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# Do Misperceptions of Peer Drinking Influence Personal Drinking Behavior? Results from a Complete Social Network of First-Year College Students

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## Abstract

**Objective:** This study considered the influence of misperceptions of typical vs. self-identified important peers' heavy drinking on personal heavy drinking intentions and frequency utilizing data from a complete social network of college students.

**Method:** The study sample included data from 1313 students (44% male, 57% White, 15% Hispanic/Latinx) collected during the fall and spring semesters of their freshman year. Students provided perceived heavy drinking frequency for a typical student peer and up to ten identified important peers. Personal past-month heavy drinking frequency was assessed for all participants at both time points. By comparing actual to perceived heavy drinking frequencies, measures of misperceptions of heavy drinking (accurately estimate, overestimate, underestimate) were constructed for both general and important peers. These misperceptions were then used as predictors of concurrent and prospective personal heavy drinking frequency and intentions using network autocorrelation analyses.

**Results:** The majority (84.8%) of students overestimated, 11.3% accurately estimated, and 3.9% underestimated heavy drinking among their general peers, while 42.0% accurately estimated, 36.9% overestimated, and 21.1% underestimated important peers' heavy drinking. For both referents, overestimation of peer heavy drinking was associated with more frequent heavy drinking and higher drinking intentions at both time points. Importantly, the effects of underestimating and overestimating close peers' drinking on personal alcohol use were significant after controlling for the influence of misperceptions of general peers' heavy drinking.

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**Conclusions:** Close peers are a critical referent group in assessments related to social norms for young adult alcohol use. Implications for prevention and intervention are discussed.

### Keywords

College student heavy drinking; peer social norms; social network

## Introduction

Social norms, the perceived beliefs regarding the prevalence and acceptability of the behavior of others, represent an important cognitive determinant of an individual's behavior. Classic social psychological literature demonstrates that social norms are powerful influences on behavior due to fundamental social comparison processes wherein individuals relate their own attitudes and behaviors to their perceptions of the opinions and behaviors of those similar to themselves (Festinger, 1954; Miller & Prentice, 1996). Individuals also have a tendency to model the perceived or real behaviors of those around them (Bandura, 1977; Bandura, 1986). These processes are particularly important to the college drinking context because the university setting is perceived by students to be permissive of heavy drinking (Perkins, 2002). Thus, risk for excessive alcohol use and related problems among college students likely increases as students engage in social comparison of those around them and model the perceived behaviors of their peers.

### Social norms and drinking behavior

Research evaluating perceived social norms specific to drinking behavior has reliably shown that descriptive norms, or the perceptions of others' drinking behavior, are robust predictors of alcohol use. Specifically, norms predict drinking behavior above and beyond the influence of gender, fraternity/sorority membership, alcohol expectancies, drinking motives, and evaluations of alcohol-related consequences (Neighbors, Lee, Lewis, Fossos, & Larimer, 2007; Perkins, Haines, & Rice, 2005). Students' perceived norms of their peers' alcohol use are often inaccurate and overestimated (Baer, 2002; Borsari & Carey, 2001; Neighbors, Dillard, Lewis, Bergstrom, & Neil, 2006; Perkins & Berkowitz, 1986). Importantly, overestimated *misperceptions* of drinking tend to be positively related to one's own drinking and increase risk for heavier alcohol consumption (Borsari & Carey, 2003; Campo et al., 2003). For this reason, preventive interventions for young adult alcohol use have often included personalized normative feedback (PNF), which attempts to correct student overestimations of peer alcohol use and consequently lower personal alcohol use (Dimeff, 1999; Carey, Scott-Sheldon, Carey & DeMartini, 2007, 2007).

An important variable to consider in social norms research is the referent to whom the comparison is being made. While much of the social norms research to date has used a general referent such as a 'typical student', evidence suggests there are differences between perceptions of this generic student and those of an individual identified as important to them. Consistent with attribution theory, individuals have a tendency to make judgements about other's behavior based on how much information you have about that person. Therefore, differences in overestimation of alcohol use between distal and proximal peers with respect to norms may be due to the fact that individuals have more direct observation, and therefore

information, regarding the behavior of those close to them (Perkins, 2003). Research suggests this type of error is exacerbated when a student is not a member of the specified group (Miller & Prentice, 1994; Perkins, 1997). Findings are also consistent with Social Comparison Theory (Festinger, 1954), which reflects the notion that one's own behavior is more closely aligned to that of indiviudals close to them. That is, students' perceptions of the drinking of more proximal individuals are closer to their personal drinking behavior when compared to their perceptions of other same-age students' drinking (McAlaney & McMahon, 2007). This was supported by a meta-analysis showing that discrepancies between perceptions of others' drinking and individuals' own drinking were larger when estimating the drinking of more distal as compared to close others (Borsari & Carey, 2003).

A study by Kenney, Ott, Meisel, & Barnett (2017) extended this research utilizing social network data from students in a single residence hall on a college campus. Students accurately estimated drinking of friends they nominated as important to them, and overestimated drinking of residential peers. Consistent with previous findings, overestimation of both nominated and residential peers was associated with higher personal drinking, though perceptions of nominated peers was a stronger predictor of personal behavior than perceptions of residential peers. Thus, the frame of reference for normative perceptions of alcohol use is an integral component of social norms research among college students. Research to delineate the influence of identified proximal individuals can further refine our measurement of social norms and enhance the efficacy of PNF interventions. Further, research to date on social norms using identified personal referents has been cross-sectional in nature, thus limiting our ability to examine the duration of effects of normative misperceptions on personal alcohol consumption.

### Current study

The current study expands our understanding of the role of normative misperceptions on heavy drinking behavior by 1) contrasting effects of perceptions of peer drinking for two referents: a typical, first-year student of the same gender and identified important peers on heavy drinking frequency and intentions, 2) utilizing data from a large, complete social network of first-year college students, and 3) examining both concurrent and longitudinal associations between normative misperceptions and heavy alcohol use. We hypothesized that compared to those who accurately estimated their peers' heavy drinking, 1) those who underestimate peer drinking of either referent will report lower heavy drinking frequency and intentions themselves, 2) those who overestimate peer drinking of either referent will report higher heavy drinking frequency and intentions themselves, and that 3) misperceptions of important peers' heavy drinking will have a unique effect on personal alcohol consumption above and beyond the effect of misperceptions of general peers' heavy drinking.

## Methods

### Participants and procedure

All incoming first-year students on one college campus were invited to participate in a longitudinal social network study. Recruitment methods included: postcards mailed to the

students' homes and campus mailboxes, tabling close to the residence halls, and multiple emails. Students could consent to study participation either in person or online. Those under the age of 18 provided assent and parental/guardian consent. The first and second online surveys were sent to participants approximately six weeks into the fall (Fall 2016; Time 1, T1) and spring of their first year (Spring 2017; Time 2, T2). Surveys were available for two weeks and contained a battery of measures on alcohol use, other substance use, and a sociocentric network survey. Participants received $50 and $55 for completing the T1 and T2 surveys, respectively.

To be eligible for the study, students had to reside on-campus in a first-year residence hall and be enrolled full-time. Based on these criteria, 1660 participants were eligible. 1342 students completed the first survey (80.8% completion rate), and 1313 completed the second survey (98% retention rate). Data for this study are based on participants who completed both the first and second survey (n=1313). All procedures were approved by the University's Institutional Review Board. See Barnett et al. (in press) for details of the parent study.

## Measures

**Personal heavy drinking frequency.—**For all survey questions concerning alcohol use, participants were presented with standard drink images and text that defined one drink as 12 oz. beer, 5 oz. wine, or 1.5 oz. of 80 proof liquor. At each time point, participants were asked: "Considering all types of alcoholic beverages, how many times during the past 30 days did you have five or more drinks in one occasion?" Responses ranged from 0 to 30 times, and the continuous nature of the response was retained.

**Personal heavy drinking intentions.—**At each time point, participants responded to the question, "How likely is it that you will consume 5+ drinks in one occasion within the next two weeks?" Response options ranged from 'Not at all likely' (0) to 'Extremely likely' (3).

**Misperceptions between actual and perceived binge drinking- general first-year student referent.—**Participants were asked "How many times in the past 30 days do you think a typical first-year student at your university of your gender had five or more drinks on one occasion?", indicating a descriptive norm for heavy drinking among a general peer of the same gender. Response options ranged from 0 to 30 times. The actual median heavy drinking frequency was calculated for each gender based on responses of all participants in the complete network to the personal heavy drinking frequency item. Using this descriptive norm question and the actual heavy drinking frequency of the entire first-year class of the same gender, participants were either categorized as accurately estimating (0), overestimating (1), or underestimating (2) the heavy drinking frequency of the typical first-year student of the same gender. Given the low count and heterogeneity of responses for participants who report a gender identity other than cisgender, an accurate referent for these participants was not possible and for that reason they were not included in analyses of misperceptions based on peers of the same gender.

**Misperceptions between actual and perceived binge drinking - important peers referent.—**On the social network survey, participants were presented with instruction, “The next question is about first-year students at your university who have been important to you in the past month, regardless of whether or not you liked them. These might be people you socialized with, studied with, or regularly had fun with.” Participants were asked to nominate up to 10 people using a pre-populated list containing all of the eligible participants who did not opt out.[1] All participants and their nominations were coded using unique identification numbers so that observations of network connections could be retained without identifying participants. Next, after nominating their social connections, participants answered a battery of questions about each network member. Before answering questions about their network member’s alcohol use, participants were provided with instructions “Please give your best estimate when answering questions about other people”. To measure heavy drinking of network members, participants were asked for each nominated peer “How many times in the past 30 days do you think this person had five or more drinks in one occasion?”. Response options ranged from 0 times to 30 times. Using the same process as for general peers, we calculated participants’ perceptions of each of their nominated peers’ frequency of heavy drinking and the participant’s self-reported heavy drinking frequency. Participants were then categorized into one of three groups: accurately estimated (0), overestimated (1), or underestimated (2) the heavy drinking frequency of nominated important peers.

**Covariates.—**At baseline, participants reported their age and how they self-identified based on gender (male, female, trans male, trans female, gender non-conforming or other) and race (American Indian or Alaskan Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, White, Other). Participants also reported 1=yes or 0=no to their Hispanic ethnicity, membership on a varsity athletic team, receipt of financial aid, and identification as a first-generation student. Information about substance-free dorm floors was received from the university. We controlled for all demographic characteristics, whether participants were assigned to receive an intervention as part of the larger study (1=yes, 0=no), and the total number of people they reported in the sociocentric survey as a measure of network size.

## Analytic strategy

First, descriptive statistics on demographic characteristics and distributions of each misperception variable were calculated using SAS 9.4 (SAS Institute, Inc., Cary, NC). Next, we examined whether misperceptions based on the general referent and important peers were associated with participants’ heavy drinking frequency and intentions. In a regular regression setting, there is no correlation or dependence between observations. In our models, since peers were part of a complete social network and so not necessarily independent of each other, it was important to account for the dependence and correlation inherent in network data. To account for this dependence between observational units, we used network autocorrelations models:

[1]During the enrollment process, students could elect to opt-out of being included on this list; 2.5% (n= 42) of students opted out. On the social network survey list of student names, participants were provided with the option “I can’t find this person on the list.”

$$y = \lambda W y + X\beta + \varepsilon,$$

where y is the dependent variable (in this case heavy drinking frequency, or heavy drinking intentions), λ is the autocorrelation parameter (which equals zero if there is no dependence between observations), W is a matrix that is a function of the social network, X is a vector of covariates, β is a vector of the coefficients, and ε is a normally distributed independent error term. This model is formulated to account for the fact that participants were not only focal participants, but they could also be a nominated peer, which is the why y is on both sides of the equal sign. Note that if the autocorrelation parameter λ equals zero, indicating that there is no dependence between observational units in the network, then this model reduces to the usual linear regression model. Network autocorrelation models utilize maximum likelihood estimation and the connections among participants when generating estimates. For a more detailed review of these models, see Ord (1975).

Each alcohol outcome (heavy drinking frequency and heavy drinking intentions) was separately regressed on misperceptions for each referent (general peer and important peers). We examined both concurrent (T1 misperceptions predicting T1 alcohol outcomes) and longitudinal (T1 misperceptions predicting T2 alcohol outcomes) associations for each combination of referent and alcohol outcome, resulting in eight total models. We report both crude models and models adjusted for the effects of demographic covariates and intervention status. Models with adjusted effects for important peers also control for misperceptions of general students' heavy drinking (to ascertain unique effects of important peer misperceptions above and beyond the influence of misperceptions of general peers) and total network size. All inferential analyses were conducted in *R* using the *sna* package (Butts, 2008). To address potential bias due to leptokurtotic distributions of the outcome variables, we performed a sensitivity analysis using a symmetry-based transformation of the outcome variables defined as the cubed root of deviation scores based on the median. We found no evidence of bias, thus we report the original analyses below.

## Results

### Description of misperceptions in peer heavy drinking social norms

Table 1 presents demographic characteristics of the sample. Table 2 describes the frequency of misperceptions between perceived and actual peer heavy drinking norms for each referent and mean personal drinking outcome levels. The vast majority of participants overestimated the frequency of heavy drinking of first-year students of the same gender (84.8%). In reference to their identified important peers, 42.0% of respondents accurately estimated their peers' heavy drinking frequency, while 36.9% overestimated and 21.1% underestimated their peers' heavy drinking frequency. Generally, participants who overestimated drinking of both general and important peers had the highest levels of heavy drinking frequency and intentions.

### Associations between peer norm misperceptions and alcohol outcomes

Table 3 presents the results of regression analyses for both alcohol use outcomes (heavy drinking frequency and intentions) based on normative misperceptions of same-gender general and important peers. In adjusted analyses, as compared to those who accurately estimated their general peers' heavy drinking, overestimation was associated with higher levels of heavy drinking frequency at both time points (T1: $b$=.76, $p$<.001; T2: $b$=0.63, $p$<.01), and higher intentions at T1 ($b$=.35, $p$<.001). The effects of underestimation compared to accurate estimatation on both outcomes were not statistically different. Participants at T1 who underestimated, as compared to overestimated, their same-gender general peers' heavy drinking had lower concurrent levels of both heavy drinking frequency themselves (T1: $b$= −1.35, $p$<.001) and intentions to drink heavily (T1: $b$=−.50, $p$<.001).

As compared to those who accurately estimated their important peers' heavy drinking frequency at T1, those who overestimated such drinking were more frequent heavy drinkers themselves at T1 and T2 (T1: $b$=1.09, $p$<.001; T2: $b$=0.49, $p$<.01) and had higher heavy drinking intentions at both time points (T1: $b$=0.47, $p$<.001; T2: $b$=0.31, $p$<.001). Compared to accurate estimators at T1, those who underestimated their important peers' heavy drinking had lower levels of heavy drinking frequency themselves at T1 ($b$=−.69, $p$=<.001), but not at T2. Finally, those who underestimated, as compared to overestimated, their important peers' heavy drinking frequency at T1 had lower frequencies of heavy drinking themselves at both time points (T1: $b$= −1.77, $p$<.001; T2: $b$=−.45, $p$<.01) and lower intentions to engage in heavy drinking at both time points (T1: $b$=−.47, $p$<.001; T2: $b$=−.21, $p$<.01).

## Discussion

This study sought to advance our understanding of the role of social norms on alcohol consumption by examining the influence of misperceptions of peer alcohol use on personal heavy drinking behaviors using data from a complete social network of first-year college students. Network approaches to the study of social influence align with the notion that individuals are entrenched within a mutually influential system of social relationships that shape behavior (Borgatti, Mehra, Brass, & Labianca, 2009). This study utilized longitudinal network data to examine concurrent and prospective influences of peer drinking misperceptions on personal alcohol behaviors. The findings further our understanding of the role of normative perceptions of same-gender general and close peers' drinking on young adult alcohol use.

Results of this study are consistent with previous findings that students typically overestimate alcohol use among the general study body on a university campus (Baer, 2002; Borsari & Carey, 2001; Neighbors, et al. 2006; Perkins, 2002; Perkins & Berkowitz, 1986). This overestimation of heavy drinking among peers for whom an individual may not have close ties reflects the notion that university settings are commonly perceived as promotive of heavy alcohol use (Perkins, 2002; Baer, 2002; Perkins & Wechsler, 1996; Perkins, Meilman, Leichliter, Cashin, & Presely, 1999). Permissive perceptions of alcohol use in the university setting is associated with risky alcohol use. We found that those who overestimated general peers' heavy drinking frequency were more frequent heavy drinkers themselves, and had higher intentions to engage in heavy drinking.

This study also reflects previous findings that individuals are better predictors of their close friends' drinking levels than of general peers (Borsari & Carey, 2003; Kenney et al., 2017). In this sample of first-year college students, the majority of students accurately estimated the heavy drinking frequency of the peers they identified as important to them. Thus, while students often overestimate heavy drinking among peers for whom they are not closely tied, students do have fairly accurate awareness of the drinking habits of more proximal peer relationships. However, one third of students in the first-year class in this sample did overestimate their important peers' heavy drinking, which in turn was associated with their own higher heavy drinking frequency and intentions. While the magnitude of the discrepancy between perceived and actual peer drinking is smaller for close peers than same-gender general peers, the impact of this overestimation may be greater on personal alcohol consumption. This finding is in line with Kenney et al.'s (2017) conclusion that nominated peers were a stronger predictor of personal drinking than residential peers. Indeed, personal behaviors are more deeply influenced by the behaviors of those whom the individual views as important and whose beliefs they value (Miller & Prentice, 1996). Therefore, messages and behaviors of these valued individuals likely hold greater relevance to personal decision-making processes.

Importantly, this study investigates the unique influence of misperceptions of close peers' heavy alcohol use, and results consistently demonstrated risk for those who overestimate close peers' drinking behavior, above and beyond the influence of their misperceptions of general peers' drinking behavior. Thus, misperceptions of close peers' drinking is not simply a reflection of their global perceptions of college student drinking. Although more students are accurate estimators of alcohol use among those closest to them, those who do overestimate close peers' drinking are particularly at risk for heavy drinking themselves. This finding demonstrates the potential value of normative feedback interventions that specifically focus on an individual's closest social network when that person overestimates the drinking of their close friends. Notably, misperceptions of same-gender general peers' heavy drinking was also associated with riskier drinking. Thus, feedback interventions may be most effective when they address multiple peer referents.

Finally, this study demonstrates lasting effects of normative misperceptions on personal drinking throughout the academic year; overestimating heavy drinking of general and important peers in the fall semester was predictive of higher heavy drinking frequency and intentions in the spring semester. The efficacy of boosters, or maintenance sessions for interventions, among college students has remained mixed with some studies reporting short, but not long-term, effects on alcohol behavior (Barnett, Murphy, Colby, & Monti, 2007; Caudill, Luckey, Crosse, Blane, Ginexi, & Campbell, 2007), and others reporting reductions in alcohol consumption levels, but not problems associated with drinking (Braitman & Henson, 2016). Results of the present study indicate that tailoring booster sessions with feedback referenced to one's important peers may offer further reductions in heavy drinking and is an avenue for further empirical inquiry.

Findings from this study should be viewed in the context of some limitations. First, data for this study were drawn from one university in the northeastern region of the US, and from first-year students living in residence halls, and thus may not generalize to a wider young

adult population. Second, these data preclude the ability to directly measure the link between heavy drinking intentions and heavy drinking due to the fact that the intention question asked about intentions to drink heavily in the next two weeks, and subsequent drinking was not measured until six months later. Third, these data do not reflect changes in friendship that naturally occur during college. Fourth, assessment reactivity effects may have occurred, given that participants were aware that peers may be nominating them and answering questions about them, which may have affected their own self report. Fifth, the measure of self-reported and perceived (general and specific network member) heavy drinking was not gender-specific (i.e., was 5+) and thus may have underestimated the number of females who would have been considered heavy drinkers based on a lower threshold. Relatedly, the question pertaining to norms regarding general peers was gender-specific whereas the question regarding alcohol norms of important peers was open to all genders based on who the participant deemed an important peer in their life. This difference in gender-specificity precludes our ability to assess the relative size of the effects of misperceived general norms and misperceived norms of one's close personal network of important persons. Finally, counts of individuals identifying with genders other than male and female were too few to permit calculations of misperceptions of general students within those gender categories.

## Conclusions

This study utilized rich social network data from a first-year class of college students to further our understanding of the relationship between misperceived peer drinking and heavy alcohol use among college students. Results corroborate previous evidence that young adults more often overestimate alcohol use among their general peers and are more accurate estimators of close peers' heavy drinking. Overestimation of peer drinking, particularly for more proximal social relationships, was risk-inducing for personal heavy drinking frequency and intentions. Future research should address the added contribution of utilizing close peer referents in normative feedback interventions.

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**Table 1.**

Demographic characteristics of the sample (n=1313)

| | **Mean (SD) / %** |
|---|---|
| Age | 18.64 (.51) |
| Gender Identity | |
| Male | 43.9 |
| Female | 54.8 |
| Trans male | 0.2 |
| Trans female | 0.1 |
| Gender queer/non-confirming | 0.6 |
| Other | 0.5 |
| Race | |
| White | 56.7 |
| Asian | 24.0 |
| Multiple race | 10.2 |
| Black or African American | 7.1 |
| American Indian or Native | |
| American | 0.9 |
| Prefer not to answer | 0.5 |
| Native Hawaiian or Pacific Islander | 0.2 |
| Other | 0.3 |
| Hispanic ethnicity | 15.4 |
| Athlete | 14.2 |
| Substance free dorm residence | 13.4 |
| Receipt of financial aid | 47.3 |
| First-generation student status | 16.8 |

**Table 2.**

Frequency of misperceptions and alcohol outcome means reported for general and important peers (n=1313)

| | | | Heavy drinking frequency | | Heavy drinking intentions | |
|---|---|---|---|---|---|---|
| | | | Tl | T2 | Tl | T2 |
| | n | % | Adjusted Mean | | Adjusted Mean | |
| *Discrepancies based on same-sex general peer* | | | | | | |
| Accurately estimate | 145 | 11.3 | 1.18 | 1.12 | 0.55 | 0.78 |
| Overestimate | 1085 | 84.8 | 1.71 | 1.56 | 0.83 | 0.84 |
| Underestimate | 50 | 3.9 | 0.90 | 1.33 | 0.51 | 0.73 |
| *Discrepancies based on important peers* | | | | | | |
| Accurately estimate | 511 | 42.0 | 1.23 | 1.36 | 0.63 | 0.73 |
| Overestimate | 450 | 36.9 | 2.54 | 1.95 | 1.14 | 1.06 |
| Underestimate | 257 | 21.1 | 0.67 | 1.45 | 0.63 | 0.83 |

**Table 3.**

Alcohol outcomes predicted by normative misperceptions based on general and important peer referents (n=1313)

**Heavy drinking frequency**

| | T1 Crude | | | T1 Adjusted | | | T2 Crude | | | T2 Adjusted | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b | SE | *p* | b | SE | *p* | b | SE | *p* | b | SE | *p* |
| *Misperceptions based on same-gender general peer* | | | | | | | | | | | | |
| Accurately estimate (ref) v. Overestimate | 0.53 | 0.21 | 0.01 | 0.76 | 0.21 | <.001 | 0.44 | 0.19 | 0.02 | 0.63 | 0.19 | <.01 |
| Accurately estimate (ref) v. Underestimate | −0.28 | 0.39 | 0.48 | −0.59 | 0.38 | 0.13 | 0.21 | 0.36 | 0.57 | 0.05 | 0.36 | 0.89 |
| Overestimate (ref) v. Underestimate | −0.81 | 0.35 | 0.02 | −1.35 | 0.35 | <.001 | −0.23 | 0.32 | 0.47 | −0.59 | 0.33 | 0.07 |
| *Misperceptions based on important peers* | | | | | | | | | | | | |
| Accurately estimate (ref) v. Overestimate | 1.24 | 0.17 | <.001 | 1.09 | 0.17 | <.001 | 0.58 | 0.16 | <.001 | 0.49 | 0.17 | <.01 |
| Accurately estimate (ref) v. Underestimate | −0.63 | 0.19 | <.01 | −0.69 | 0.19 | <.001 | 0.09 | 0.19 | 0.64 | 0.04 | 0.19 | 0.81 |
| Overestimate (ref) v. Underestimate | −1.86 | 0.17 | <.001 | −1.77 | 0.17 | <.001 | −0.49 | 0.17 | <.01 | −0.45 | 0.17 | <.01 |

**Heavy drinking intentions**

| | T1 Crude | | | T1 Adjusted | | | T2 Crude | | | T2 Adjusted | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b | SE | *p* | b | SE | *p* | b | SE | *p* | b | SE | *p* |
| *Misperceptions based on same-gender general peer* | | | | | | | | | | | | |
| Accurately estimate (ref) v. Overestimate | 0.28 | 0.08 | <.01 | 0.35 | 0.08 | <.001 | 0.06 | 0.08 | 0.45 | 0.14 | 0.08 | 0.09 |
| Accurately estimate (ref) v. Underestimate | −0.04 | 0.15 | 0.78 | −0.15 | 0.15 | 0.31 | −0.04 | 0.16 | 0.80 | −0.13 | 0.16 | 0.42 |
| Overestimate (ref) v. Underestimate | −0.32 | 0.13 | 0.02 | −0.50 | 0.13 | <.001 | 0.10 | 0.14 | 0.46 | −0.27 | 0.14 | 0.06 |
| *Misperceptions based on important peers* | | | | | | | | | | | | |
| Accurately estimate (ref) v. Overestimate | 0.51 | 0.06 | <.001 | 0.47 | 0.07 | <.001 | 0.33 | 0.07 | <.001 | 0.31 | 0.07 | <.001 |
| Accurately estimate (ref) v. Underestimate | −0.003 | 0.07 | 0.97 | 0.001 | 0.07 | 0.99 | 0.10 | 0.08 | 0.21 | 0.10 | 0.08 | 0.23 |
| Overestimate (ref) v. Underestimate | −0.52 | 0.07 | <.001 | −0.47 | 0.07 | <.001 | −0.23 | 0.07 | <.01 | −0.21 | 0.07 | <.01 |

Adjusted effects account for demographic covariates (age, gender, race, ethnicity), membership on a varsity athletic team, residence in a substance free dorm, receipt of financial aid, identification as a first-generation student, and intervention status. Models with adjusted effects for important peers also control for misperceptions of general students' heavy drinking and total network size.