The Role of Perceived Parent Drinking Motives on Alcohol Use Among Adolescents With and Without Childhood Attention-Deficit/Hyperactivity Disorder

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Public Health Significance: This study demonstrated potential utility in assessing and addressing adolescent perceptions of parent drinking motives as these perceptions were associated with later adolescent alcohol use. However, perceptions of parent drinking motives were only relevant in adolescent alcohol use among youth without ADHD, suggesting further study is warranted among these vulnerable youth.

Abstract

Objective: Parent history of alcohol-related problems and antisocial behaviors contribute to adolescent alcohol use and are associated with offspring attention-deficit/hyperactivity disorder (ADHD). Youth with ADHD may be susceptible to intergenerational transmission of alcohol-related cognitions which may model drinking motives that enhance risk for adolescent alcohol use. We examined whether childhood ADHD and parent history of alcohol use disorder, with or without antisociality, were associated with adolescents' perceptions of their parents' drinking motives and whether these perceptions predicted their alcohol use behaviors. *Method:* Adolescents (N=199; 56% with ADHD; M_{age}=15.73) completed the Drinking Motives Questionnaire regarding perceptions of their parents' drinking motives. Participants subsequently reported their past-year alcohol use behaviors (M_{age}=16.95). Parents reported their history of alcohol-related problems and antisocial symptoms. Covariates included adolescent gender (7% girls), race (9% self-identified Black), and parental education and marital status. *Results:* Perceived parent drinking motives were highest for social and lowest for conformity motives, consistent with adult self-reports in the literature. Parent alcohol use and antisociality history predicted perceptions of parent drinking motives, and child ADHD only predicted perceptions of parent social drinking motives. Perceived parent drinking motives predicted adolescent alcohol use, but only among youth without ADHD. *Conclusion*: Findings reflect the potential importance of assessing adolescent perceptions of parent drinking motives for adolescents without ADHD and a possible need for supporting parents in communicating about their own alcohol use. Future research should consider alternative strategies (e.g., assessing implicit cognitions) for studying the link between alcohol-related cognitions and behaviors for adolescents with ADHD.

Keywords: ADHD; alcohol use; parent psychopathology; drinking motives

The Role of Perceived Parent Drinking Motives on Alcohol Use Among Adolescents With and Without Childhood ADHD

Adolescent alcohol use is a public health concern, with recent estimates indicating that 59% of twelfth grade students had ever tried alcohol, 41% had been drunk at least once in their lives, and 14% had participated in binge drinking (i.e., consumed five or more drinks) in the past two weeks (Meich et al., 2020). Adolescent alcohol use can have deleterious effects in both the short- (e.g., physical altercations, vehicle accidents, legal trouble, risky sexual behavior, suicide) and long-term (e.g., risk for problematic alcohol use, reduced career achievement; Marshall, 2014; Schilling et al., 2009). Decades of research have highlighted predisposing family and individual factors that amplify risk for such adverse outcomes. Among other risk factors, adolescents with a family history of alcohol use disorder (AUD; Chassin et al., 1999; Sher, 1991) or antisocial personality disorder (ASPD) combined with AUD (Frick et al., 1992; Hussong et al., 1999) are at increased risk for problematic trajectories of alcohol use compared to those without such family history. Additionally, adolescents with a history of externalizing difficulties, namely attention-deficit/hyperactivity disorder (ADHD), are at increased risk of early alcohol use, binge drinking, and development of AUD as adults (Elkins et al., 2018; Lee et al., 2011; Molina et al., 2018). The aims of the current study were to elucidate potentially malleable factors that amplify or dampen risk for problematic alcohol use among adolescents with these vulnerability factors. Informed by social learning theory (Bandura et al., 1977) and motivational models of alcohol use (Cox & Klinger, 1988), we examined the role of perceived parent drinking motives on adolescent alcohol use among youth with versus without childhood ADHD and family history of AUD within a sample of youth with, and demographically similar same-aged youth without, ADHD histories.

Parent Drinking Motives and Adolescent Alcohol Use

Interventions for adolescent alcohol use often leverage parents or caregivers (hereafter "parents") as agents-of-change given the overwhelming evidence that parenting behavior and communication styles influence adolescent alcohol use (for reviews see Ryan et al., 2010; Yap et al., 2017). Among these parenting behaviors, parents' own alcohol use appears as a consistent predictor of adolescent alcohol use (Rossow et al., 2016; Ryan et al., 2010), and such intergenerational transmission of alcohol use is believed to be caused via both genetic and environmental factors (see Ellis et al., 1997; Thomas et al., 2023). Consistent with social learning theory (Bandura, 1977), parent alcohol use likely contributes to adolescent alcohol use directly through modeling of alcohol-related behaviors and indirectly via transmission of beliefs about alcohol that the child internalizes across development. These learned associations may then pose, or dampen, risk for adolescent alcohol use in relevant contexts (Van Der Vorst et al., 2013). Indeed, parent alcohol use histories predict both adolescent expectancies about the positive effects of alcohol and adolescent alcohol use behaviors (Brown et al., 1987; Shen et al., 2001), with evidence of stronger influence from fathers than mothers with alcohol use histories (Handley & Chassin, 2009). Thus, adolescents' observation and perception of their parents' drinking behaviors, contexts, and cognitions likely set the foundation for their own alcohol use cognitions and behaviors (Campbell & Oei, 2010; Ellis et al., 1997).

Perceptions of parents' drinking motives, or reasons why parents drink, may be a salient predictor of adolescent alcohol use. Consistent with motivational models of alcohol use (Cox & Klinger, 1988), drinking results from a desire to alter affective states (either through pharmacological or social effects), and drinking motives serve as the final common pathway to alcohol use, mediating the effects of other distal factors (e.g., expectancies) on alcohol use

(Kuntsche et al., 2007). Generally, self-focused motives (i.e., coping and enhancement) are more strongly linked to problematic patterns of alcohol use than social motives (i.e., social and conformity; see Cooper et al., 2016 for a review). Just as children learn about appropriate behaviors and regulating emotions from parent modeling (Morris et al., 2007), adolescents may also learn about drinking to alter affective states via modeling, thereby setting the stage for their own decision to drink in the context of similar affective states. For example, witnessing parents communicating (e.g., "It's been a long day; I need a drink.") or behaving (e.g., drinking during stressful situations) in ways that convey coping motives for drinking may pose a risk for problematic patterns of alcohol use by adolescents.

Some evidence suggests parent-reported drinking motives correspond to their child's drinking motives and alcohol use (with variability based on parent and child gender; e.g., Mares et al., 2013; Windle & Windle, 2012). Yet social learning theory posits that a relevant factor to learning is the degree to which the child observes, and how they perceive or encode, the actions being modeled (Bandura et al., 1977). In the case of motives for drinking alcohol, the child's perception of parent drinking and reasons for drinking may be more strongly related to their own alcohol use than parent-reported drinking (Smith et al., 1998). One cross-sectional study demonstrated that adolescent-perceived parent drinking motives were correlated with their own drinking motives in both specific (e.g., parent social motives correlated with personal social motives) and non-specific (e.g., parent coping motives correlated with personal coping, conformity, and social motives) ways, but the impact of such perceptions on personal alcohol use was not examined (Cloutier et al., 2021). To our knowledge, no study has examined the association between adolescents' beliefs about their parents' reasons for drinking and their own alcohol use, despite the potential for such perceptions to set the stage for adolescent alcohol use.

If such an association exists, the messages a parent conveys about their own reasons for drinking may represent a key point of intervention.

Parent History, Childhood ADHD, and Adolescent Alcohol Use

Adolescents with ADHD are at risk for early, escalating, heavy use patterns of alcohol consumption (Elkins et al., 2018; Molina et al., 2018; Sibley et al., 2014). In turn, meta-analytic studies provide robust evidence that ADHD in childhood is associated with later AUD (Charach et al., 2011; Lee et al., 2011). Familial history may contribute to this risk, as children with ADHD are more likely than peers without ADHD to have a parent with AUD (Molina et al., 2020; Kuperman et al., 1999), as well as an AUD comorbid with ASPD (Molina et al., 2020). In one study, 44% of fathers and 25% of mothers of youth with ADHD experienced problematic alcohol use, versus 28% and 13% of parents of youth without ADHD (Molina et al., 2020). Among those parents, 7% of mothers and 27% of fathers of youth with ADHD also met criteria for ASPD, compared to 1% and 14% of parents whose child did not have ADHD (Molina et al., 2020). Children whose parents have such profiles (AUD with ASPD) are at increased risk of developing worsening externalizing difficulties and alcohol use problems (Iacono et al., 1999; Loukas et al., 2003). However, the substantial heterogeneity in the outcomes experienced by children of parents with AUD (Yap et al., 2017) and ASPD (Loukas et al., 2003) suggests that parent psychopathology alone does not determine adolescent alcohol use trajectories. Parent modeling and communication patterns may contribute to adolescent alcohol-related outcomes and, if so, could be explored as potential points of intervention.

Adolescent perceptions of parent drinking motives may aid in our understanding of pathways to alcohol use among these vulnerable adolescents (i.e., those with family history of AUD or ASPD, those with a history of ADHD). Parents with AUD (Cooper et al., 2016) or those

with antisocial-related symptoms (Tragesser et al., 2007) may have high levels of motives that correspond to heavy alcohol consumption and alcohol-related problems (i.e., coping and enhancement motives; Cooper et al., 2016). If such motives are modeled in the home, and internalized by the adolescent, the risk for adolescent alcohol use may be amplified. Because children with ADHD may be more likely than peers without ADHD to have parents with such histories (Molina et al., 2020), youth with ADHD may be more likely to be exposed to parents' problematic drinking motives. Further, experts in ADHD have hypothesized that parents of youth with ADHD may be more likely than parents without children with ADHD to drink to cope (Pelham & Lang, 1993; 1999), although this stress-reactive drinking occurs in only a subset of these parents and may be more prevalent among mothers than fathers (Handley & Chassin, 2008; Kashdan et al., 2013; Pelham et al., 1998).

Thus, parents of youth with ADHD may be more likely to exhibit problematic drinking motives in the home, which, if internalized by the adolescent, could further amplify their risk of alcohol use. Observation of parent coping motives for drinking may be especially problematic for youth with ADHD who are more likely than peers to engage in problematic alcohol use (1) as a result of perceived familial stress in the home stemming from parent alcoholism (Marshal et al., 2007), and (2) due to poor adaptive coping strategies and high negative emotions (Harty et al., 2017). Therefore, parenting factors, high negative emotions, and maladaptive coping strategies may be stronger predictors for adolescent alcohol use in the context of ADHD. Alternatively, others have found that the expected associations between substance-related cognitions (i.e., expectancies) and behaviors were only present among youth without ADHD (Pedersen et al., 2014; Walther et al., 2019). Such interactive effects may indicate that self-report alcohol-related cognitions have diminished effects on substance use among youth with a history

of ADHD, suggesting that internalizing parent drinking motives may have less effect on drinking among youth with ADHD. Thus, evidence demonstrates altered pathways from parenting factors and alcohol-related cognitions to alcohol use based on ADHD history, highlighting the need to examine these pathways among youth with and without ADHD.

Collectively, youth with preexisting vulnerabilities for adolescent alcohol use, including childhood ADHD and family history of AUD/ASPD, may have parents who convey drinking motives associated with problematic alcohol use patterns. Perceptions of these parent drinking motives may compound with adolescents' vulnerabilities to accelerate adolescent alcohol use, especially among youth with ADHD. Research is needed that examines the role of perceptions of parents' drinking motives in adolescent alcohol use and the degree to which such pathways vary as a function of childhood ADHD and parent psychopathology. Findings have the potential to inform parenting interventions by addressing parent communication styles around their drinking motives and providing specificity to the populations for whom such strategies may be indicated.

Current Study

The overarching goals of the present study were to improve understanding of adolescent perceptions of parent drinking motives and to examine the role of these perceptions in adolescent alcohol use, particularly among youth with known risk for alcohol use in adolescence. Given limited literature regarding adolescent perceptions of parent drinking motives, our first aim was to describe adolescent perceptions of their parents' drinking motives (coping, enhancement, social, and conformity motives), exploring potential differences between perceived motives for mothers and fathers. Our second aim was to examine characteristics associated with these perceptions, including the degree to which perceptions of parent drinking motives vary as a function of parent psychopathology (i.e., AUD with or without ASPD) and adolescent ADHD

history. Our third aim was to test whether perceived parent drinking motives predicted adolescents' subsequent alcohol use (i.e., any alcohol use or any binge drinking in the past year). Finally, we examined interactions between childhood ADHD and perceived parent drinking motives on adolescent alcohol use. We examined these aims separately for mothers and fathers given gender differences in rates of parent alcohol/ASPD histories (Molina et al., 2020), rates of parenting-related stress-induced drinking (Handley & Chassin, 2008; Kashdan et al., 2013), and influence of parent alcohol cognitions on offspring alcohol cognitions (Handley & Chassin, 2009; Mares et al., 2013; Windle & Windle, 2012).

Method

Participants

Participants with ADHD

Participants with childhood ADHD were diagnosed with DSM-III-R or DSM-IV ADHD in Pittsburgh, PA between 1987 and 1996 as part of the Pittsburgh ADHD Longitudinal Study (PALS). Participants were 9.40 years old on average (*SD* = 2.27 years) at the initial evaluation. ADHD probands were selected for longitudinal follow-up with annual interviews during adolescence due to their diagnosis of ADHD and participation in a summer treatment program for children with ADHD, an 8-week intervention including behavior modification, parent training, and medication when indicated (Pelham & Hoza, 1996). Diagnoses for ADHD were determined using the disruptive behavior disorders (DBD; Pelham et al., 1992) symptom questionnaire for teachers and parents and a standardized semi-structured diagnostic interview with parents administered by a doctoral-level clinician. Two doctoral-level clinicians independently reviewed all ratings and interviews to confirm DSM diagnoses. A third clinician reviewed the file in the case of disagreement, and the majority decision was used. Exclusion

criteria for follow-up included a full-scale IQ of less than 80, a history of seizures or other neurological problems, and/or a history of pervasive developmental disorder, schizophrenia, or other psychotic or organic mental disorders.

Of those eligible for follow-up in the PALS (n = 516), 71% participated (n = 364; M = 8.35 years after childhood diagnosis, SD = 2.79). A small percentage could not be located (n = 23) and 129 refused or failed to participate. Participants with childhood ADHD were compared with nonparticipating individuals with ADHD on demographic (e.g., age at first treatment, race, parental education level and marital status) and diagnostic (e.g., parent and teacher ratings of ADHD and related symptoms) variables. Only 1 of 14 comparisons was statistically significant ($p < .05$), such that participants had a slightly lower average conduct disorder symptom rating (Cohen's d = .30). At the first PALS follow-up interview, which occurred on a rolling basis between 1999 and 2003, the mean age was 17.75 years (SD = 3.39 years, range = 11 to 28 years). Given our focus on adolescent alcohol use, the current study included only those who participated as adolescents (n = 263; see *Subsample for the Current Study*).

Participants without ADHD

Individuals without ADHD were recruited into the PALS when individuals with ADHD were recruited for follow-up. Participants without ADHD were recruited on a rolling basis to ensure demographic similarity to those with ADHD (age, gender, race, and parental education). They were recruited from the greater Pittsburgh area from several sources, including pediatric practices serving patients from diverse socioeconomic backgrounds (41%), advertisements in local newspapers and the university hospital staff newsletter (28%), local universities and colleges (21%), and other methods (11%), such as Pittsburgh Public Schools and word of mouth. A telephone screening interview administered to parents gathered demographic characteristics,

history of diagnosis and treatment for ADHD and other behavior concerns, presence of exclusionary criteria as previously listed for the ADHD participants, and a checklist of ADHD symptoms. Individuals who met DSM-III-R criteria for ADHD (eight or more symptoms reported by either the parent or participant), currently or historically, were excluded. Non-ADHD comparison participants with subthreshold ADHD symptomatology, or with other psychiatric disorders, were retained. There were no statistically significant differences between the 364 individuals with childhood ADHD and the 240 participants without ADHD on age, gender, race, and highest parental education. As with those with ADHD, those without ADHD were interviewed on an annual basis during adolescence.

Subsample for the Current Study

Data were selected from the first five annual interviews of the PALS for any participants who were 13-17 years-old at any of these interviews (N=285). Adolescent participants were included in the present study if they reported on their perceptions of at least one parent's drinking motives at a timepoint prior to reporting on their own alcohol use behaviors at age 16 or age 17 (N = 199; 111 ADHD; 88 non-ADHD). This sampling was done to focus on late adolescent alcohol use and maximize available data. Eighty-six adolescents were excluded because 1) they did not report parent drinking to justify reporting of motives (n=21) or 2) their data did not include two waves in late adolescence with necessary data. Compared to the full PALS sample, this subsample was similar in terms of race, ethnicity, family socioeconomic status (SES), and rates of ADHD diagnosis. The current sample had slightly fewer girls (7%) than the full sample (11%; z = -2.01; p = .04). The average duration between report of parents' motives (M_{age} = 15.67) and adolescent alcohol use (M_{age} = 16.91) was 1.24 years (range: 1-4 years). A total of 172 (86%) participants reported on both their mothers' and fathers' drinking

motives, 16 (8%) participants reported only on their mothers' drinking motives, and 11 (6%) reported only on their fathers' drinking motives.

Sample demographics are presented in Table 1. The ADHD and comparison group did not differ on adolescent gender or race. Participants in the non-ADHD group were less likely than those in the ADHD group to come from a socioeconomically disadvantaged background (i.e., single parents or parents with less than high school education; $\chi^2(1)=12.25$, $p<.01$), to have a mother with AUD ($\chi^2(1)=10.21$, $p<.01$) or AUD with ASPD ($\chi^2(1)=6.42$, $p=.01$) history, and to have a father with AUD ($\chi^2(1)=9.48$, $p<.01$) or AUD with ASPD ($\chi^2(1)=7.66$, $p<.01$) history.

Procedure

Interviews in adolescence were conducted by postbaccalaureate research staff. Informed consent was obtained, and all participants were assured confidentiality of all disclosed material, except in cases of impending danger or harm to self or others (reinforced with a Department of Health and Human Services Certificate of Confidentiality). In cases where distance prevented participant travel, information was collected through a combination of mailed and telephone correspondence; home visits were offered as needed. Self-report questionnaires were completed with either pencil-and-paper or computerized versions. The University of Pittsburgh Institutional Review Board approved of all study procedures.

Measures

Adolescent Alcohol Use

Adolescent alcohol use was assessed at each annual interview with a structured paper-and-pencil substance use questionnaire (Molina & Pelham, 2003; Molina et al., 2007) that was adapted from existing measures, including the Health Behavior Questionnaire (Jessor et al., 1989) and the National Household Survey of Drug Abuse interview (NHSDA, 1992). The

substance use questionnaire includes both lifetime exposure questions (e.g., have you ever had a drink, age at first drink) and quantity/frequency questions for alcohol and other substances. Given the positively skewed distribution of alcohol use items, we created two binary variables to represent adolescent alcohol use. The first ("any alcohol use") represented whether the adolescent reported any alcohol use (i.e., more than just a sip) in the past year. The second ("binge drinking") represented whether the adolescent engaged in binge drinking (i.e., had 5 or more drinks on one occasion or drank enough to get drunk) in the past year.

Adolescent Perceptions of Parent Drinking Behaviors and Motives

Adolescent perceptions of their parent drinking behaviors and drinking motives were assessed at each annual interview. Adolescents were first asked about the frequency of their parents' alcohol use using a Likert scale ranging from "my mother/father has never drank alcohol" to "multiple times per day." Adolescents who reported any alcohol use for their respective parent were asked to report the average number of drinks their parent consumes per occasion, and responses ranged from 1 to 15 drinks.

Adolescents who reported any alcohol use for their parent(s) completed a modified Drinking Motives Questionnaire (DMQ; Cooper, 1994) for each parent whom they perceived to drink any alcohol. The DMQ is a 20-item questionnaire that assesses motives for drinking across four subscales: social, coping, enhancement, and conformity motives. For the current study, adolescents were asked to rate their perceptions of their parent's drinking motives (e.g., social: "My mother drinks because it improves parties and celebrations;" coping: "My father drinks to forget his worries;" enhancement: "My mother drinks because it helps her enjoy a party;" conformity: "My father drinks because his friends pressure him to drink") on a Likert-scale ranging from 1 (*almost never/never*) to 5 (*almost always/always*). Subscale scores were created

by averaging the adolescents' responses to the five items per subscale for each parent. The DMQ has demonstrated excellent psychometric properties in its original self-report version (see Cooper, 1994; Kuntsche et al., 2008). Cloutier et al. (2021) also adapted the DMQ for adolescent report of parents' motives and reported evidence of invariant construct validity by gender and race. The internal consistency for the modified version in our sample was good-to-excellent (Cronbach's α range = .79 - .93) across both parents and subscales.

Parent History of Alcohol Use Disorder and Antisocial Personality Disorder

A lifetime history of alcohol problems for biological parents was assessed using the Structured Clinical Interview for the DSM-IV with parents (SCID-IV; First et al., 1998). This interview has excellent reliability and validity and reflected the version of the DSM in use at the time of data collection, yielding lifetime diagnoses of alcohol abuse or dependence for mothers and for fathers. In the absence of direct interview, alcohol problems of the non-interviewed biological parent were measured with the spousal report on the Short Michigan Alcoholism Screening Test (SMAST; Selzer et al., 1975). For the SMAST, AUD was considered present upon endorsement of three or more alcohol-related problems (e.g., "Have they ever gotten into trouble at work or school because of drinking?"), or one of three diagnostic items indicating receipt of treatment or help for drinking (e.g., "Have they ever gone to anyone for help about their drinking?" Selzer et al., 1975).

ASPD was assessed using the SCID-II ASPD Module (SCID-II; Spitzer et al., 1987), which was administered to biological parents about themselves and about the other biological parent. ASPD diagnoses were assigned if either biological parent's report met diagnostic criteria. Childhood CD was not required for diagnosis of ASPD in adulthood due to concerns about

retrospective recall of spouses' childhood behaviors and because evidence suggests this criterion is not necessary for capturing impairing ASPD (Compton et al., 2005).

Parent history of AUD and/or ASPD was represented by two binary overlapping dummy-coded variables. The first represented whether the respective parent had any history of AUD (regardless of ASPD). The second variable represented whether the respective parent had any history of both AUD and ASPD, reflecting the cumulative effect of the two disorders on adolescent perceptions and behaviors.

Covariates

Covariates included adolescent gender, race and ethnicity, and family socioeconomic advantage. At the time of data collection, participants reported their gender with binary options coded as "boys" = 0 and "girls" = 1. To account for evidence that non-Hispanic Black youth are less likely to drink than youth from other racial and ethnic backgrounds (see Chen & Yoon, 2021; Goings et al., 2019), race was coded as a binary variable with "non-Hispanic Black" = 0 and "All others" = 1. Family socioeconomic advantage was coded based on the parents' education and marital status. A total of 138 participants' parents were married, 130 of whom had more than a high school degree. Of the 61 parents who were not married, 53 had more than a high school degree. We combined these variables as "single parent (any education level) or married parents with a high school degree or less" = 0 and "married parents with more than a high school degree" = 1.

Transparency and Openness

We report how the sample size was determined, all data exclusions, manipulations, and all measures in this study, and we follow JARS (Kazak, 2018). Data and research materials are

not publicly available. This study's design and its analysis were not pre-registered. All analyses were conducted in SPSS Version 28 (IBM, 2021).

Data Analytic Strategy

Descriptive statistics were calculated to examine adolescent perceptions of their parents' drinking behaviors and motives (Aim 1). Paired sample t-tests demonstrated differences in drinking behaviors and motives between mothers and fathers among adolescents reporting for two parents. Adolescents reporting for one or both parents were included for the remainder of analyses, with separate models conducted for mothers and fathers. ADHD group differences in parent drinking and motives were examined with independent samples t-tests. Cohen's *d* (Cohen, 1988) effect sizes were calculated for all significant t-test differences.

For Aim 2, a series of hierarchical linear regressions were conducted to examine characteristics associated with adolescents' perceptions of their mothers' and fathers' drinking motives (i.e., social, coping, enhancement, conformity), resulting in eight models. Model predictors included adolescent gender, race, and socioeconomic advantage (Step 1); parent history of AUD or history of ASPD with AUD, with separate models for each given variable overlap (Step 2); and adolescent history of ADHD and perceptions of parents' drinking (Step 3).

For Aim 3, a series of hierarchical logistic regression analyses were conducted to examine the associations between perceptions of parent drinking motives, the interaction of perceived motives and child ADHD history, and subsequent adolescent alcohol use (measured as any past year use and any past year binge drinking). Separate models were conducted for each of the four drinking motives per parent for each alcohol use outcome, resulting in 16 models. Model predictors included adolescent gender, race, and socioeconomic advantage (Step 1); parent history of AUD/history of ASPD and AUD, perceptions of parent drinking, perceptions of each

respective parent drinking motive, and history of childhood ADHD (Step 2), followed by the product term representing the interaction of ADHD and the respective perceived parent drinking motives (Step 3). Statistically significant interactions ($p < .05$) were probed using the PROCESS Macro (Hayes, 2022) in SPSS Version 28 (IBM, 2021). Finally, we conducted a series of sensitivity analyses to assess the degree to which our Aim 3 analyses were robust (1) to persistence in ADHD symptoms (i.e., highest average symptom rating from parents and teachers) rather than dichotomous history of ADHD, and (2) beyond the effects of prior adolescent alcohol use (see Supplemental Materials).

Results

Aim 1: Describe Adolescent Perceptions of Parents' Drinking Motives

Table 1 reports descriptive information regarding adolescent perceptions of their parents' drinking and drinking motives. Adolescents generally reported low levels of drinking motives for both parents, with the modal response across most items being "Almost Never or Never." The exception was item 16, "To celebrate special occasions with friends," which was the most-frequently endorsed item for mothers and fathers, followed by item 5, "To be sociable." Social motives were the most frequent and conformity motives the least frequent drinking motives reported for mothers and fathers. Adolescents reported higher levels of parent drinking frequency ($t(166) = 3.78$, $p<.01$; $d = .29$) and amount ($t(154) = 3.86$, $p<.01$; $d = .31$), as well as higher social ($t(171) = 2.56$, $p<.01$; $d = .20$), coping ($t(171) = 4.10$, $p<.01$; $d = .31$), enhancement ($t(171) = 4.32$, $p<.01$; $d = .33$), and conformity ($t(171) = 2.92$, $p<.01$; $d = .22$), drinking motives for fathers compared to mothers. Compared to youth without ADHD, those with ADHD reported fewer social motives for mothers ($t(186) = -2.55$, $p<.01$, $d = -.37$) and fathers ($t(181) = -1.79$, $p<.05$, $d = -.27$), but greater coping motives for fathers ($t(181) = 2.07$, $p<.05$, $d = .29$).

Aim 2: Characteristics Associated with Perceptions of Parents' Drinking Motives

Table 2 displays results of the regressions examining parent and adolescent characteristics associated with perceived parent drinking motives. Adolescents whose mothers had a history of AUD with ASPD reported higher levels of coping (β = .32) and conformity (β = .26) drinking motives in their mothers compared to adolescents whose mothers did not have such history. Maternal history of AUD alone was not associated with mothers' drinking motives. However, adolescent-perceived mother drinking quantity was positively associated with each of the mothers' drinking motives: social (β = .29), coping (β = .15), enhancement (β = .26), and conformity (β = .18). Adolescents with a history of ADHD perceived lower levels of social drinking motives (β = -.18) for their mothers compared to adolescents without ADHD histories. There were no differences in any other perceived mothers' drinking motives by ADHD history.

Compared to no paternal history of AUD/ASPD or AUD only, paternal history of ASPD and AUD was associated with higher levels of fathers' coping (β = .22), enhancement (β = .19), and conformity (β = .25) drinking motives. As with mothers, adolescent perceptions of father drinking quantity were associated with fathers' drinking motives: social (β = .46), coping (β = .43), enhancement (β = .60), and conformity (β = .34). Adolescents with a history of ADHD perceived lower levels of social drinking motives (β = -.19) for their fathers compared to adolescents without ADHD histories. There were no differences in any other perceived fathers' drinking motives by ADHD history.

Aim 3: Association Between Parent Drinking Motives and Adolescent Alcohol Use

Table 3 displays results of the logistic regressions examining the association between adolescent perceptions of their parents' drinking motives and adolescent alcohol use. Neither maternal nor paternal history of AUD, with or without ASPD, was associated with adolescent

alcohol use. However, adolescent-perceived quantity of mother drinking predicted their likelihood of ever drinking (OR = 1.95) and binge drinking (OR = 1.74). History of ADHD was not associated with adolescent alcohol use.

There were minimal main effects of adolescent perceptions of parent drinking motives on adolescent alcohol use. Only adolescent perceptions of their mothers' enhancement motives were associated with their likelihood of binge drinking (OR = 3.04). However, the models revealed statistically significant interactions between ADHD history and parent drinking motives and any adolescent alcohol use (Table 3).

Probing these interactions revealed that adolescent perceptions of their parents' drinking motives, namely their mothers' coping and enhancement motives and their fathers' social and enhancement motives, predicted any alcohol use only among adolescents without a history of ADHD (see Table 3). Although the interaction terms of ADHD and perceived mother coping motives, and of ADHD and perceived father conformity motives, were statistically significant, these perceived motives were not significantly associated with adolescent alcohol use for either group. To disentangle interactive effects, Figure 1 displays the average perceived parent motives by adolescent ADHD and drinking status for statistically significant interactions (i.e., ADHD with mother/father enhancement, mother coping, and father social drinking motives). These interactions revealed that adolescents with a history of ADHD perceived approximately similar motives in their mothers and fathers regardless of later alcohol use behaviors. However, among adolescents without a history of ADHD, greater perceptions of mothers' and fathers' drinking motives predicted increased likelihood of engaging in alcohol use behaviors.

Discussion

Decades of research have highlighted the critical role of parent drinking in adolescent alcohol use, although the exact mechanisms of this intergenerational transmission remain unclear. Informed by social learning theory (Bandura, 1977) and motivation models of drinking (Cox & Klinger, 1988), we sought to understand the nature and role of perceived parent drinking motives for adolescents known to have elevated risk for adverse alcohol-related outcomes. In this longitudinal study of youth with and without ADHD, adolescents generally reported low levels of perceived parent drinking motives, with slightly higher levels of motives reported for fathers than for mothers. Perceptions of parent drinking motives were relatively similar regardless of childhood ADHD, but these perceptions varied as a function of parent alcohol consumption and psychopathology. Among youth without a history of ADHD, perceptions of certain parent drinking motives predicted adolescent alcohol use approximately one year later, adding to the risk associated with having a parent with AUD and ASPD who continues to consume alcohol. These findings offer new insights into the potential mechanisms contributing to intergenerational transmission of alcohol use that may inform intervention strategies among subgroups of vulnerable youth.

Adolescent Perceptions of Parent Alcohol Use Motives

To our knowledge, this was the first study to describe adolescent perceptions of their parents' drinking motives and their association with adolescent alcohol use. Overall, adolescents reported lower mean levels of drinking motives for their parents than what adults tend to self-report, yet the pattern of findings mapped on to the patterns of self-reported motives in adult samples (see Cooper et al., 2016). Specifically, social motives were most frequently endorsed, and conformity motives were least frequently endorsed. Additionally, adolescents whose parents had a history of AUD, with or without ASPD, reported more parent coping (in both mothers and

fathers) and enhancement (in fathers) motives compared to those with parents without such psychopathology, consistent with findings that adults with these clinical profiles self-report greater coping and enhancement motives than those without such clinical profiles (Cooper et al., 2016; Tragesser et al., 2007). The fact that adolescents in our study were able to report on parents' motives in patterns consistent with what is found in the literature bolsters the concept that adolescents may be attending to and encoding their parents' reasons for drinking. Given that adolescent perceptions of parenting factors are more strongly predictive of risky behaviors than parent self-report (Smith 1998; Trager et al., 2023; Varvil-Weld et al., 2013), it seems important in future work to continue studying children and adolescents' perceptions and perhaps their evolution across development and contexts (i.e., environments that vary in a range of factors known to affect alcohol use including various parental drinking behaviors).

Characteristics Associated with Perceptions of Parents' Drinking Motives

Adolescent perceptions of parent drinking motives were related to parent alcohol use and psychopathology rather than by child ADHD history. The lack of ADHD group differences in parent coping drinking motives contrasts with prior evidence that subgroups of parents of youth with ADHD may use alcohol to cope with their child's behavior and parenting challenges (Handley & Chassin, 2008; Kashdan et al., 2013; Pelham et al., 1999). These findings may be explained by our use of whole-group comparisons, rather than accounting for potential moderating factors that may increase drinking to cope among parents of children with ADHD (e.g., social support, parental trait anxiety; Handley & Chassin, 2008; Kashdan et al., 2013; Pelham et al., 1999).

The limited ADHD group differences was also unexpected because, as previously reported for this sample, youth with ADHD are more likely than peers without ADHD to have a

parent with a history of AUD, with or without ASPD (Molina et al., 2020), and, in the current study, such parent psychopathology was predictive of perceived parent coping and enhancement motives. This surprising combination of findings may be explained by the robust associations between ongoing parent alcohol use and perceived parent drinking motives, beyond the effects of parent psychopathology. In other words, the more adolescents reported current drinking by their parents, the more reasons they reported their parents had for drinking, regardless of parent AUD or ASPD history. History of AUD and ASPD represented lifetime presence of the disorders, and parents may reduce their drinking, especially from problematic levels, upon becoming parents (Bowden et al., 2018; Dawson et al., 2006). Indeed, although parents of youth with ADHD were more likely to have an AUD history, there were no meaningful group differences in adolescent-reported current parent drinking patterns, suggesting these parents may have reduced their alcohol consumption or avoided drinking in front of their teens. Similarly, others have found that adolescent-reported exposure to parent drinking, rather than parent-reported alcohol use, influences adolescent alcohol-related cognitions (Smit et al., 2019). These findings align with social learning models of alcohol use and suggest that ongoing, observable parent drinking patterns are relevant catalysts in the intergenerational transmission of alcohol-related cognitions among youth without ADHD (Campbell & Oei, 2010).

Finally, the limited evidence for group differences may have arisen because adolescents with a history of ADHD are less likely than peers without ADHD to accurately report their parents' reasons for drinking. Reporting about another individual's behaviors and affective motives requires one to attend to and infer affective processes in others, retain these interpretations, then later recall and accurately report on these memories in an explicit way. For individuals with ADHD, such high-level executive functioning processes may be impaired,

impeding formation of and access to such explicit alcohol-related associations (see Pedersen et al., 2014). Thus, although we found evidence that adolescents are encoding perceived reasons that their parents drink alcohol, adolescent history of ADHD and associated challenges in executive control may disrupt adolescents' internalization and reporting of parents' drinking motives.

Parent Drinking Motives and Adolescent Alcohol Use

Ultimately, the utility of measuring perceived parent motives for drinking lies in whether these perceptions predict adolescents' own alcohol use. In our sample, adolescent perceptions of parental drinking motives were associated with greater likelihood of adolescent alcohol use only among youth without a history of ADHD. For adolescents in general (ignoring ADHD), these findings support social learning models of adolescent alcohol use and may help explain the heterogeneity in the link between parent and adolescent alcohol use (Loukas et al., 2003; Yap et al., 2017). Specifically, intergenerational transmission of alcohol use may be conferred, in part, by transmission of alcohol-related cognitions. These effects were small, and, perhaps due to a small sample size and limited variability in adolescent alcohol use over time, were not robust to the inclusion of prior alcohol use (see Supplemental Material). Yet, it is noteworthy that perceptions of parents' drinking motives predicted adolescent alcohol use for youth without ADHD above and beyond parent current alcohol use, which is a well-documented risk factor for adolescent alcohol use. Thus, through communication and modeling about coping and enhancement motives by mothers, and social and enhancement motives by fathers, parents may transmit positive associations between alcohol and affective effects, setting the stage for adolescent alcohol use and adding to the risk associated with parent alcohol use history.

Among youth with ADHD, perceptions of parent drinking motives were irrelevant to later adolescent alcohol use. The link between perceived parent motives and adolescent alcohol-related behaviors may be mediated by adolescents' alcohol-related cognitions (expectancies and motives; Campbell & Oei, 2010). This internalization of parents' drinking motives into personal alcohol cognitions may be disrupted among youth with ADHD, although our models did not include the adolescents' alcohol-related cognitions to evaluate this assertion. This disrupted association between substance-related cognitions and behaviors in the context of ADHD has been found when examining the link between personal substance expectancies and substance use (Pedersen et al., 2014; Walther et al., 2019). Challenges with executive control and impulsivity in the context of ADHD may lead to reliance on "hot," implicit and automatic cognitive processes, rather than "cool," explicit and planful decision making (Stacy & Wiers, 2010). By assessing perceptions using a questionnaire-based measure of perceived parent drinking motives, we likely accessed explicit thought processes rather than implicit associations. Such explicit cognitions about parents' drinking motives may be less influential among youth whose challenges with executive functioning and impulsivity lead to reliance on "hot" cognitive processes (i.e., impulsive, reward-driven decision-making) when deciding to drink. Future research should evaluate how exposure to parents' drinking affects implicit associations of alcohol and affective processes among individuals who may be reliant on impulsive decision-making.

Implications

Parents report needing more support around conversations about alcohol with their teens, and many use their personal drinking as a conversation-starter (Sawyer et al., 2018; Sheriff et al., 2008). Thus, interventions that target parents as agents-of-change in adolescent alcohol use may

benefit from addressing communication and messaging about their personal alcohol use, and our findings offer specificity for how these strategies may be employed. Our findings related to the role of adolescent perceived parent alcohol consumption in alcohol-related cognitions and behaviors calls into question the wisdom of using one's personal drinking as a conversation-starter, and, at a minimum suggests, that such conversations should include discussions of moderating one's alcohol consumption. In addition to existing recommendations by NIAAA that parents avoid communicating that alcohol is a good way to handle problems (NIAAA, 2021), it may be beneficial to work with parents to identify ways their drinking communicates enhancing properties of alcohol (e.g., "It makes things more fun!") or social reasons for drinking (e.g., always drinking at social gatherings), as such perceptions contributed to adolescent alcohol use. However, perceived mother coping motives were the only motives to predict adolescent binge drinking for youth without ADHD, highlighting that certain parent drinking motives may have more detrimental impact and could serve as priorities in interventions. Because perceived drinking motives were higher among those whose mother had a history of AUD and ASPD or whose father had a history of AUD (with or without ASPD), parent training components that address communication about reasons for drinking may be especially relevant for dampening risk associated with ongoing or historical parent alcohol use problems.

Targeting parents' communication about personal use may be less of an intervention priority for youth with ADHD, whereas parenting strategies that impede "hot" or impulsive decisions to use may be higher priorities. For example, enhancing parents' knowledge about teens' whereabouts, activities, and friendships is especially protective for youth with ADHD (Walther et al., 2012), and efforts to enhance parent monitoring may therefore impede adolescent access and, thus, impulsive decisions to drink.

Limitations and Future Directions

Future research would benefit from expansion to samples with more gender, racial, ethnic, and socioeconomic diversity than the current sample. Adolescents identifying as Black were less likely to report alcohol use, which is a well-replicated finding outside of ADHD research (Chen & Yoon, 2021; Goings et al., 2019), and additional study of resilience factors, including parental messaging, would be valuable. Relatedly, recent evidence suggests a trend toward stricter parental rules about alcohol use associated with the decline in adolescent alcohol use since this study's data collection (see Vashishtha et al., 2020), and therefore more updated studies are needed regarding how perceived parent alcohol-related cognitions (which may be communicated via parent alcohol-related rules) may predict adolescent alcohol use.

Despite our longitudinal design, it was not possible to determine causality among the interrelated factors of perceived parent drinking motives and adolescent alcohol use. Additionally, the limited variability in perceived parent motives and the binary alcohol use outcome variables may have reduced power to detect true associations. Although over half of youth (61%) reported abstaining from alcohol at the initial time point, adolescents' own drinking may have influenced their perceptions of their parents' drinking and motives for drinking. Alternative study designs with briefer assessment periods may be better equipped to disentangle the temporal nature of the development of adolescent alcohol-related cognitions (including perceptions of parents' motives) and behaviors. Further, we did not account for the myriad factors that may also impact the association between perceived parent drinking motives and adolescent alcohol use. For example, adverse effects of parents' personal alcohol-related disclosures may be mitigated when paired with high levels of parental involvement or support (Handley & Chassin, 2013), or the role of perceived drinking motives in parents may be less

impactful than perceptions of peers' drinking motives (Cloutier et al., 2021). More research is needed to understand the specific ways that parent communication about alcohol use, either directly or indirectly, intentional or unintentional, predicts adolescent alcohol use in the context of other known influences.

Conclusion

Adolescents were able to report on their perceptions of the most to least common parental drinking motives in a manner analogous to adult endorsements of their most to least common drinking motives in the literature. These perceptions of parent drinking motives also related to parent AUD and ASPD in expected ways, suggesting that adolescents can encode and report specific reasons for alcohol use known to be associated with problematic alcohol consumption. These perceptions of parent drinking motives were predictive of adolescent alcohol use, but only among those without a history of ADHD. These findings suggest potential benefit in including perceived parent drinking motives in research broadly but a need for additional study in adolescents with ADHD.

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Table 1
Participant Demographics and Descriptive Statistics

Participant Characteristics	Overall (*N* = 199) *N*(%)	ADHD (*n*=111) *N*(%)	Non-ADHD (*n*=88) *N*(%)
Race and Ethnicity			
Asian American	1 (.5%)	0 (0%)	1 (1%)
Black or African American	18 (9%)	10 (9%)	8 (9%)
Hispanic or Spanish American	2 (1%)	2 (2%)	0 (0%)
White (non-Hispanic)	160 (80%)	87 (78%)	73 (83%)
More than one race	16 (8%)	11 (10%)	5 (6%)
Not listed	2 (1%)	1 (1%)	1 (1%)
Married parents with > high school degree	130 (65%)	**63 (57%)**	**67 (76%)**
Girls	13 (7%)	8 (7%)	5 (6%)
Mother with AUD History	47 (23%)	**36 (32%)**	**11 (13%)**
Mother with AUD + ASPD History	12 (6%)	**11 (10%)**	**1 (1%)**
Father with AUD History	72 (36%)	**51 (46%)**	**21 (24%)**
Father with AUD + ASPD History	40 (19%)	**30 (27%)**	**10 (11%)**
Ever drank, Time 2	102 (51%)	54 (49%)	48 (54%)
Binge Drinking, Time 2	62 (32%)	33 (30%)	29 (33%)

Perceptions of Parent Drinking	Overall Sample		ADHD		Non-ADHD	
	Mother *M(SD)*	Father *M(SD)*	Mother *M(SD)*	Father *M(SD)*	Mother *M(SD)*	Father *M(SD)*
Drinking frequency (Never to >once daily)	**1-3 times/ month**	**1-2 times/ week**	1-3 times/ month	1-2 times/ week	1-3 times/ month	1-2 times/ week
No. drinks per occasion (1-15)	**1.71 (1.22)**	**2.30 (2.21)**	1.77 (1.37)	2.44 (2.65)	1.64 (1.03)	2.13 (1.55)
Perceived Parent Drinking Motives (range 1-5)						
Social	**1.57 (.63)**	**1.70 (.76)**	1.47 (.59)	1.61 (.74)	1.70 (.66)	1.81 (.76)
Coping	**1.13 (.35)**	**1.31 (.63)**	1.14 (.42)	**1.39 (.74)**	1.12 (.24)	**1.21 (.43)**
Enhancement	**1.18 (.34)**	**1.38 (.62)**	1.18 (.38)	1.43 (.71)	1.18 (.31)	1.32 (.49)
Conformity	**1.09 (.30)**	**1.19 (.47)**	1.07 (.33)	1.20 (.52)	1.10 (.25)	1.17 (.40)

Note. Statistically significant differences in bold, with mother-father comparisons highlighted in the Overall Sample column and ADHD group comparisons highlighted across ADHD and Non-ADHD columns.

Table 2

Aim 2 Linear Regression Results: Characteristics Associated with Perceptions of Parent Drinking Motives

Mother Motives		Social			Coping			Enhancement			Conformity	
	R^2	β	B (95% CI)	R^2	β	B (95% CI)	R^2	β	B (95% CI)	R^2	β	B (95% CI)
Step 1	.02			.06			.02			.04		
Gender		.11	.29 (-.08-.65)		.14	.20 (-.01-.42)		.12	.17 (-.04-.38)		.16*	.18 (.01-.35)
Race		-.01	-.02 (-.37-.32)		-.17	-.23* (-.43--.03)		-.04	-.05 (-.25-.15)		-.10	-.10 (-.27-.06)
SES		.05	.07 (-.14-.29)		-.05	-.04 (-.16-.09)		-.03	-.02 (-.10-.14)		.04	.03 (-.07-.13)
Step 2	.01			.11			.02			.06		
Parent AUD		.06	.09 (-.14-.33)		.09	.07 (-.06-.21)		.07	.06 (-.08-.19)		.06	.04 (-.07-.15)
Parent AUD + ASPD		.12	.33 (-.09-.76)		.32**	.53 (.29-.76)		.14	.22 (-.02-.46)		.26**	.34 (.15-.54)
Step 3	.12			.02			.07			.04		
Perceived amount parent drinks		.29**	.15 (.07-.23)		.15*	.05 (.01-.09)		.26**	.08 (.03-.12)		.18*	.04 (.01-.08)
ADHD history		-.18*	-.23 (-.43--.04)		.01	.01 (-.11-.12)		.01	.01 (-.11-.12)		-.08	-.05 (-.14-.05)
Father Motives		Social			Coping			Enhancement			Conformity	
	R^2	β	B (95% CI)	R^2	β	B (95% CI)	R^2	β	B (95% CI)	R^2	β	B (95% CI)
Step 1	.02			.03			.05			.03		
Gender		.13	.38 (-.04-.79)		.12	.27 (-.06-.60)		.16*	.38 (.08-.69)		.15*	.29 (.01-.57)
Race		.05	.15 (-.27-.57)		-.04	-.10 (-.44-.24)		-.04	-.10 (-.40-.21)		.02	.04 (-.25-.33)
SES		.04	.06 (-.19-.32)		-.01	-.02 (-.22-.19)		.01	.01 (-.18-.19)		-.01	-.01 (-.18-.17)
Step 2	.01			.07			.07			.08		
Parent AUD		.01	.02 (-.22-.26)		.14	.18 (-.01-.37)		.08	.10 (-.07-.27)		.11	.11 (-.05-.27)
Parent AUD + ASPD		.06	.11 (-.18-.40)		.22**	.34 (.11-.57)		.19**	.30 (.10-.50)		.25**	.31 (.12-.50)
Step 3	.23			.18			.34			.11		
Perceived amount parent drinks		.46**	.15 (.10-.20)		.43**	.11 (.08-.15)		.60**	.16 (.13-.20)		.34**	.07 (.04-.11)
ADHD history		-.19*	-.29 (-.51- -.06)		.05	.06 (-.13-.24)		.01	.01 (-.16-.17)		-.03	-.03 (-.18-.13)

Note. * $p < .05$; ** $p < .01$. Step 1 variables are coded as: Gender: Boys = 0, Girls = 1; Race: Black = 0, Other = 1; SES: Single parent or married parents with high school degree or less = 0, Married parents with greater than a high school degree = 1. Models were conducted separately with Parent AUD and Parent AUD + ASPD in the models given variable overlap. Findings were consistent across both model versions. R^2 represents the change from previous model.

Table 3

Aim 3 Logistic Regression Results: The Association Between ADHD, Perceived Parent Drinking Motives, and Adolescent Drinking

	Mother Motives						Father Motives					
Adolescent Alcohol Use:	Any Alcohol Use			Binge Drinking			Any Alcohol Use			Binge Drinking		
	R^2	*B*	OR (95% CI)	R^2	*B*	OR (95% CI)	R^2	*B*	OR (95% CI)	R^2	*B*	OR (95% CI)
Step 1	.20			.17			.10			.08		
Gender		.33	1.39 (.37-5.18)		-1.84	.16 (.02-1.33)		.72	2.05 (.52-8.09)		-1.56	.21 (.03-1.76)
Race		1.91*	6.74 (1.37-33.09)		1.68	5.37 (.65-44.44)		1.73*	5.62 (1.10-28.81)		1.39	4.03 (.48-34.08)
SES		.22	1.25 (.60-2.62)		.04	1.04 (.47-2.30)		.07	1.07 (.50-2.31)		-.06	.94 (.41-2.14)
Parent AUD		-.51	.60 (.27-1.36)		-.26	.77 (.33-1.82)		-.08	.93 (.45-1.91)		.06	1.06 (.49-2.32)
Parent AUD + ASPD		-.98	.38 (.08-1.80)		-.57	1.72 (1.22-2.42)		.16	1.17 (.48-2.88)		-.02	1.16 (.97-1.38)
Amt parent drinks		.67**	1.95 (1.36-2.78)		.55**	1.74 (1.23-2.45)		.18	1.20 (1.00-1.43)		.15	1.16 (.97-1.38)
Step 2 (separate models per motive)												
ADHD history		-.12	.89 (.44-1.79)		.07	1.07 (.51-2.26)		-.39	.68 (.33-1.40)		-.26	.77 (.36-1.68)
Social Motives	.01	.01	1.01 (.58-1.76)	.00	.15	1.17 (.66-2.05)	.03	.31	1.36 (.80-2.33)	.01	.23	1.26 (.74-2.13)
Coping Motives	.03	-.38	.69 (.25-1.87)	.01	.40	1.49 (.51-4.39)	.03	-.22	.80 (.41-1.57)	.01	.12	1.13 (.56-2.29)
Enhancement Motives	.00	.15	1.16 (.40-3.33)	.03	1.11*	3.04 (1.01-9.18)	.02	.15	1.17 (.56-2.45)	.01	.17	1.18 (.55-2.53)
Conformity Motives	.01	-.83	.44 (.12-1.63)	.00	-.24	.79 (.17-3.56)	.03	-.34	.71 (.33-1.54)	.01	-.09	.91 (.40-2.07)
Step 3 (separate models per motive)												
ADHD*Social	.00	-.35	.70 (.24-2.05)	.01	.58	1.79 (.57-5.57)	.05	-1.28*	.28 (.09-.82)	.01	-.41	.67 (.25-1.77)
ADHD*Coping	.01	-3.33*	.04 (.00-.82)	.04	-3.70*	.03 (.00-.80)	.03	-1.66	.19 (.04-1.03)	.03	-1.65	.19 (.04-1.02)
ADHD*Enhancement	.03	-3.47*	.03 (.00-.55)	.02	-2.10	.12 (.01-1.20)	.09	-3.03**	.05 (.01-.42)	.03	-1.26	.28 (.06-1.25)
ADHD*Conformity	.01	-2.57	.08 (.00-12.87)	.00	-1.04	.35 (.00-28.66)	.04	-1.91*	.15 (.02-.95)	.00	-.51	.60 (.12-2.98)
Probing Significant Interactions												
ADHD: Social								-.34	.71 (.33-1.21)			
Non-ADHD: Social								.94*	2.55 (1.10-5.91)			
ADHD: Coping		-1.21	.30 (.06-1.40)		-.98	.37 (.03 -4.17)						
Non-ADHD: Coping		2.12	8.35 (.57-123.01)		2.72*	15.18 (1.26-182.62)						
ADHD: Enhancement		-.79	.45 (.13-1.59)					-.58	.56 (.24-1.31)			
Non-ADHD: Enhancement		2.68*	14.63 (1.12-191.29)					2.45**	11.57 (1.50-89.48)			
ADHD: Conformity								-1.00	.37 (.13-1.06)			
Non-ADHD: Conformity								.91	2.48 (.51-12.07)			

Figure 1.

Interaction Between ADHD and Perceived Parent Motives on Adolescent Alcohol Use