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Associations of perceived drinking motives of parents and friends on adolescents' own drinking motives

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Abstract

Adolescents form perceptions of why their parents and friends drink alcohol that may impact adolescents' own drinking motives. This study tested whether perceived drinking motives of parents and friends are associated with adolescents' own drinking motives. Participants included community-recruited adolescents 14–17 years (N = 105; 63.8% female) who drank alcohol in the past year. Perceived parent and friend motives both related to adolescent drinking motives at the bivariate level; however, only friend motives remained statistically significant in the final hierarchical regression models controlling for relevant covariates (e.g., alcohol frequency). Findings support a social-cognitive modeling pathway in the development of adolescents' own drinking motives and highlight the perception of why others drink as a potential intervention target.

Experimentation with alcohol is a common experience during adolescence (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2016). Indeed, by 12th grade 61.5% of adolescents in the United States will have consumed a full alcoholic beverage in their lifetime and 55.7% will have done so within the past year (Miech et al., 2018). Although only a small percentage of those who consume alcohol will go on to develop an alcohol use disorder (AUD), early initiation of alcohol use in adolescence is one of the strongest predictors of developing an AUD or related psychological problems (Chassin & Ritter, 2001; Guttmannova et al., 2011; Swendsen et al., 2012). A substantial body of work suggests that there are various alcohol use patterns, some of which (e.g., drinking to cope with one's problems; heavy episodic drinking) may be able to distinguish alcohol users who are likely to develop problems from those who likely will not (Cooper, 1994; Kuntsche, Knibbe, Gmel, & Engels, 2005). Building upon indirect learning (e.g., via media, peers, family) and growing personal experience, these identifiable patterns of alcohol use typically emerge and can begin to solidify during adolescence. As such, adolescence is a key period for studying the onset of risk-related use (Casey & Jones, 2010; Nealis, Thompson, Krank, & Stewart, 2016).

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The decision to drink, and how much individuals drink in a given context, emerges from a range of cultural, cognitive, and contextual factors (Petraitis, Flay, & Miller, 1995). However, one of the most proximal predictors of alcohol use are drinking motives, that is, an individuals' reasons for drinking (Cox & Klinger, 1988; Kuntsche, Wiers, Janssen, & Gmel, 2010; Kuntsche et al., 2005). Alcohol use motives can be categorized along two underlying dimensions based on the valence (positive or negative) and source (internal or external) of the outcome individuals hope to achieve by drinking (Cooper, 1994). Specifically, some people may drink alcohol to achieve a positive experience or to avoid a negative experience, and the source of the reward may be internal (e.g., negative emotions) or external (e.g., seeking social acceptance) in nature. Building off of the Cox and Klinger (1988) motivational drinking model, Cooper (1994) developed a measure formally crossing the two dimensions to assess four drinking motives: Coping (e.g., to alleviate negative internal consequences), Conformity (e.g., to avoid negative external/social consequences), Social (e.g., to obtain positive external/social rewards), and Enhancement (e.g., to obtain positive internal rewards).

This motivational model of alcohol use and consequences integrates cognitive and affective processes into a social learning framework (Bandura, 1999; Cooper, Russell, & George, 1988). A convergence of historical (e.g., previous drinking experiences) and current (e.g., mood; social environment) factors shape a person's likelihood to drink through cognitive factors such as expectancies and motives. Put simply, people expect certain outcomes from drinking (e.g., I expect alcohol to make me more sociable), and may therefore be motivated to drink in order to achieve those expected effects (e.g., I often drink to be sociable). The accumulation of internal and external antecedents (e.g., mood; arriving at a friend's house), cognitive factors (i.e., expectancies and motives), and drinking experiences develop into a set of drinking patterns with varying consequences (for review see Cooper, Kuntsche, Levitt, Barber, & Wolf, 2016; Cooper et al., 1988; Cox & Klinger, 1988; Kuntsche, Knibbe, Engels, & Gmel, 2007). For example, Coping motives often are associated with more frequent alcohol use as well as adverse consequences independent of consumption levels and social setting, and Enhancement motives are associated with heavy consumption (e.g., binge) patterns also independent of social setting (Cooper et al., 2016; Merrill & Read, 2010; Merrill, Wardell, & Read, 2014). In contrast, Conformity and Social motives typically are limited to drinking in social settings in low to moderate amounts, respectively, and evidence null or inconsistent associations with drinking problems (Cooper et al., 2016; Kuntsche et al., 2014). Within this framework, an individuals' motives are theorized to be the "final pathway" to actual alcohol use and emerging patterns; identifying social-cognitive factors that contribute to the development of specific motives is needed to better understand the etiology of adolescent alcohol use (Cooper et al., 2016; Cox & Klinger, 1988).

Influence of parents on alcohol use motives

Parents often serve as the initial, primary model of appropriate behavior and emotion regulation (Morris, Silk, Steinberg, Myers, & Robinson, 2007), and how parents discuss and use alcohol throughout development is likely to serve as the foundation for later cognitions and experiences among their offspring (Petraitis et al., 1995). For instance, adolescents may reference their parents' motives as a model for how to consume alcohol in an "adult-like"

way in their attempts to become more autonomous (Baumrind & Moselle, 1985). Indeed, a large body of work has shown that parents' drinking patterns are strong predictors of both adolescent alcohol use motives and behaviors (e.g., Marino et al., 2018; Ryan, Jorm, & Lubman, 2010). For example, cross-sectional studies suggest that the drinking motives of adolescent offspring may mediate the link between parental and offspring alcohol consumption (e.g., Müller & Kuntsche, 2011). In one cross-sectional study, parents' Conformity motives were directly linked to their child's Conformity motives, and parental problems further mediated the effect of their Coping motives and their child's alcohol use (Marino et al., 2018). Longitudinal studies further support that parents transmit their own drinking motives and behaviors to their adolescent offspring, such that parent drinking patterns are indirectly associated with adolescent drinking patterns via adolescent drinking motives. For instance, in one study, parental drinking levels when offspring were 10 years old indirectly affected offspring's drinking in emerging adulthood (M_{age} = 19) through offspring drinking motives (Van Damme et al., 2015). Specifically, paternal drinking was indirectly associated with offspring drinking through Enhancement motives, while maternal drinking indirectly affected male offspring's drinking through Social motives (Van Damme et al., 2015). In another 10-year, three wave study beginning in mid-adolescence (M_{age} = 15.5 years), parents' (self-reported) drinking motives were correlated with their children's (self-reported) drinking motives across time (Windle & Windle, 2012).

Additionally, the perception of parental alcohol use appears to influence offspring drinking motives. For example, one study found that offspring who perceived their parents as having more alcohol problems also reported greater Coping, Conformity, and Enhancement (but not Social) motives to drink compared to offspring who perceived their parents as having no or few alcohol problems (Chalder, Elgar, & Bennett, 2006). While these findings provide support for the intergenerational transmission of drinking motives and behaviors and the role they might have in adolescents' drinking patterns, two major limitations must be considered. First, the assessment of parent-reported drinking motives presumes that adolescents are accurately detecting the reasons their parents drink alcohol. However, adolescent impressions may differ from parental report, and adolescents' motives for drinking may be more influenced by adolescents' *perception* of parental motives than by parent-reported drinking motives. Indeed, there is some empirical data to support that the child's perception of parenting behaviors and substance use norms is a stronger predictor of child substance use than parent reports (Cohen & Rice, 1997; Varvil-Weld, Turrisi, Scaglione, Mallett, & Ray, 2013). Second, none of the studies to date have accounted for adolescents' perceptions of their friends' motives in conjunction with parental markers.

Influence of friends on alcohol use

While both parents and friends are important sources of influence on behavior, at least three developmental features of adolescence suggest that friends may be more influential than parents in terms of risky health behaviors, including the refinement of alcohol use motives. First, across adolescence, increasingly more unsupervised time is spent with friends, providing greater opportunities to consume alcohol and gain exposure to friends' drinking motives (Brown, Dolcini, & Leventhal, 1997; Lee & Vandell, 2015). Second, adolescence is characterized by sensitivity to social feedback (Steinberg, 2007); conforming to perceived

alcohol use patterns of friends may support adolescents' goals of achieving and maintaining acceptance of important peers (Brechwald & Prinstein, 2011). Third, adolescence is a period of identity formation: during this developmental phase, emulating valued others (e.g., friends) through behaviors and perceived norms can help adolescents achieve a favorable sense of self (Brechwald & Prinstein, 2011; Festinger, 1954). Although parents may exert greater influence on offspring alcohol use earlier in adolescence, there is empirical data supporting the idea that peers play an increasingly larger role through mid-late adolescence (Baumrind & Moselle, 1985). For instance, in one study of U.S. 9th and 10th graders (M_{age} = 15.5), maternal and paternal alcohol use accounted for less than 4% variance in adolescent alcohol use frequency and problems, whereas friend alcohol use accounted for 25% and 15% in alcohol use frequency and problems, respectively (Windle, 2000). Furthermore, there is an extensive literature highlighting the role of perceived peer substance use norms and greater adolescent use prevalence rates (Borsari & Carey, 2001; Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2016). While these findings provide support for concordance in alcohol use among adolescent friend groups, the extent to which adolescents' drinking motives might be impacted by perceived drinking motives of their friends is not well understood and warrants close examination.

Perceived drinking motives of others on own alcohol motives

During adolescence both parents and friends comprise a significant proportion of an adolescent's proximal social context, thereby exerting a strong influence on alcohol cognitions/behaviors (Bahr, Hoffmann, & Yang, 2005). From a social-cognitive framework, this primarily occurs through indirect pathways. For example, in addition to increasing access, parents and peers may serve as models for patterns of use and related motives (Ryan et al., 2010). It is possible that in addition to forming perceptions regarding how much their parents and friends use alcohol, adolescents further infer the motives underlying observed use (Borsari & Carey, 2001). Adolescents may then adopt these perceptions of why others use alcohol into their own budding belief and behavior system. For example, if adolescents regularly see a parent consuming alcohol when the parent is stressed (e.g., drinking after work) or expressing an intent/desire to do so (e.g., parent saying "I could really use a drink right now" after a stressful event), they may learn to use alcohol as a coping mechanism. Likewise, if adolescents regularly see their friends consuming alcohol at parties or expressing the importance of alcohol at parties (e.g., friend asking "Will there be alcohol there?" in response to a party invitation), they also may drink more frequently for social reasons and come to believe that alcohol improves social gatherings.

With this backdrop, the aim of the current study was to examine if perceived drinking motives of parents and friends are associated with adolescents' own drinking motives. Specific perceived parent and friend motives were expected to show the strongest positive correlations to adolescents' own specific drinking motives. For example, parent and friend Enhancement motives were expected to show the strongest positive correlation with adolescent Enhancement motives. However, because friends are believed to play a more influential role in drinking behaviors among adolescents, the association between perceived friend and adolescents' own motives were expected to be stronger than the association between perceived parent and adolescents' own motives. Given the noted associations of

gender, race/ethnicity, alcohol use history, age, and years since alcohol initiation with drinking motives (e.g., Bradizza, Reifman, & Barnes, 1999; Kuntsche et al., 2005; Kuntsche et al., 2006; Stewart, Zeitlin, & Samoluk, 1996), as well as the theorized associations between drinking partners (e.g., parents; friends) and perceived drinking motives, these variables also were considered as potential covariates for the final model.

Method

Participants

Participants were adolescents (ages 14–17 years) recruited from the community to take part in a larger laboratory-based study on adolescent emotions and behavior ($N = 137$; see Blumenthal, Cloutier, Douglas, Kearns, & Carey, 2019). The inclusionary criterion for the primary project was endorsement of any past year alcohol use on a telephone screener or during an in-person interview ($n = 10$ did not report past year alcohol use during the interview). Participants were excluded if they endorsed a potential alcohol use disorder on a telephone screener or during an inperson interview ($n = 12$). From the larger study, participants were only excluded from the current analyses if they had missing data on one of the primary variables of interest. Because Little's MCAR test (1998) indicted the data were Missing Completely at Random [$\chi^2 = 23.04$, ($df = 23$, $p = .459$)] and the percentage of missingness present in the primary variables (3.6%) fell below accepted thresholds (e.g., 8–10%; Widaman, 2006), listwise deletion was used on the final regression analyses.

The final sample included 105 community-recruited adolescents ($M_{age} = 16.05$, $SD = 0.94$ years), 63.8% of whom were female. The racial and ethnic composition of the final sample was as follows: 70.5% White/Caucasian, 5.7% Black, 6.7% Asian, 16.2% Multiracial/Other; 1.0% not reported; 23.8% Hispanic. In terms of year in school, 2.9% were in 8th grade, 11.4% in 9th grade, 16.2% in 10th grade, 41.0% in 11th grade, 22.9% in 12th grade, and 5.7% were homeschooled.

Measures

Screening materials—Before attending the laboratory visit, participants completed a brief telephone interview with trained research assistants. Specifically, a single item based on the Youth Risk Behavior Survey (e.g., "Other than for religious purposes, have you ever had an alcoholic beverage?"; CDC, 2016) in combination with an abbreviated timeline follow-back technique (Chung, Maisto, Cornelius, & Martin, 2004; Sobell & Sobell, 1996; Winters, 2003) were used to identify participants who consumed a full standard alcoholic beverage within the past 12 months. Next, participants were asked if they were "ever in serious trouble with parents, school, or police because of alcohol use" to exclude those at risk for a potential alcohol use disorder (ADIS-C; Saunders, Aasland, Babor, De la Fuente, & Grant, 1996).

Once in the laboratory, a trained research assistant administered the Alcohol Use Disorders Identification Test interview (AUDIT; Silverman & Albano, 1993) to identify participants at risk for an alcohol use disorder. In the AUDIT interview, participants are asked 10 questions pertaining to their alcohol consumption (e.g., frequency, amount) and problems (e.g.,

drinking-related remorse and memory loss) in the past year; their responses are scored from 0 to 4, with higher scores reflecting more hazardous alcohol use. As part of the larger project (see Blumenthal et al., 2018) and consistent with the World Health Organization guidelines, a score of 10 or higher was used as a conservative cutoff for alcohol use disorder risk and exclusion from full participation (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001).

DMQ-Self—Adolescents' own drinking motives were assessed with the Drinking Motives Questionnaire (DMQ; Cooper, 1994; Cooper, Frone, Russell, & Mudar, 1995). The DMQ includes 20 items and four subscales assessing Coping (e.g., "To forget your worries"), Conformity (e.g., "To be liked"), Social (e.g., "Because it improves parties and celebrations"), and Enhancement (e.g., "Because you like the feeling") motives. Each subscale included five items rated on a 1 (*almost never/never*) to 5 (*almost always/always*) scale that were summed to create subscale scores ranging from 5 to 25. The DMQ is widely used and has excellent psychometric properties among adolescents including confirmed factor structures across diverse samples, strong test-retest reliability across short- and long-term follow-ups (r's > .82), as well as criterion validity (e.g., alcohol use behaviors/problems; Cooper, 1994; Cooper et al., 2008; Kuntsche et al., 2005). Internal consistencies for the DMQ-Self subscales were good, ranging from .84 to .89.

Perceived DMQ-Friend and parent—Adolescents' perceived drinking motives for Friend and Parent were assessed with modified versions of the DMQ previously described, which altered the referent from "you" to "your friend(s)" (Perceived Drinking Motives Questionnaire - Friend) or "your parent" (Perceived Drinking Motives Questionnaire - Parent). Perceived Friend/Parent - Conformity, Social, and Enhancement motives were each rated across five items on 5-point scales. The Perceived Coping motive subscales for Friend and Parent contained only three items, each rated on five-point scales, resulting in subscales ranging from 3 to 15.[1]

Both the Perceived DMQ-Friend and -Parent measures evidenced adequate psychometric properties in the current study consistent with the well-validated DMQ-Self that was described above. Notably, each of the subscales on both the Perceived DMQ-Friend and -Parent evidenced good-to-excellent internal consistency (α_{range} = .84–.91), showed no differences in reported scores between demographically-distinct groups (e.g., gender, race), and evidenced construct validity when differentially evaluating increases in motives by reported drinking group (e.g., Adolescents who typically drink with friends reported stronger Perceived DMQ-Friend motives; see Table 1).

Alcohol-Related covariates—Adolescents' drinking patterns were assessed with the *Adolescent Alcohol/Drug Involvement Scale* (AADIS; Moberg, 2000; Moberg & Hahn, 1991) for descriptive purposes and to serve as potential covariates. Specifically, participants reported how often they drank alcohol on a single item ranging from 0 (*Never Used*) to 7 (*Used Several Times a Day*). As part of the AADIS, participants also were asked to indicate who they typically drink with on a checklist (Parents/Older Relatives, Older Friends, Same

[1]Two items ("because it helps when I feel depressed or nervous" and "to forget about problems") were accidentally excluded due to an administration error.

Age Friends, Siblings, or Alone). Participants could select all options that applied; each option was converted into individual, dichotomous variables where "1" reflected endorsement and "0" reflected non-endorsement. To create a single, dichotomous friends variable, "Typically drink with older friends" and "Typically drink with same age friends" were merged together so that endorsement on either item resulted in endorsement on "drinking with friends." Given the focus on parent and friend influence, only drinking with friends and drinking with parents were included as potential covariates.

Age of first alcohol use was asked with a single, face-valid item based on the Youth Risk Behavior Survey (i.e., "How old were you when you first had an alcoholic drink?"; CDC, 2016). Number of years since alcohol initiation was calculated by subtracting the response to "Age of first alcohol use" from the participants' current age. The youngest recorded response for age of first alcohol use was 8 years, and the oldest was 17 years; because the age range of the current sample was 14–17, the range of possible responses for "Number of years since alcohol was first consumed" was 0 (i.e., first tried alcohol within the past year) to 9 (i.e., for 17 year olds who first tried alcohol at age 8).

Procedure

Participants were recruited from the community via flyers posted at locations frequented by adolescents (e.g., coffee shops), information tables at local events (e.g., holiday and musical events), and social media ads (e.g., Facebook). All advertisements directed parents and adolescents to call the laboratory for further information. Interested adolescents and parents who contacted the laboratory were fully informed about study procedures, and adolescents completed a brief initial screening interview over the telephone. Eligible participants were invited to the laboratory appointment, at which time both parent consent and child written assent were obtained. Adolescents then completed a questionnaire battery (randomly presented to limit order effects), interviews (e.g., AUDIT), and finally a laboratory task unrelated to the current project (see Blumenthal et al., 2019). At the end of the laboratory visit, adolescents were thanked, debriefed, and compensated $30 for their time and then scheduled for follow-up interviews unrelated to the current project.

Analytic approach—First, sample descriptives for categorical demographics (i.e., gender, race, ethnicity, year in school) and alcohol-related covariates (i.e., drinking frequency, drinking partners) were summarized. Second, a series of one-way ANOVAs and bivariate correlations were conducted to identify potential covariates. Specifically, a series of one-way ANOVAs tested mean differences in alcohol use motives based on who adolescents typically drank with (i.e., with/without friends; with/without parents), adolescent gender (i.e., Male vs. Female), race (i.e., White vs. Non-White), and ethnicity (i.e., Hispanic vs. Non-Hispanic). Bivariate correlations included the primary outcomes (i.e., DMQ-Self), predictors (i.e., Perceived Friend and Parent Motives), and continuous covariates (i.e., age, years since first alcohol use, drinking frequency).

To identify whether specific Perceived Friend and Parent Drinking Motives related to adolescents' specific drinking motives, a series of hierarchical regressions were conducted. The outcome variables were adolescents' own Coping, Conformity, Social, or Enhancement

drinking motives. In initial models, covariates (i.e., alcohol use frequency, drinking partners) were entered in Step 1, followed by relevant Perceived Friend and Parent Drinking motives subscales together in Step 2. Because drinking motives often are correlated, final analyses also controlled for adolescents' other drinking motives. In this test, identified alcohol-related covariates (i.e., alcohol use frequency, drinking partners) were again entered in Step 1, followed by the adolescents' other Drinking Motives in Step 2, then relevant Perceived Friend and Parent Drinking motives in Step 3. For example, the more conservative model predicting adolescent Enhancement motives included adolescent Coping, Conformity, and Social motives in Step 2, followed by Perceived Parent Enhancement motives and Perceived Friend Enhancement motives in Step 3.

Results

Descriptive analyses

In terms of drinking partners, 40.0% endorsed drinking with older friends, 66.7% with same-age friends, 47.1% with parents, 19.0% with siblings, and 9.5% alone. See Table 1 for mean difference tests on Own, Perceived Friend, and Perceived Parent DMQ based on typical drinking partners, gender, race, and ethnicity. Regarding the comparison of drinking partners, adolescents who reported drinking with their friends had significantly greater Own- and Friend-Coping, Conformity, Social, and Enhancement motives than those who drank without friends. Furthermore, adolescents who reported drinking with their friends also reported slightly higher Perceived Parent-Coping and -Enhancement motives than those who did not report drinking with friends. In contrast, adolescents who reported drinking with parents had lower Own-Coping and -Enhancement motives, as well as lower Perceived Friend-Enhancement Motives. No other comparisons were statistically significant.

In terms of gender, females reported slightly higher perceived Friend-Coping motives than males but no other comparisons were statistically significant. For race, non-whites endorsed slightly higher Own-, Perceived Friend-, and Perceived- Parent Conformity motives than whites but no other comparisons were statistically significant. Lastly, there were no statistically significant differences on any of the motives subscales by ethnicity. Given the overall lack of statistically significant differences on the outcomes (i.e., Own-Motives), gender, race, and ethnicity were not included as covariates in the final models.[2]

Regarding bivariate associations between alcohol use motives, own-motives were positively associated with friend and parent motives; however, as seen in Table 2, the magnitude of the association was nearly double with friends (rs = .44-.71) compared to parents (rs = .20-.31). Of the variables considered as potential covariates, alcohol frequency, drinking with parents, and drinking with friends were the only ones to evidence statistically significant ($p < .05$) associations with more than one outcome variable (see Tables 1 and 2).

[2]Because of the one statistically significant difference of race on Own-Conformity motives, additional analyses were conducted with race included as a covariate across models. Identical results were obtained across analyses; however, because of the small overall sample and subgroup samples (i.e., Non-White N = 30), we elected to present the most parsimonious model.

Primary analyses

Results of the initial hierarchical regression analyses controlling for alcohol frequency, drinking with parents, and drinking with friends all were statistically significant. The total amount of variance each model accounted for was: 50% for Own-Coping, 23% for Own-Conformity, 62% for Own-Social, and 52% for Own-Enhancement. With the exception of Own-Conformity, covariates in Step 1 (i.e., alcohol frequency, drinking with parents, drinking with friends) accounted for a significant amount of variance. Across all models, relevant Perceived Motives in Step 2 accounted for a significant amount of variance. Within Step 2, all of the significant variance was accounted for by Perceived Friend motives; none of the Perceived Parent motives were significant in the final model (see Table 3 for predictor level data).

Similar findings were obtained with the more conservative regression analyses including adolescents' other Own alcohol use motives as additional covariates. Indeed, the total models for Own-Coping (R^2 = .516), Own-Conformity (R^2 = .272), Own-Social (R^2 = .733), and Own-Enhancement Motives (R^2 = .676) were statistically significant (F[8,96], *ps* <.001). In this more conservative test, Step 2 accounted for more variance for Own-Coping (ΔR^2 = .08, p = .011), Own-Conformity (ΔR^2 = .10, p = .011), Own-Social (ΔR^2 = .27, p < .001), and Own-Enhancement Motives (ΔR^2 = .25) than the other covariates in Step 1. Step 3 containing Perceived Friend and Parent Motives accounted for significantly more variance than covariates in Step 1 and Step 2 for Own-Coping (ΔR^2 = .14, p < .001), Own-Conformity (ΔR^2 = .10, p = .002), and Own-Social (ΔR^2 = .10, p < .001), but not Own-Enhancement Motives (ΔR^2 = .02, p = .100). Within Step 3, Friend motives remained statistically significant though accounted for slightly less variance in Own-Coping (sr^2 = .558, p < .001), Own-Conformity (sr^2 = .697, p = .002), Own-Social (sr^2 = .667, p < .001), and Own-Enhancement Motives (sr^2 = .496, p = .048) compared to the base regression models presented in Table 3. Parent motives still were not statistically significant for Own-Coping (sr^2 = .15, p = .197), Own-Conformity (sr^2 = .14, p = .349), Own-Social (sr^2 = .13, p = .093), nor Own-Enhancement Motives (sr^2 = .12, p = .231).

Discussion

The current study is the first to report on perceived motives of both parents and friends as potential correlates of adolescent drinking motives. As expected, the perceived motives of both parents and friends generally showed the strongest positive correlations with the respective subscales for own motives. In each instance, perceived motives for friends evidenced stronger associations with own motives than did perceived parent motives. These associations were robust to the inclusion of other alcohol-related covariates, including alcohol use frequency, drinking partners, other own motives, and parent motives. Overall, the current cross-sectional findings support a social-cognitive modeling pathway in the development of adolescents' own drinking motives.

According to this model, motives for use are shaped by previous experiences that are both direct (e.g., effects that prior alcohol use had) and indirect (e.g., observing effects in others; verbal transmission; Bandura, 1999; Cooper et al., 1988). The present findings suggest that perceived drinking motives of others could be an indirect pathway through which one

develops their own drinking motives. Indeed, the results suggest that perceptions of "why" others use may serve to establish socially acceptable guidelines for defining adolescents' own motives for using alcohol. While this is the first study to test these associations, the findings are conceptually consistent with data on norms through which the perceived attitudes of parents/friends have been shown to prospectively predict adolescents' attitudes, as well as their own drinking behavior (e.g., Borsari & Carey, 2001). It is possible that if adolescents' own drinking motives do not currently map onto their perceptions of why others typically use, adolescents may alter their own use patterns so that they are more closely aligned with that of their parents or friends. For example, Teunissen and colleagues (2012) was able to manipulate peer norms using a preprogrammed chatroom, which in turn altered the adolescent participants' willingness to drink in the moment. The effects were strongest when the peer norms were believed to come from high-status peers (Teunissen et al., 2012) or when the participant more closely identified with the drinking prototypes (Teunissen et al., 2014). Furthermore, the extent to which adolescents conformed to the peer norms in the chatroom prospectively predicted weekend drinking in different contexts across eight weeks of daily diary assessments (Teunissen, et al., 2016). Importantly, the cross-sectional nature of the current analyses did not allow for a direct test of whether adolescents alter their own use motives to match the perceived motives of their parents or friends. Longitudinal and experimental work is needed to examine the extent to which perceived motives predict changes in adolescent drinking motives and impact behavior.

The salience of perceived friend motives in our older adolescent sample is consistent with developmental models highlighting the growing influence of friends and peers, as well as the diminishing (though still important) influence of parents during this period (Donovan, 2004). These data are consistent with a wealth of studies showing that, when both parents and friends are considered as predictors of adolescent substance use, friends are a statistically stronger predictor (e.g., Windle, 2000). The current study contributes to this literature by explicitly testing perceived motives as a potential pathway in the formation of one's own drinking motives. If motives are formed by the perception of others' motives, and motives are the final pathway to alcohol use, then challenging this perception (e.g., through individual/group therapy; existing norm-based interventions) can be used as a potential prevention target before an individual's drinking motives become solidified. However, longitudinal work that tests the theorized mediation of perceived motives and alcohol use outcomes via own motives are needed.

Of note, in the current study we unexpectedly identified several statistically significant cross-motive correlations (e.g., Own-Social Motives were positively correlated with Parent-Enhancement Motives), which suggest that the specific subscales of others' motives are not always unique to ones' own motives. In the case of Own-Social and Parent-Enhancement motives ($r = .41$), it is possible that the perception of parents using alcohol to make themselves 'feel good' lays the foundation for adolescents' own social drinking. While these findings correspond with several other studies which evidence high intercorrelations across Own-Motives subscales (e.g., Martens, Rocha, Martin, & Serrao, 2008), the current study was designed as a preliminary examination of Perceived Motives of Others that were most likely to be associated with Own-Motives. As such, we did not have a strong theoretical background to include cross-motive analyses (e.g., using Parent-Enhancement as the primary

predictor for Own-Social motives), and given the small sample size, we were not statistically powered to incorporate all the friend and parent perceived motives on a more exploratory basis. Future work, with larger samples and multi-modal, longitudinal designs is needed to determine the extent to which these cross-motive associations are replicable across samples and theoretically meaningful.

As the first study to use a measure of perceived motives, a few comments on the psychometrics are warranted. First, the Perceived Drinking Motives measures are based on Cooper's Drinking Motives Questionnaire-Revised (DMQ-R; 1994), which has been widely used and garnered significant support in terms of reliability and validity across populations (including adolescents). The changes employed were minimal, face-valid (e.g., changing "you" to "your friend" or "your parent"), and necessary given the lack of validated measures available that assess perceived motives of others. Second, the measures we were able to utilize from the current study provide some support for the psychometrics and are consistent with what was found in the original DMQ. In addition to good internal reliability estimates across all subscales (i.e., Cronbach's $\alpha > .82$), the lack of mean differences across gender, race, and ethnicity suggests that these groups do not respond differently to the perceived motives subscales. Furthermore, as would be expected, adolescents who reported drinking alcohol with their friends reported greater perceived friend-drinking motives, suggesting that the measure distinguishes between groups of adolescents as intended. While we did not see the same pattern with parents and perceived parent drinking motives, it is possible that adolescents form perceptions regarding their parents' drinking motives without necessarily drinking with their parents. While the current study provides some support for the psychometrics of the Perceived DMQ, additional research that is designed to directly test the psychometric properties of these measures (e.g., confirmatory factor analyses; predictive validity) are needed.

The current study should also be considered in light of several limitations. First, the data were drawn from a cross-sectional study design; therefore, we were unable to determine the temporal sequencing of these associations. Longitudinal and experimental research designs are needed to provide better inferences regarding temporal sequencing of associations and potential causality. However, as the first study in this area, we believe these cross-sectional data provide the justification for pursuing more rigorous (and resource intensive) research designs (Kraemer, Yesavage, Taylor, & Kupfer, 2000). Second, while the pattern of findings for Coping are consistent with the other subscales, the administration error in the Perceived Friends and Parents DMQ resulting in two missing Coping items means that findings for Coping should be interpreted with caution. Future researchers should incorporate these missing items and consider the extent to which their inclusion/exclusion may alter results. Third, there is a wealth of data highlighting the importance of perceived peer and parent drinking norms (e.g., how much do you think your peers/parents are drinking; Borsari & Carey, 2001), but unfortunately these data were not collected in the current study. The amount of alcohol youth perceive others to drink (i.e., descriptive norms) as well as the acceptability of those drinking patterns (i.e., injunctive norms) are important variables that should be considered in future research in this area. Lastly, although not the aim of the current study, direct assessments of parent and friend drinking motives were not assessed and could have provided insight into how much actual motives of others influence own

motives for use (Hussong, 2003). While there is an extensive literature noting the perception of others behaviors/attitudes as a stronger predictor of own behaviors/attitudes than the actual behaviors/attitudes of others (Borsari & Carey, 2001), future researchers should consider concurrently assessing parent- and friend-reported drinking motives to test this directly.

In addition to the limitations previously noted, future researchers should consider incorporating additional theoretically relevant variables, as well as testing alternative statistical models (e.g., moderation, mediation). Other parent and friend variables may moderate the extent to which perceived drinking motives predicts adolescents own drinking motives. For example, the amount of alcohol parents/friends consume, family/friend group norms and attitudes, as well as features of the parent/friend relationships (e.g., quality, peer status) all may serve as moderators (Grigsby, Forster, Unger, & Sussman, 2016; Teunissen et al., 2016). It is also possible that peer and parental influences function synergistically (Bronfenbrenner, 1986; Wang, Hipp, Butts, Jose, & Lakon, 2015). For example, parental alcohol use may indirectly affect adolescent alcohol use through peer use (Bahr et al., 2005), and parents may serve as a buffer against adolescents' affiliations with alcohol using peers (Marshal & Chassin, 2000). Unfortunately, the cross-sectional nature of the study precludes us from testing such relations. Basic demographic information regarding the parents and friends being referenced in the Perceived DMQ may also moderate the strength of the association between the Perceived DMQ and DMQ-Self. For example, the perceived motives of parents and friends who are the same gender as the target adolescent may be more influential than opposite gendered parents and friends (Windle & Windle, 2012). Lastly, while parents and friends are two important influences on adolescent substance use, siblings also play a key role in adolescent drinking behaviors (Gossrau-Breen, Kuntsche, & Gmel, 2010). Therefore, future researchers should consider incorporating a measure of perceived sibling alcohol use motives.

Conclusions

Overall, findings support a social-cognitive modeling pathway in the development of adolescents' own drinking motives through emerging perceptions of others' drinking motives. Perceptions of others' motives may serve as a potentially meaningful intervention target for adolescents' substance use. The current study provides the foundation for additional research testing these questions, including more rigorous designs (e.g., longitudinal, experimental), complementary assessments of others' use behaviors (e.g., parents/friends drinking frequency), and psychometrics of the Perceived Friend and Parent Drinking Motives Questionnaires.

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Table 1.

Mean differences in own and perceived motives based on typical drinking partners, gender, race, and ethnicity.

		Typical Drinking Partner: Friends		Typical Drinking Partner: Parents		Gender		Race		Ethnicity	
	Total (*N* = 105)	**With Friends (*N* = 77)**	**Without Friends (*N* = 28)**	**With Parents (*N* = 50)**	**Without Parents (*N* = 55)**	**Male (*N* = 38)**	**Female (*N* = 67)**	**White (*N* = 30)**	**Non-White (*N* = 74)**	**Hispanic (*N* = 21)**	**Non-Hispanic (*N* = 76)**
Own	*M(SD)*	*M(SD)*	*M(SD)*	*M (SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
Cope	8.53 (4.65)	9.52 (4.91)	5.82 (2.26)**	7.00 (3.29)	9.93 (5.28)**	7.79 (3.57)	8.96 (5.14)	8.03 (4.19)	9.57 (5.49)	9.04 (5.30)	8.38 (4.45)
Conform	6.72 (2.96)	7.13 (3.28)	5.61 (1.34)*	6.74 (3.28)	6.71 (2.74)	6.87 (3.16)	6.64 (2.87)	6.34 (2.51)	7.73 (3.76)*	7.08 (3.23)	6.61 (2.89)
Social	12.31 (6.07)	14.04 (6.09)	7.57 (2.46)**	11.54 (5.88)	13.02 (6.06)	12.45 (6.24)	12.24 (6.03)	12.89 (5.86)	13.43 (6.63)	12.84 (6.78)	12.15 (5.87)
Enhance	12.28 (5.72)	13.92 (5.52)	7.79 (3.41)**	10.66 (4.96)	13.76 (5.84)*	12.05 (5.88)	12.42 (5.67)	11.87 (5.50)	13.43 (6.23)	11.88 (6.54)	12.41 (5.48)
Friend											
Cope-Abv	7.51 (3.96)	7.99 (4.03)	6.18 (3.47)*	7.34 (3.91)	7.65 (4.04)	6.34 (3.57)	8.16 (4.04)*	7.28 (3.83)	8.03 (4.34)	7.40 (3.69)	7.54 (4.06)
Conform	10.10 (5.51)	10.79 (5.57)	8.21 (4.95)*	10.12 (5.65)	10.09 (5.43)	9.68 (5.54)	10.34 (5.53)	9.31 (5.21)	12.23 (5.79)*	10.44 (5.71)	10.00 (5.48)
Social	15.56 (6.33)	17.05 (5.87)	11.46 (5.58)**	15.10 (6.65)	15.98 (6.06)	15.18 (6.15)	15.78 (6.47)	15.08 (6.41)	16.80 (6.17)	15.72 (5.56)	15.51 (6.59)
Enhance	15.74 (6.29)	17.22 (5.74)	11.67 (6.02)**	14.50 (6.10)	16.87 (6.30)	14.95 (6.29)	16.19 (6.29)	15.23 (6.09)	16.97 (6.79)	16.40 (6.28)	15.54 (6.31)
Parent											
Cope-Abv	5.47 (3.34)	5.65 (3.41)	4.96 (3.16)	5.50 (3.03)	5.44 (3.63)	4.63 (2.51)	5.94 (3.66)	5.73 (3.35)	4.90 (3.33)	6.16 (3.92)	5.25 (3.13)
Conform	6.56 (3.33)	6.57 (3.43)	6.54 (3.10)	6.36 (2.93)	6.75 (3.67)	5.74 (2.65)	7.03 (3.59)	6.23 (2.60)	7.43 (4.64)*	7.04 (3.56)	6.41 (3.26)
Social	13.04 (5.61)	13.09 (5.56)	12.89 (5.83)	13.86 (5.61)	12.29 (5.56)	11.95 (4.94)	13.66 (5.90)	12.85 (5.27)	13.77 (6.32)	13.48 (5.79)	12.90 (5.58)
Enhance	10.86 (5.34)	11.23 (5.36)	9.82 (5.24)	10.58 (4.85)	11.12 (5.79)	10.11 (4.83)	11.28 (5.60)	10.88 (4.66)	11.00 (6.81)	12.00 (6.92)	10.50 (4.74)

Note. *N* = 105; Cope-Abv refers to the three-item scale created for Perceived Coping Motives for Parents and Friends. See text. With Friends refers to participants who endorsed drinking alcohol with their friends on the Adolescent Alcohol/Drug Involvement Scale (AADIS; Moberg,2000; Moberg & Hahn,1991), Without Friends refers to participants who did not endorse drinking alcohol with their friends on the AADIS, With Parents refers to participants who endorsed drinking alcohol with their parents on the AADIS, Without Parents refers to participants who did not endorse drinking alcohol with their friends on the AADIS. See text.

*$p \leq .05$.

**$p \leq .001$.

Table 2.

Bivariate correlations between adolescents' own motives, perceived motives, and potential covariates.

Own Motives	Perceived Friend Motives				Perceived Parent Motives				Covariates			
	Cope-Abv	Conform	Social	Enhance	Cope-Abv	Conform	Social	Enhance	Age	[1]Years Since Initiation		Alcohol Frequency
Cope	.54**	.32**	.37**	.45**	.28**	.13	.07	.29**	.14		.08	.45**
Conform	.19	.44**	.22*	.17	.31**	.20*	.15	.27**	.06	−.05		−.00
Social	.40**	.32**	.71**	.59**	.26**	.12	.31**	.41**	.16	−.01		.49**
Enhance	.38**	.23*	.55**	.58**	.19	.05	.14	.29**	.12		.01	.53**
Perceived Friend Motives												
Cope – Abv	–	–	–	–	.29**	.24*	.19	.32*	.31*		.00	.22*
Conform	–	–	–	–	.19	.22*	.17	.15	.17	−.04		.11
Social	–	–	–	–	.19	.16	.36**	.35**	.38**		.01	.31**
Enhance	–	–	–	–	.26*	.19*	.28*	.39**	.31*	−.00		.32**

Note. $N = 105$; Cope-Abv refers to the three-item scale created for Perceived Coping Motives for Parents and Friends. See text; Years Since Initiation refers to the number of years since their first alcoholic beverage;

[1] $N = 103$ due to missing cases on this variable only.

* $p \leq .05$.

** $p \leq .001$.

Table 3.

Hierarchical regressions predicting adolescent drinking motives from perceived parent/friend drinking motives.

	DV: Coping				DV: Conform				DV: Social				DV: Enhance			
Variable	**ΔR^2**	***β***	***sr*²**	***p***	**ΔR^2**	***β***	***sr*²**	***p***	**ΔR^2**	***β***	***sr*²**	***p***	**ΔR^2**	***β***	***sr*²**	***p***
Step 1	.303			<.001	.071			.060	.366			<.001	.409			<.001
Alc Frequency		.31	.41	<.001		−.09	.00	.330		.28	.39	<.001		.35	.54	<.001
Drink w/ parents		−.25	.20	.002		.09	.00	.336		−.01	.02	.946		−.10	.14	.194
Drink w/ friends		.06	.25	.441		.22	.22	.040		.19	.36	.013		.19	.43	.026
[1]Step 2	.194			<.001	.165			<.001	.253			<.001	.115			<.001
Parent DMQ		.12	.16	.116		.11	.17	.221		.12	.15	.090		.048	.16	.532
Friend DMQ		.41	.58	<.001		.38	.81	<.001		.50	.80	<.001		.358	.64	<.001
Total Model:	*F*[5,99] = 19.576				*F*[5,99] = 6.101				*F*[5,99] = 32.211				*F*[5,99] = 16.378			

Note. [1]Parent and Friend DMQ were matched with adolescents own DMQ (e.g., when predicting Own-Coping Motives, Parent DMQ and Friend DMQ refer to Perceived Coping motives for Parent and Perceived Coping motives for Friend).