Injunctive Norms as a Moderator of Social Motives and Substance Use in College Students

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Abstract

Previous research has found peer norms and social motives to be important factors in substance use in the college population, but these studies provide little insight into how such factors might differ across users depending on the types of substance used or even co-used. The current study examined the potential for peer norms to act as a moderator of the relation between social motives and substance use between students who use alcohol only and those who use more than one substance. A sample of college students (N=257) who reported drinking in the past year completed a survey assessing relevant constructs. Results indicated that (a) social motives did not differentially predict use across categories of users, although polydrug users endorsed more social motives for alcohol use than their alcohol only peers, (b) social motives did differ in relation to different types of substance use among students who used the greatest number of substances, and (c) social norms did not moderate the relationship between social motives and use, though they were significantly correlated with substance use. These results have important implications for future directions of research as well as the development of effective substance use interventions.
Injunctive Norms as a Moderator of Social Motives and Substance Use in College

Although intervention and prevention programming has rapidly expanded, substance use in college populations remains a public health concern as levels of alcohol, cigarette smoking, and marijuana use have either continued to rise or remained constant with no significant reductions since 2002 (United States Department of Health and Human Services [HHS], 2013). These three types of substance use are in turn associated with risk for negative consequences such as school drop out, failed classes, poor class attendance, trouble with authorities, sexual misconduct, injuries, long-term addictions, and fatalities (HHS, 2013). These consequences have prompted interest in the unique motives students report for using alcohol, cigarettes, and marijuana in college populations, as early research implicated motive endorsements as a vitally important variable in understanding college alcohol use (Cox & Klinger, 1988; Cooper, 1994).

Social Motives

Motivational theory as applied to substance use is based on the idea that individuals have specific reasons for engaging in substance use behaviors and they make decisions, whether consciously or unconsciously, according to those reasons (Cox & Klinger, 1988). Cox and Klinger (1988) first posited a model in which motives were classified according to two dimensions: (a) positive versus negative reinforcement and (b) internal sources of motivation versus external sources of motivation. Positive reinforcement refers to engaging in behaviors with the desire to increase a positive experience or reward, whereas negative reinforcement refers
engaging in behaviors with the desire to avoid negative experiences. Internal sources of motivation in this context refer to factors (whether emotional, psychological, or otherwise) that are related to the internal state of an individual whereas external sources refer to those factors that might be thought of as outside the individual (such as social connections and peer pressure). Crossing the two dimensions produces four potential motives for alcohol use: positive internal motives (i.e., drinking with the desire to intensify positive emotions), negative internal motives (i.e., drinking with the desire to avoid negative emotions), positive external motives (i.e., drinking to be more sociable), and negative external motives (i.e., drinking to reduce social consequences). Cooper (1994) refined the Cox and Klinger model and mapped the motivational theory onto a four-factor model of social psychological concepts. The resulting four types of motives included (a) enhancement motives, or drinking to enhance positive mood, (b) coping motives, (c) social motives, and (d) conformity motives, or drinking to avoid social consequences or “fit in” (Cooper, 1994). Social motives, then, are traditionally considered to be positive reinforcement motives centered on external rewards.

Current theory in alcohol use implicates the importance of motives for use in college populations (Cox & Klinger, 1988; Cooper, 1994; Carey & Correia, 1997; Karwacki & Bradley, 1996; MacLean & Lecci, 2000; Stewart & Zeitlin, 1995). Most drinking among college students is social in nature (Christiansen, Vik, & Jarchow, 2002; Mohr et al., 2005) and social motives more strongly predict alcohol use than do negative reinforcement motives (LaBrie, Hummer, & Pederson, 2007; Martens, Rocha, Martin, & Serrao, 2008). In addition, other studies have shown that individuals who
report more social motives for drinking actually drink more frequently than those who endorsed other motives for drinking (Hussong, 2003; Lee, Geisner, Lewis, Neighbors, & Larimer, 2007; Armeli, Connor, Cullum, & Tennen, 2010).

Research regarding motives for smoking cigarettes in the college population has shown a similar pattern. Indeed, social motives may be particularly important for understanding smoking, as the majority of college smokers within previously studied samples endorse social motives for use above and beyond other types of motives (Levinson et al., 2007; Waters, Harris, Hall, Nazir, & Waigandt, 2006). However, findings regarding motives for marijuana use among college students differed from other substances, such that social avoidance (most akin to a type of coping motive) is typically associated with increased marijuana use (Simons, Neal, & Gaher, 2006; Buckner, Heimberg, & Schmidt, 2011), particularly for those who perceive peers as more engaged in substance use (Kahler, Read, Wood, & Palfai, 2003). Such findings suggest that social motives are the most common reason for substance use in college students and may be useful in predicting problematic substance use, particularly drinking.

**Social Motives and Type of Drug User**

The presence of poly-drug use among college students complicates the relationship between social motives and substance use as students may exclusively use only one substance or they may also use some combination of the three of interest. Martin, Clifford, and Clapper (1992) reported that, in a sample of 575 college students, the students who exclusively used a single substance were comprised entirely of those who used alcohol only. The same study also found that of students
who are concurrent users of more than one substance, eighty-two to ninety three percent used some combination of substances simultaneously (or in the immediate temporal proximity of each other). Moreover, studies supporting Stage theory (Kandel, 1975) indicate that substance use may emerge in typical sequences with alcohol use or cigarette use often proceeding marijuana and other drug use. To understand the relation between social motives and various forms of substance use, then, the issue of polydrug use must be addressed.

In the current study, I addressed this issue by examining social motives across groups of users who differed by the pattern of their use in the past year. Specifically, I differentiated between student users across four general categories: (1) those who use alcohol only, herein termed “alcohol-only” students, (2) those who use both alcohol and cigarettes but no other substances, herein termed “alcohol and cigarette” students, (3) those who use alcohol and marijuana but no other substances, herein termed “alcohol and marijuana” students, as well as (4) those who use alcohol, cigarettes, and marijuana, herein termed “tri-user” students.

Patterns of polydrug use may help clarify the relation between alcohol and social motives, in particular, because the extent to which social motives are related to alcohol use may vary depending on what other types of substances the individual is using. The stage theory of substance abuse considers poly-drug use to be an indicator of the severity of an individual’s overall drug involvement (Kandel, Yamaguchi, Chen, 1992); more severe use has in turn been more strongly associated with the endorsement of other motives, such as coping or or mood enhancement (Cooper, 1994; Cronin, 1997; Billingham et al., 1993; Wood et al., 1992; Colder and O’Conner,
Thus, the extent to which social motives predict alcohol use may be confounded by the severity of an individual’s substance use. In terms of social motives, alcohol only users would be expected to endorse social motives for drinking above and beyond other motives more often than poly-drug users, who, according to the stage theory, would more likely endorse other motives that correspond to being a heavier user in general, like coping motives (Kandel, Yamaguchi, & Chen, 1992).

**Social Motives across Type of Drug use among Poly-Drug Users**

Whereas comparing social motives across different types of substance users is useful in better understanding why social motives may be more related to drinking for some individuals (alcohol only users) than other users (poly-users), comparing social motives for different types of substances within a single individual is useful in better understanding whether social motives differentially predict use of certain classes of drugs over others. Because motives can only be examined among those who actually use a substance, in the current study I compare social motives for alcohol use, cigarette use, and marijuana use for tri-users only.

The type of drug being used by a student also holds a variety of associated student perceptions that may influence motives for use, such as expectancies, perception of harm, past consequences, and others (Buckner, 2013; Engels, Weirs, Lemmers & Overbeek, 2005; Leyro, Zvolensky, Vujanovic, & Bernstein, 2008). In addition, the physiological effects of the various drug classes likely influence drug use and behavioral motivations on a neurobiological level (HHS, 2016, 2007; Bechara, 2005). Much evidence points to alcohol use in college as a primarily social activity,
with many students endorsing social motives and social camaraderie as their primary drinking motivation (Simons et al., 2000; Stewart et al., 1996; Wood et al., 2001). Though cigarette and marijuana use are also associated with social motives, they both also are related to other motive dimensions like coping or expansion motives (Simons, Neal, & Gaher, 2006; Buckner, Heimberg, & Schmidt, 2011). Moreover, because stage theory indicates that marijuana may be associated with more severe patterns of use that are in turn perhaps more strongly associated with coping motives, social motives may not be as strongly associated with marijuana and cigarette use as they are with alcohol use in tri-users.

**Proximal Injunctive Norms as Moderator**

Another factor to consider in the relationship between social motives and use across categories of users in the college population is the apparent moderation of the relationship between social motives and substance use by injunctive norms. Injunctive norms are defined as a student’s perception of the extent to which “relevant others” approve of and engage in drinking behavior (Borsari & Carey, 2003). In studies concerning student drinking behaviors, students believed that normative drinking rates were not only higher than their own drinking rate but also that these rates were higher in the larger population of their peers than they were in actuality (Baer & Carney, 1993; Baer et al., 1991). Other studies showed a similar pattern, such that college students report seeing other students as more approving of use than they actually are, and this overestimation of approval is often associated with heavier drinking or more problematic drinking behavior (Perkins, 2002; Borsari & Carey, 2003; Prentice & Miller, 1993).
Many of the studies regarding peer norms consider drinking behavior in distal relevant others (the larger peer context in general) as opposed to close friends, parents, or immediate friend groups (proximal relevant others). This has led to many programs on college campuses that seek to correct the overestimation of distal peer approval; the real efficacy of these programs, unfortunately, has yet to be meaningfully reflected in the prevalence of substance use across college campuses since 2002 (HHS, 2013). However, associations between drinking and proximal peer approval are strong and consistent, indicating that the greater the perception of the approval of proximal relevant groups, such as for students’ closest friends, the more drinks students consumed per week (Lee, Geisner, Lewis, Neighbors, & Larimer, 2007). In addition, believing that close friends and parents were approving of use is positively correlated to cannabis use in students and perceptions of injunctive norms in the larger student population (a distal reference group) were not (LaBrie et al., 2010). Similarly, proximal injunctive norms were found to be more strongly related to more substance-related behaviors than were distal injunctive norms (Buckner, 2013). Thus, proximal injunctive norms, particularly those of close friends, are likely important factors to target in substance use prevention in the college context, as existing research suggests that college students may shape their substance-related behaviors according to their perception of approval by their closest friends.

Proximal injunctive norms may be significant in the study of social motives and substance use in the college population as well such that the relation between the endorsement of social motives for using and the actual use of substances is moderated by the student’s perceived proximal injunctive norms (Lee, Geisner, Lewis,
Neighbors, & Larimer, 2007). I anticipate a similar moderating effect for peer norms in the current study. Specifically, I anticipate that students who perceive that their friends are highly disapproving of substance use would likely not drink due to social motives, as their social situation (by their perception) is one in which substance use would create negative social consequences like friend disapproval. However, if a student perceives that their closest friends are highly approving of substance use, the student may be likely to endorse social motives for substance use because they perceive their social situation as being one in which substance use is accepted or even encouraged. Consistent with this hypothesis, Neighbors et al. (2004) describe an intervention that targeted the overestimation of injunctive norms in a college population; subsequent analysis of the intervention’s success revealed that the program more greatly reduced drinking for those students who drank for socially motivated reasons (Neighbors et al., 2004).

Similar studies are needed to extend this hypothesis to other substances. Stage and motivation theory helps explain the relation between social motives, proximal injunctive norms, and various types of substance use among tri-users as well. I posit that poly-drug users are engaged in more severe substance use than alcohol only users and as such have multiple motives for using alcohol and other drugs than do their peers. However, the motives for using alcohol may remain primarily social, as they may have more peers who also use alcohol as compared with other drugs, such that social motives are more strongly associated with alcohol use than with other drug use particularly for those who perceive their friends as more heavily drinking. Nonetheless, proximal injunctive norms might also moderate the relation between
social motives and use of cigarettes and marijuana, strengthening the association between motives and use when peer norms are strong.

**Current Study**

The current study tested six central hypotheses. The first three compared motives for alcohol use across different groups of substance using college students. First, I expected differential mean endorsements of social motives for alcohol use across categories of users, such that students who reported using alcohol only would have higher mean social motive endorsements for alcohol than students who reported using any combination of drugs, according to stage theory. Second, I expected that social motives for alcohol use would most strongly predict alcohol use for “alcohol only” students than for any poly-drug using groups. Third, norms, including student’s perception of how much their friends are using as well as their perception of how accepting their friends would be of their use, were posited to moderate the relationship between social motives and actual alcohol use; specifically, I expected that the relationship between alcohol motives and alcohol use would be stronger with greater norms for the alcohol-only students than for any poly-drug group.

Hypotheses four to six compared social motives across types of substances used for tri-users only. Fourth, I expected differential mean endorsements of social motives for substance use across drug classes for the tri-user groups, such that students who use all three substances would have the highest mean social motives endorsements for their alcohol use, with no significant difference between social motive endorsements for their cigarette use and their marijuana use. Fifth, I expected that, within the tri-user group, social motives would be a stronger predictor of alcohol
use than of smoking cigarettes and using marijuana. Finally, I expected that, within
the tri-user group, the relation between social motive endorsement for any given
drug class and respective use would be moderated by peer norms. Specifically, I
expected that norms would moderate the relation between social motive
endorsement and substance use for all three substances within the tri-user group,
though more significantly so for alcohol use than for cigarette or marijuana use.

**Methods**

**Participants**

Participants were 411 college students between the ages of 18 to 23, recruited
through a southeastern university. To qualify for the study, students had to report
alcohol use within the past year at the point of screening. Whereas no exclusions were
made based on race, gender, or ethnicity, we over sampled men and ethnic minority
students in order to account for the fact that women and European American students
were over-represented in the student body population. Three participants were
missing variables included in tests of hypothesis one, and were deleted.

The sample was comprised of slightly more females (54.26%) than males
(45.74%), identified mostly as white (59.61%) or black/African American (22.38%),
and only 4.5% consider themselves Hispanic/Latino. In addition, most students had at
least one parent who was at least a college graduate (81.75%). Year of college was
roughly evenly distributed across year and included first year students (26.59%),
sophomores (22.93%), juniors (20.73%), and seniors (27.32%), with a handful of
students in graduate school or “other” (2.44%). Finally, the majority of students were
not active members of a fraternity or sorority (85.4%). Demographics were also
analyzed separately for individuals who classified as tri-user students (by reporting use of alcohol, cigarettes, and marijuana in the last year), and this group (N=135) was comprised of primarily males (68.15%), identified mostly as white (68.15%) or black/African American (19.26%) and 6.66% considered themselves Hispanic/Latino. A total of 20% of these students were active members of a fraternity or sorority. For most students, their parent with the highest education attainment was at least a college graduate (82.23%). Finally, year of college was roughly equal for first year students (30.37%), sophomores (23.70%), juniors (20%), and seniors (25.19%).

Procedure

As part of a larger study, 850 participants completed one of two versions of a one hour computerized survey administered in small groups during a one hour lab visit. These participants returned two weeks later to complete either the same survey or a modified version of the survey. The current study utilized data from only those individuals who were administered the original survey in the first session (n=411) which included original measures of various previously validated and widely used measures of substance use, social motives across substances, and injunctive norms for substance use. During the survey, a research assistant was present to answer any questions and all participants gave informed consent. Participants were given as much time as needed to finish the surveys in both visits, and were allowed to refuse to answer any question.

Measures

Motives. Five items from the Drinking Motives Questionnaire were used to assess social motives for alcohol use (Cooper, 1994). Participants responded by
indicating how often they drink alcohol for each reason using a response scales ranging from 0 (never/almost never) to 4 (almost always/always). The five items were averaged to obtain a single score with a mean of 2.41, standard deviation of 0.98, and standardized Chronbach's alpha coefficient of 0.86.

The same five items were used to assess social motives for marijuana use and cigarette use with instructions that were adapted to ask specifically about each substance. The five cigarette use items were averaged to obtain a single score with a mean of 0.51, standard deviation of 0.71, and standardized Chronbach's alpha coefficient of 0.81. Similarly, the five marijuana use items were averaged to obtain a single score with a mean of 2.41, standard deviation of 0.98, and standardized Chronbach's alpha coefficient of 0.89.

**Substance Use.** Three items assessed the frequency of substance use (alcohol, smoking cigarettes, and marijuana use) within the last year with a 7-point response scale that ranged from 0 (0) to 6 (40 or more). The item for alcohol use had a mean of 3.41 and standard deviation of 1.67. The item for cigarette use had a mean of 0.63 and standard deviation of 1.12. The item for marijuana use had a mean of 2.00 and standard deviation of 2.22.

**Substance user Categories.** Categories of users were determined by dichotomizing each substance use indicator, such that students who reported any cigarette use greater than zero, but did not report any amount of marijuana use greater than zero in the last year were categorized as “alcohol and cigarette” students, those who reported any amount of marijuana use greater than zero but did not report cigarette use greater than zero in the last year were categorized as “alcohol and
marijuana” students, those who reported any amount of marijuana use greater than zero and also reported any amount of cigarette use greater than zero were categorized as “tri-user. Students, and those who did not report any amount of tobacco or marijuana use greater than zero were categorized as “alcohol only” students. Of the 411 students, 105 were alcohol only users, 39 were alcohol and cigarette users, 88 were alcohol and marijuana users, and 135 were tri-user students.

**Injunctive norms.** To measure peer norms for close friends, items from the Monitoring the Future Scale were used (National Institute on Drug Abuse, 2009). Three items asked participants how they thought their close friends would feel about them drinking alcohol, smoking cigarettes, or using marijuana (respectively). One item measuring alcohol injunctive norms asked participants how they thought their close friends would feel about them getting drunk regularly (such as at least once a week). Possible answers ranged from 1 (strongly approve) to 5 (strongly disapprove). In addition, four items asked participants how many of their friends that they thought drink alcohol, get drunk regularly, smoke cigarettes, and smoke marijuana (respectively). Possible answers ranged from 0 (none) to 4 (all). These variables were then standardized in order to allow for the combining of all items for each substance, in order to measure both perceived peer acceptance of use and perceived peer use together as a single peer norms scale for alcohol, cigarette use, and marijuana use. The scale had a mean of 0.0002 and standard deviation of 0.90.

**Results**

**Preliminary analyses.** Bivariate correlations between the variables that were included in this study can be found in Table 1. These analyses show that for the
overall sample, membership in a fraternity or sorority was significantly correlated to
gender (boys were more likely to Greek), greater alcohol use, greater alcohol social
motives, and greater alcohol peer norms. Gender was significantly correlated to
alcohol use and alcohol peer norms (with males reporting more of each). Alcohol use
was significantly positively correlated with alcohol social motives and alcohol peer
norms. Alcohol social motives were also significantly correlated to alcohol peer
norms.

For the tri-user group, membership in a fraternity or sorority was significantly
correlated with gender (again boys were more likely to be Greek) as well as with
greater alcohol use, alcohol peer norms, cigarette peer norms, marijuana use, and
marijuana motives. Gender was significantly correlated with alcohol use, cigarette
use, cigarette peer norms, and marijuana use such that boys reported more of each.
Alcohol use was significantly and positively correlated with alcohol social motives,
alcohol peer norms, cigarette use, cigarette peer norms, marijuana use, and
marijuana peer norms. Alcohol social motives were significantly and positively
correlated with alcohol peer norms, cigarette social motives, and marijuana social
motives. Alcohol peer norms were significantly and positively correlated with
cigarette peer norms, marijuana use, and marijuana peer norms. Cigarette use was
significantly and positively correlated with cigarette social motives, cigarette peer
norms, and marijuana use. Cigarette social motives were significantly and positively
correlated with cigarette peer norms and marijuana social motives. Cigarette peer
norms were significantly and positively correlated with marijuana use and marijuana
peer norms. Marijuana use was significantly and positively correlated with marijuana
motives and marijuana peer norms. Marijuana social motives were significantly and positively related to marijuana peer norms.

**Hypothesis one.** A one-way analysis of variance (ANOVA) was estimated to test mean differences in user group endorsements of social motives for drinking. The overall model was significant, $F(3, 408) = 15.92$, $p < .0001$, and the grouping variable (alcohol only, alcohol and cigarettes, alcohol and marijuana, and tri-users) accounted for 10.5% of the variance in social motives for alcohol use in all users. Tukey’s HSD post-hoc analysis indicated that social motive endorsements significantly differed between tri-user and alcohol-only user students. Social motive endorsements also significantly differed between alcohol-and-marijuana using students and alcohol only students. In every case, the three poly-drug user groups (alcohol and cigarettes, alcohol and marijuana, and tri-users) had higher social motives for alcohol use than the alcohol only group, although the alcohol and cigarette user group did not significantly differ from any other group (see Figure 1).

**Hypothesis two.** Multiple regression was used to test the relation between social motive and alcohol use as moderated by categories of users. The overall model was significant, $F(9, 401) = 36.69$, $p < 0.001$, $R^2=.45$. Endorsement of social motives significantly predicted alcohol use, $b = 240.59$, $p < .0001$, such that the more social motives for drinking a student had, the more alcohol use they reported in the last year. Greek affiliation also significantly predicted alcohol use in the last year, $b = 39.53$, $p < 0.001$, in that individuals that were active members of sororities or fraternities drank significantly more than non-Greek affiliated students. Gender similarly predicted alcohol use, $b = 16.10$, $p < 0.001$, such that males drank more than
females. There were no group differences in the relationship between social motives and alcohol use.

**Hypothesis three.** Multiple regression was used to test whether injunctive alcohol norms moderated the relationship between social motives for drinking and alcohol use and whether that moderation effect varied by substance user category (see Table 2). The model was significant overall, $F(17, 393) = 36.72, p < 0.001, R^2 = 0.61$. Alcohol norms predicted actual alcohol use, $b= 211.87, p < .0001$, such that the more approving students perceived their friends of their use and the greater their perception of their friends use, the more use they reported. There were significant differences in alcohol use between the alcohol only group and the tri user group, $b= 213.66, p < .0001$. There were also marginally significant differences in alcohol use between the alcohol only group and alcohol and cigarette users, $b = 4.34, p < .05$. A marginally significant interaction was also found in the relationship between user group and alcohol norms predicting alcohol use, $b=4.25, p < .10$, in that the relationship between alcohol only users versus tri-users and peer norms marginally predicted alcohol use such that poly-drug users reported even more alcohol use than alcohol-only users when they had stronger peer norms. There was not a significant interaction between norms, motives, use, and user category.

**Hypothesis four.** A paired-samples t-test was conducted to compare social motives in tri-users across drug classes. There was a significant difference in the motive endorsements across drug classes, such that within the tri-user group, social motives were significantly higher for alcohol use ($M=2.72, SD=0.76$) than for cigarette use ($M=0.69, SD=0.79$); $t(132)=23.75, p = < .0001$, and marijuana use($M=1.69,$
Finally, social motives for cigarette use were also significantly greater than those for marijuana use, t(132) = -10.00, p < .0001. Social motives were the highest on average in relation to alcohol use as compared to marijuana and cigarette use.

**Hypothesis five.** Pearson correlation coefficients were computed to assess the relationship between social motives and use for each drug class within the tri-user group. Alcohol social motives and alcohol use were significantly and positively correlated, r(133) = .35, p < .0001, as were cigarette social motives and cigarette use, r(131) = .30, p < .0001, and marijuana social motives and marijuana use, r(133) = .22, p < .0001. In addition, the relationship between social motives and use was strongest for alcohol use, followed by cigarette use, with marijuana use having the weakest association of the three.

**Hypothesis six.** General linear regression models were used for each drug class to test the relation between drug use by type, social motives, and peer norms (see Table 3). For alcohol, the overall model was significant, F(5, 129) = 29.21, p < 0.001, R² = 0.53. Whereas there was a significant relationship between social motives and alcohol use, b=29.43, p<.0001, as well as a significant relationship between alcohol peer norms and alcohol use, b=78.10, p < .0001, there was no significant two-way interaction between social motives and alcohol peer norms. For cigarettes, the overall model was significant, F(5, 127) = 9.36, R²=.27. Whereas both greater social motives, b= 20.97, p < .05, and greater peer norms, b = 30.82, p < .0001, predicted cigarette use, there was no significant two-way interaction between social motives and cigarette peer norms. For marijuana, the overall model was significant, F(5, 129)
= 13.07, p < .0001, R^2=0.34. Whereas greater marijuana peer norms, b = 107.96, p < .0001, as well as greater social motives, b=22.67, p < .05 predicted marijuana use, there was no significant two-way interaction between social motives and marijuana peer norms.

**Discussion**

In the current study, both social motives for using drugs and peer norms (regarding peer acceptance of substance use and actual peer use) were found to be closely related to substance use in college students, replicating prior studies. But a novel finding of the current study was that these relations varied in important ways across categories of users as well as types of drugs within tri-user students. The current study had three primary findings. First, social motives were not differentially predictive of alcohol use across different types of substance users based on their polydrug use, though polydrug users generally had higher social motives for alcohol use than their peers. However, a second key findings was that social motives did differ in their relation to different types of substance use among those most involved with substances (i.e., tri-users of alcohol, marijuana and cigarettes). And third, counter to hypothesis, social norms were not a moderator of substance use in any model, though social norms were a significant correlate of substance use as expected. We discuss each of these findings within the context of posited hypotheses below.

The current study hypothesized that polydrug users would not endorse social motives as strongly as alcohol-only users because polydrug users may be engaged in more severe patterns of use and thus have more complicated motives for use than individuals using only alcohol. On the contrary, the current study found the opposite
to be true; poly drug users endorsed stronger social motives for drinking than students who used alcohol only. In addition, this relation was progressive across drug class such that dual substance user groups (alcohol and cigarettes as well as alcohol and marijuana users) endorsed social motives for drinking to a greater extent than students using only alcohol, but tri-user students endorsed social motives for drinking to an even greater extent than dual-substance using students.

The progressive relation between social motives and poly-drug use is consistent with the interpretation that social reasons for drinking increase as severity (as indexed by the number of substances used) of use increases. This effect may simply reflect a greater presence of substance using social contexts for those with more severe substance use. Individuals who initiate use for social reasons may be more likely to do so in the presence of peers who use one or more substances and those peers may have contact with others who may be more extensively involved in substance use. In this way, peers who use socially may act as link to social networks of other substance users that act as forces through which individuals use more drugs themselves. This is consistent a more general hypothesis in medical sociology by which the more integrated individuals are in a particular social network, the more susceptible they are to both the protective factors and risk factors that flow within the network (Smith & Christakis, 2008). Further research is needed to determine developmental or social pathways that might explain why poly drug users are more likely to endorse social motives for drinking than single user students and longitudinal studies may be best able to do so.
The current study also found that social motives for drinking were significantly related to actual use, in that students who endorsed social motives for drinking also drank more than those who endorsed weaker social motives for drinking. Interestingly, this relation did not differ across user categories. Thus, although students who use more drugs endorsed social motives more so than students who use fewer drugs, the two groups do not differ in the extent of their alcohol use as a function of their social motives. One interpretation may be that poly-drug user students endorse social motives for drinking more than alcohol only students, but that they also endorse other motive dimensions that are better predictive of their actual alcohol use. One limitation of this study is that other motive dimensions were not included, as social motives were the primary focus of the main hypotheses, and thus cannot provide evidence for such an interpretation. For this reason, further research is needed in this area as well in order to determine whether a motive dimension other than social motives might better differentially predict use across categories of users.

Consistent with past findings, peer norms were also found to predict all forms of substance use in the current study; however, peer norms did not moderate the relation between any indicator of social motives and any indicator of substance use. One explanation for this null finding is that social motives for drinking may not necessarily reflect the proximal social norms of a student’s environment; for example, a student who is socially motivated to use substances may do so because he or she feels it is necessary to engage in social activities, regardless of whether or not their friends also use heavily or approve of their use. Another way to think of this
explanation is that social motives for drinking may be an internal process that acts independently of the external situation. According to this explanation for the null effect, the effect of social norms may map onto not just social motives but also to conformity motives, following Cooper’s (1994) model. That is, it may be that there is a difference, for example, between internally based social motives (such as “I drink to feel sociable”) and externally based social or conformity motives (“I drink to avoid rejection by my friends”). The externally-based social motives may explain the correlation between peer norms and social motives, while internally based motives might not be expected to bear relation with peer norms, as the motive is self-directed as opposed to others-directed. In other words, the object of internally based motives is oneself, while the object of externally based motives is relevant others—in this instance, peers. It makes sense, then, that peer norms would not moderate the relation between motives and use if the motive itself represents a decision to use that does not involve consideration of relevant others.

Another major finding of this study is that for students using all three substances, social motives and use were significantly correlated for each substance, with the strongest relationship between social motives and alcohol use. This is particularly useful in understanding how use of different drug classes might be differentially affected by motives, in that social motives appear to be an influential factor in substance use regardless of substance type (though especially so for alcohol) in students who use all three substances. This is encouraging in terms of interventional campaigns, in that addressing social motives may be enough to reduce use in students who use all three substances, regardless of which substance is
targeted in the campaign. However, an interesting novel finding of this study is that while social motives are higher in poly drug users than in their peers, they are also higher and more associated with alcohol use than other drug use within the poly drug user group. Considering that the vast majority of our sample was polydrug users (N=367), this finding underscores the fact that understanding the relation between social motives and substance use may depend on also understanding drug use by type for the individual.

While much is left to be studied in terms of why and how social motives predict substance use as well as why and how peer norms predict substance use, these findings suggest that interventions to reduce college drug use may be usefully aimed at social motives for using as well as injunctive social norms, but might not necessarily have to target both variables in order to be effective. However, more research is needed to determine if other motive dimensions and variables predict use differentially across categories of users. In order to effectively study these mechanisms and relationships, however, findings from the current study suggest that it may be crucial to consider both students polydrug use and the type of drug under study. An analysis that does not consider these questions may lead to incomplete understandings.
References


Table 1. Correlations among variables

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Note. Those values below the diagonal refer to correlations within the full sample of n = 411. Those values above the diagonal refer to correlations within the tri-user sample n = 135. The abbreviations refer to the following: (1) AM- alcohol motives, (2) CM- cigarette motives, (3) MM – marijuana motives, (4) AN – alcohol peer norms, (5) CN – cigarette peer norms, (6) MN – marijuana peer norms, (7) AU – alcohol use, (8) CU – cigarette use, (9) MU – marijuana use, (10) GL – Greek affiliation, and (11) gender.

*p < .05. **p < .001.*
Table 2: Results for Regression Analyses

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*Note: The following are the meanings behind the variable abbreviations: (1) DV1- alcohol only vs. alcohol and cigarettes, (2) DV2- alcohol only vs. alcohol and marijuana, (3) DV3- alcohol only vs. tri-users.*
Table 4: Results for regression analyses

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Figure 1: Distribution of alcohol social motives across categories of users

- Alcohol Only
- Alcohol & Cigarettes
- Alcohol & Marijuana
- Tri-users

User Category