories of either problem drinking variable between ages 19 and 24. However, the association between excessive alcohol use and IPV perpetration was stronger (and in fact, significant only) for the ADHD group. Specifically, the average rate of IPV perpetration between ages 19 and 24 was predicted by age 19 heavy drinking, age 19 alcohol-related problems, and a slower decrease in alcohol-related problems from ages 19 to 24 among those with, but not without, childhood ADHD. These associations remained significant after accounting for APD diagnosis.

According to Hussong and colleagues (2004), high levels of problem drinking at the beginning of emerging adulthood may “launch” individuals on a long-term course of antisocial behavior, including aggression. Indeed, our results support a launch pathway for young men diagnosed with ADHD in childhood, as elevated heavy episodic drinking and alcohol use problems at age 19 were positively associated with greater average levels of IPV perpetration from ages 19 to 24. Conversely, there was no such “launch” pathway among men without childhood ADHD histories. Hussong et al. (2004) also specified that persistence of problem drinking may prevent individuals from exhibiting the typical developmental desistance of antisocial behavior (i.e. “snare” hypothesis). We found partial support for the snare hypothesis among men with ADHD histories, in that a slow desistance in alcohol use problems from ages 19 to 24 was associated with more severe IPV perpetration from ages 19 to 24. This study did not find that persistent problematic drinking “ensnared” young adult men in the nonADHD group, nor was there evidence of differential associations between persistence of heavy episodic drinking and IPV rates among those with or without ADHD histories.

Executive functioning deficits, which are common among young adults with childhood ADHD (Nigg et al., 2002) and underlie associations between problem drinking and aggression (Giancola, 2000; Giancola et al., 2012), may be responsible for the association between problem drinking and IPV perpetration in individuals with ADHD histories. Indeed, there is evidence to suggest that deficits in inhibitory control enhance the susceptibility of adults with ADHD to the disinhibitory effects of alcohol (Weafer et al., 2009). These difficulties with behavioral disinhibition may lower the threshold for males with childhood ADHD histories to behave violently with romantic partners when drinking heavily. Nonetheless, because we did not measure the rate of IPV perpetration *when under the influence of alcohol*, we cannot conclude that problem drinking contributed directly to IPV rates. Future studies should assess whether ADHD histories and behavioral disinhibition increase risk of perpetrating IPV while inebriated.

Notably, problematic drinking continued to predict rates of IPV perpetration among emerging adult men with childhood ADHD over and above APD diagnosis, which did not significantly increase risk of IPV. This was surprising, given the strength of associations between APD and IPV shown in a prior study with this sample (Wymbs et al., 2012) and many others (for reviews, see Capaldi et al., 2012). Perhaps the lack of prediction from APD to IPV was due to the strong association between APD and problem drinking among those with ADHD histories. Molina and colleagues (2007) found that young adults with childhood ADHD and APD were nearly twice as likely to have alcohol use disorders as those without APD. Thus, in our models, problem drinking may have accounted for the same variance in IPV rates as predicted by APD.

The fact that we failed to find differences in patterns of heavy episodic drinking and alcohol use problems among emerging adult males with and without ADHD diagnosed in childhood was not surprising. Prior studies also reported null findings (Fischer et al., 2002; Molina et al., 2007). Though excessive alcohol consumption is normative during emerging adulthood (SAMSHA, 2012), we found that heavy drinkers with childhood ADHD were more likely than those without childhood ADHD to report perpetrating IPV. Thus, it may be that

drinking heavily identified emerging adults with ADHD histories who are at risk of serious impairment in core functional domains, such as interpersonal relationships. Alternatively, excessive drinking may also have been a proxy measure for related constructs that better explain IPV perpetration. For example, research has shown that urgency, the tendency to react impulsively when experiencing positive or negative affect, is predictive of greater alcohol use (Burton, Pedersen, & McCarthy, 2012) and IPV (Derefinko, DeWall, Metze, Walsh, & Lynam, 2011). Research is needed to examine whether the proclivity to drink heavily identifies young men with ADHD histories who are most likely to experience other functional difficulties (e.g., parenting, occupational performance). Examinations of mechanisms underlying associations between heavy alcohol use and IPV among those with ADHD histories also seem warranted.

Even though this study had several strengths (e.g., large sample of adults diagnosed with ADHD in childhood, focus on peak ages for problem drinking and IPV), there were several limitations. First, romantic partners of study participants did not provide reports of IPV victimization. In light of the propensity for individuals to under report IPV perpetration (Arias & Beach, 1987) and for young adults with ADHD to inflate self-appraisals (Knouse et al., 2005), rates of IPV perpetration reported herein may be biased estimates. Second, the dearth of partner data also prevented us from examining whether “assortative mating” contributed to the associations between problem drinking and IPV rates observed among adults with ADHD histories. Assortative mating, whereby romantic partners select each other based on shared traits (Merikangas, 1982), is common among young adults with histories of conduct problems and substance abuse (Rhule-Louie & McMahon, 2007). Studies indicate that IPV (Capaldi, Kim, & Shortt, 2007) and problem drinking (Schuckit, Smith, Eng, & Kunovac, 2002) are more severe and persistent in couples when both partners have conduct problems. Future research should collect alcohol use and IPV data from individuals with childhood ADHD *and* their partners to investigate whether couples that have two partners with ADHD or other behavioral concerns have especially strong alcohol—aggression associations. Third, this study describes analyses conducted with 19 to 24 year-old males. Studies investigating samples of adolescent and older men, as well as women of any age, may yield different results. Fourth, because we had to collapse IPV perpetration data collected over time into a composite variable, we could not determine whether the link between problem drinking and IPV is driven by high initial IPV or changes in IPV perpetration over time. Future studies should consider examining the degree to which associations between trajectories of problem drinking *and* IPV vary in strength between emerging adults with and without ADHD histories. Finally, this sample contains adults who were diagnosed with ADHD as children. Outcomes might differ for individuals diagnosed with ADHD in adulthood as they may have less severe presenting problems (Barkley et al., 2008).

This study sheds light on the association between problem drinking and IPV perpetration among emerging adult males with ADHD diagnosed in childhood. Perpetrating IPV may have wide-ranging effects for young men with ADHD, especially for those who are problematic drinkers. Romantic partners may provide much-needed support and assistance to adults with ADHD to help make ends meet on a daily basis (Eakin et al., 2004). However, as IPV is a robust predictor of separation among young, at-risk couples (Shortt, Capaldi,

Kim & Owen, 2006), violent men with ADHD appear more likely to experience relationship dissolution. As young adults with ADHD are impaired across numerous functional domains (Barkley et al., 2008)—especially when under the influence of alcohol (Weafer, Camarillo, Fillmore, Milich, & Marczynski, 2008), losing the potential benefits of a romantic partner could be quite problematic. Clinicians providing services for young males with ADHD and problem drinking tendencies should be prepared to assess for the presence of IPV. While we are unaware of data on the efficacy of alcohol use education programs for emerging adults with ADHD histories, clinicians treating problem drinkers with ADHD who have romantic partners may wish to inform them (and their partners) that IPV may be one consequence of problematic alcohol use. Another option for clinicians working with this population may be to recommend behavioral couples therapy, which not only is an efficacious treatment for alcohol abuse (O'Farrell & Schein, 2011), but has also been shown to reduce the frequency of IPV among problem drinkers (O'Farrell, Murphy, Stephan, Fals-Stewart, & Murphy, 2004). There is some evidence suggesting psychosocial treatment reduces ADHD *symptoms* in adults (Safren et al., 2010), but little is known about how to effectively remediate *impairment* in adults with ADHD, including relationship problems (Knouse & Safren, 2011). Research is sorely needed to develop and to test interventions addressing the core functional impairments of emerging adults with ADHD, especially those who engage in excessive alcohol use, as doing so may ultimately reduce the occurrence of violence in their romantic relationships.

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Figure 1.

Initial level of heavy episodic drinking predicts the average rate of intimate partner violence (IPV) among 19–24 year-olds with, but not without, childhood ADHD. Dashed lines = non-significant paths; solid lines = significant ($p < .05$) paths. Standardized betas are shown. Indicator residuals were in the model, but omitted here for clarity.

Figure 2.

Initial level of, and change over time in, alcohol use problems predicts the average rate of intimate partner violence (IPV) among 19–24 year-olds with, but not without, childhood ADHD. Dashed lines = non-significant paths; solid lines = significant ($p < .05$) paths. Standardized betas are shown. Indicator residuals were in the model, but omitted here for clarity.