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Drinking Reductions following Alcohol-related Sanctions are associated with Social Norms among College Students

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Abstract

Students mandated for intervention following an alcohol-related sanction event often reduce their drinking prior to intervention. Knowing the determinants of self-initiated change may help identify intervention targets for individuals who do not reduce their drinking. Guided by self-regulation theory, we tested whether fewer past alcohol consequences and higher descriptive and injunctive norms would be associated with higher levels of post-sanction drinking. College students referred for a campus alcohol violation (N=658, 64% male) reported on their drinking during the month before and after their sanction event. Results show that post-sanction drinking was significantly lower than pre-sanction drinking across four outcomes: (a) drinks per drinking day, (b) drinks per week, (c) peak drinks, and (d) peak blood alcohol concentration (BAC). Hypothesized social influence variables (i.e., descriptive and injunctive norms) were consistently associated with all four drinking outcomes; that is, students who perceived that their friends drank more and held more accepting views of drinking were less reactive to alcohol-related sanctions. Past consequences of drinking did not consistently predict subsequent drinking. Therefore, we conclude that alcohol interventions for mandated students should target both descriptive and injunctive norms to optimize their efficacy.

Keywords

college students; alcohol use; normative perceptions; alcohol consequences; self-initiated change

Introduction

Alcohol misuse among college students continues to be a significant public health concern, marked by negative consequences (Hingson, Zha, & Weitzman, 2009; Johnston, O'Malley, Bachman, & Schulenberg, 2010). Students who violate campus alcohol policies tend to be riskier drinkers (Fromme & Corbin, 2004; LaBrie, Tawalbeh, & Earleywine, 2006), and are

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often required to participate in mandated interventions (Barnett & Read, 2005). Many of these students are motivated to change and some will reduce their drinking behavior, even prior to intervention (Barnett, Goldstein, Murphy, Colby, & Monti, 2006; Carey, Henson, Carey, & Maisto, 2009; Hustad et al., 2011; Morgan, White, & Mun, 2008; White, Mun, & Morgan, 2008; Wray, Simons, & Dvorak, 2011). However, not all students change. Knowledge of factors that support self-initiated change may help to identify targets of intervention for those who do not change.

Research on naturalistic change among adults demonstrates that risky drinkers often make changes to their drinking without treatment (Carballo et al., 2007; Klingemann, Sobell, & Sobell, 2010; Sobell, Cunninghamm, & Sobell, 1996; Sobell, Ellingstad, & Sobell, 2000). Although the literature on self-change among *college students* has been limited (Misch, 2007; Vik, Cellucci, & Ivers, 2003), it does highlight the roles of the social environment and negative experiences. Predictors of change following a sanction include female gender (Carey, Carey, Henson, Maisto, & DeMartini, 2011; Fromme & Corbin, 2004), higher motivation to change (Carey et al., 2009) and event severity (Morgan et al., 2008), and an interaction between heavier drinking levels and greater sensitivity to punishment (Wray et al., 2011). Other variables have yet to be examined.

Self-regulation theory (Kanfer, 1986; Miller & Brown, 1991) explains the psychological mechanisms that promote change in behavior by proposing six stages that lead to behavior change - informational input, self-evaluation, instigation of change, planning, implementation, and plan evaluation. The first three are most relevant in initial decisions to change drinking. A university sanction may contribute to the informational input stage by providing a source of information about a potentially problematic behavior. This may lead to the self-evaluation stage, in which one compares his or her behavior to personal criteria, both internal and external.

Self-evaluation may involve comparing the current self to the ideal self – an internal personal criterion. Here, the sanction experience may prompt a student to further consider additional recent negative consequences that have been experienced due to drinking, and whether the accumulation of these experiences fit with the ideal self. While level of alcohol *consumption* has been examined as a predictor of self-initiated change following an alcohol sanction (Carey et al., 2009; Wray et al., 2011), recent experience with additional alcohol-related *consequences* have not. It is possible that for individuals who have experienced more alcohol-related consequences, the additional, public consequence of a university sanction may trigger a change in drinking behavior. Consistent with the notion of “crystallization of discontent,” these individuals may become fed up with accumulating alcohol problems (Baumeister, Heatherton, & Tice, 1994).

Other criteria guiding self-evaluation may be external; in particular, a student may compare his/her own behavior to social norms. Both descriptive (i.e., how typical or common a person believes drinking behavior is) and injunctive norms (i.e., behaviors that are judged to be acceptable, expected, or correct within a social system, Cialdini, Reno, & Kallgren, 1990) predict drinking behavior (Baer, 1994; Chawla, Neighbors, Lewis, Lee, & Larimer, 2007; Larimer, Turner, Mallett, & Geisner, 2004; Neighbors et al., 2008; Read, Wood, Davidoff,

McLacken, & Campbell, 2002). A student who believes alcohol use is common and/or acceptable may be less likely to change drinking behavior even following a sanction. Self-regulation theory suggests that when these informational input (i.e., receiving a sanction) and self-evaluation stages (i.e., consideration of past experiences with consequences and norms) indicate that current drinking behavior does not match relevant standards, the third stage -instigation of change - may occur.

Based on both previous research and self-regulation theory, the present study address two aims. First, we examined the extent of self-initiated change following an alcohol-related sanction. We hypothesized significant reductions from pre- to post-sanction on (a) drinks per drinking day, (b) weekly drinks, (c) peak number of daily drinks, and (d) peak blood alcohol concentration (BAC). Second, we tested whether norms and past experience with consequences predict self-initiated change following a sanction. After controlling for pre-sanction drinking, we hypothesized higher levels of post-sanction drinking for individuals reporting (a) higher descriptive norms for alcohol use, (b) higher injunctive norms for alcohol use, and (c) lower levels of past experience with alcohol-related consequences. As a third, exploratory aim, we examined whether the influences of norms and past experience with consequences on post-sanction drinking were moderated by gender, given evidence for gender differences in alcohol consequences (Sugarman, DeMartini, & Carey, 2009), norms (Borsari & Carey, 2003), and self-initiated change (Barnett et al., 2006; Carey et al., 2011; Fromme & Corbin, 2004).

Methods

Participants and Procedures

Students were referred by Residence Life staff and eligible if it was the first alcohol violation, if the violation was not severe enough to warrant referral to Judicial Affairs (e.g., aggressive behavior), and if they used alcohol in the month prior to the sanction. Of 1096 eligible students, 677 (62%) agreed to participate, were randomly assigned to one of four intervention conditions, and provided data at baseline, 1-, 6-, and 12-month follow-ups. Detailed study procedure and intervention conditions are provided elsewhere (Carey et al., 2011). For the present study, only baseline data were used. Participants completed self-report measures of their drinking (a) the month prior to the event that led to their sanction and (b) since the sanction.

Participants with missing data on one or more variables (n=11), or with a time interval between the violation and baseline assessment of less than 7 days (n=8)[1], were deleted listwise. These students did not differ from the remainder of the sample on any model variables (all ps > .05). Our final analytic sample was N=658. The modal reason for citation was illegal use or possession of alcohol (93.8%, n=617). Less common violations, often

[1]Eight participants completed their baseline assessment within one week after their sanction. As such, assessment of typical weekly drinking behavior “since the sanction” overlapped with drinking behavior prior to the sanction. These participants were dropped from our analyses. In addition, this interval between the alcohol-related sanction and the baseline assessment, used as a control variable in our analyses, was skewed and kurtotic as a function of 14 outliers. Scores for these individuals were recoded to one unit greater than the next most extreme value in the distribution (Tabachnick & Fidell, 2007), reducing skewness and kurtosis within range of typically suggested cutoffs (Kline, 2005). After recoding, the mean interval between the violation and the baseline assessment was 23.93 days (SD = 15.05; range 7–80; median = 19).

received in combination with illegal use/possession, included failure to comply with university officials (*n*=16), threatening the health/safety of another (*n*=8), misuse of identification cards (*n*=6), disorderly conduct (*n*=4), and theft/property damage (*n*=3). Participants were on average 19.04 years old (*SD* = 0.72), 64% (*n* = 419) male, primarily in their freshman (67%, *n* = 441) or sophomore (28%, *n* =183) year in college, 5% (*n* = 33) Latino/Hispanic, and 84% (*n* = 555) white.

Measures

Demographics—Participants provided descriptive information on gender, age, weight, and race/ethnicity.

Alcohol use—At baseline, participants reported their alcohol use during two time frames: (a) the 30 days prior to their sanction event, and (b) time since the sanction. We defined a standard drink (12 oz. of beer; 5 oz. of 12% table wine; 12 oz. of wine cooler; or 1.25 oz. of 80-proof liquor), and then asked participants to report (a) average number of standard drinks consumed on a typical drinking day (drinks per drinking day), (b) number of standard drinks consumed in a typical week (drinks per week), (c) maximum number of drinks consumed in a single day (peak drinks), and (d) the number of hours spent drinking that day. Peak blood alcohol concentration (peak BAC) was calculated using the formula: $[(\text{drinks}/2) * (\text{GC}/\text{weight})] - (0.016 * \text{hours})$, where (i) drinks = number of standard drinks consumed, (ii) hours = number of hours over which the drinks were consumed, (iii) weight = weight in pounds and (iv) GC = gender constant (9.0 for females, 7.5 for males) (Hustad & Carey, 2005; Matthews & Miller, 1979).

Alcohol Consequences—The Rutgers Alcohol Problems Index (RAPI) was used to assess consequences (White & Labouvie, 1989); a five point scale (never to > 10 times) indicates how often each of 23 consequences occurred in the 30 days prior to sanction. Items were recoded into dichotomous values to obtain a count of the number of *different* consequences experienced over the past 30 days (Martens, Neighbors, Dams-O'Connor, Lee, & Larimer, 2007).

Descriptive Norms—Descriptive norms were assessed with a seven-day grid (Baer, Stacy, & Larimer, 1991) that yielded an average daily alcohol use estimate for the close friends of the participant's gender. Alcohol use estimates were summed across days to yield the perceived number of drinks per week by friends. Norms for close friends (Baer et al., 1991; LaBrie, Hummer, Neighbors, & Larimer, 2010; Lewis, 2005) and those of the same gender (LaBrie et al., 2010; Rimal & Real, 2003) are most closely linked to a student's own drinking behavior.

Injunctive Norms—Perceived injunctive norms were assessed with a modified version of the item set used by Larimer et al. (2001). Following the stem "How would your friends respond if they knew…," 10 items were assessed. Examples include "You drank alcohol every weekend" and "You drank alcohol enough to pass out." Response options range from 1 (strong disapproval) to 7 (strong approval). Alpha for this scale was .79.

Social Desirability—A reliable and valid short-form of the Marlowe-Crowne Social Desirability scale (Reynolds, 1982) was administered.

Data Analyses

Drinking variables at pre- and post-sanction were normally distributed. *T*-tests and within-subjects effect sizes (Cohen, 1988) were used to examine differences between pre- and post-sanction alcohol use. We tested bivariate associations between descriptive norms, injunctive norms, and pre-sanction consequences, and post-sanction alcohol use. Next, we tested each predictor (along with control variables, below) as a univariate predictor of post-sanction drinking. To address our primary aim, a final series of multivariate autoregressive models examined all three predictors. We controlled for baseline levels of the outcomes and the time interval between sanction and assessment, as initial post-event change may fade with time (Carey et al., 2009; Hustad et al., 2011) and as this interval was significantly correlated at the bivariate level with each of our outcome variables. Social desirability was not associated with T2 use once controlling for T1 use, and thus was not included in final models. All models included gender as an additional predictor, as well as interactions between gender and our three predictors of primary interest. Independent variables were centered prior to creating interaction terms, and centered variables were included in models to test interactions (Aiken & West, 1991).

Results

Descriptives

The mean descriptive norm value (number of weekly drinks consumed by close friends of the same gender) was 18.89 (*SD* = 10.50). The mean injunctive norm value was 3.05 (*SD* = 0.70), representing perceived mild disapproval by friends across drinking-related behaviors. The mean number of consequences experienced in the month prior to the sanction was 3.91 (*SD* = 3.61). Each predictor was significantly and positively correlated with all four alcohol use variables at both the pre- and post-sanction time points (*p*s < .01).

Differences in Alcohol Use from T1 to T2

Post-sanction alcohol use was significantly lower than pre-sanction alcohol use (Table 1). Students consumed about one less drink per drinking occasion following their sanction, and two fewer drinks both per week and on their heaviest drinking day. This translated into average peak BAC reductions of about .04. Effect sizes were small to medium (*d*s = .33 – .53).

Predictors of Post-sanction Alcohol Use

Results of regression models were similar across all outcomes (Table 2). Higher descriptive and injunctive norms were consistently associated with higher levels of all four post-sanction drinking outcomes after controlling for pre-sanction values on those outcomes. Higher past consequences and female gender were significant predictors of higher peak BACs. No predictor of interest significantly interacted with gender to predict drinking outcomes.

Discussion

The present study demonstrates that students often reduce their drinking on their own following alcohol-related sanctions, corroborating previous reports (Barnett et al., 2006; Carey et al., 2009; Hustad et al., 2011; Morgan et al., 2008; White et al., 2008; Wray et al., 2011). As self-regulation theory (Miller & Brown, 1991) would suggest, students respond to either receiving an alcohol-related sanction or the event that led to the sanction. Thus, receiving a sanction provides students with information about a potentially problematic behavior in need of change.

We examined descriptive and injunctive norms as predictors representing external standards to which students may compare themselves during self-evaluation. Across four different drinking indices (drinks per drinking day, drinks per week, peak drinks, and peak BAC), higher levels of both descriptive and injunctive norms for one's close friend, assessed following the sanction, were associated with higher levels of post-sanction drinking. Students who perceive their friends to be drinking more, and to be more accepting of drinking behavior, react less to alcohol-related sanctions. Norms serve to provide guidelines for acceptable behavior; indeed, conformity to the social norms of valued groups often leads to social approval and positive self-concept (Cialdini & Goldstein, 2004). It is possible that, for some students, engagement in continued drinking leads to greater acceptance and positive self-identity, outweighing the potential social costs or personal embarrassment of the sanction. Thus, in social networks that value drinking over compliance with university rules, receipt of a sanction may not trigger self-regulation efforts. Importantly, given that our models controlled for the effects of pre-sanction alcohol use and consequences, we were able to observe independent effects of norms beyond the respondents' own drinking behavior.

Although the sanction, or the event leading to it, did result in subsequent self-regulation efforts on average, we did not observe the hypothesized effect of higher levels of past consequences on post-sanction drinking. To the contrary, higher levels of consequences were associated with *higher* BACs post-sanction. Though for some students the accumulation of consequences may enhance motivation to make changes (Baumeister et al., 1994; White & Ray, 2013), consequences can be associated with *increased* drinking or problems (Mallett, Marzell, & Turrisi, 2011; Read et al., 2012; Read, Merrill, Kahler, & Strong, 2007). The naturalistic change literature with adults also finds that self-change is least common among people with higher levels of alcohol consequences (Dawson et al., 2005; Smart, 2007). As not all students perceive all alcohol consequences to be negative (Mallett, Bachrach, & Turrisi, 2008; Merrill, Read, & Barnett, 2013), it is possible that past consequences promote self-initiated change only among those students who view their consequences, as well as the sanction itself, as aversive.

None of the effects of our predictors on change in alcohol use were qualified by gender. Other research has found female students to be more motivated to avoid further sanctions (Carey & DeMartini, 2010) and to be more reactive to assessment in the absence of an intervention (Carey et al., 2011). However, our results suggest that the extent to which

norms or past-experience influence self-regulation efforts following a sanction is not gender-specific.

Though not a central aim of our study, we included time since the sanction as a covariate in our analysis and found it to be significantly related to all four drinking outcomes. Consistent with prior research (Carey et al., 2009; Hustad et al., 2011), students who had a longer interval between their sanction and completion of the baseline assessment had higher levels of recent alcohol use. It is possible that any reduction in drinking as a function of the sanction wears off over time. Alternatively, heavier drinkers may have been less likely to schedule and/or attend their baseline session in a timely fashion.

Clinical Implications

Examining predictors of self-initiated change can help to identify targets for intervention and students who might benefit from an alcohol intervention. In the present study, we demonstrated that an alcohol-related sanction alone has a larger effect on those with fewer risk factors to begin with (lower descriptive and injunctive norms). Thus, we cannot rely on the sanction alone to decrease drinking among riskier drinkers. Among the most effective individual-level interventions designed to reduce problematic drinking in college students are brief motivational interventions (BMIs; Carey, 2012; Carey, Scott-Sheldon, Carey, & DeMartini, 2007; Larimer & Cronce, 2007). These interventions typically include feedback on descriptive norms; however, injunctive norms have rarely been included. Given that both types of norms were associated with increased risk in the present study, integration of injunctive norms into BMIs may be fruitful.

Limitations

The present study involved assessment of social norms at baseline as predictors of retrospective reports of alcohol use, which limits causal inferences. It is possible that social norms changed between the time of the sanction and assessment. Thus it would have been optimal for norms to be measured prior to a sanction to determine whether and how they predict behavior change. Use of prospective designs among large samples of students who have not yet been sanctioned will provide stronger data. Second, most events leading to sanction in our participants were of low severity. Sampling a greater range of sanction events (e.g., hospitalization, violence) may provide more power to determine whether event severity predicts post-sanction change (Morgan et al., 2008). Finally, though descriptive norms were assessed with gender-specific items, injunctive norms were not.

Conclusion

The present study contributes to the literature examining predictors of self-initiated change among college students receiving alcohol-related disciplinary infractions, by demonstrating that social influence variables – both descriptive and injunctive norms – are associated with self-initiated risk reduction following an alcohol-related sanction. Students with higher normative perceptions following a sanction event/at baseline make smaller changes in their drinking behavior prior to intervention and therefore seem unlikely to change without additional intervention. Targeting both injunctive and descriptive norms within the context

of these interventions continues to be a promising avenue for promoting decreased drinking among these high-risk students.

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Table 1

Self-reported pre- and post-sanction drinking

	M	*(SD)*	*t*	*df*	*p*	Cohen's *d*
Alcohol Use Outcome	**Pre-sanction**	**Post-sanction**				
Drinks per drinking day	5.41 (2.62)	4.63 (3.06)	9.05	657	<.001	.37
Drinks per week	12.35 (9.09)	10.40 (8.92)	8.22	657	<.001	.33
Peak drinks	9.04 (4.49)	7.23 (4.71)	13.53	657	<.001	.53
Peak BAC	.16 (.09)	.12(.09)	11.94	659	<.001	.47

Note: BAC = peak blood alcohol concentration

Table 2

Multiple regression models predicting post-sanction drinking behavior while controlling for pre-sanction behavior

	Model Outcome Variables			
	DDD	**DPW**	**Peak Drinks**	**Peak BAC**
Model Predictors	**B**	**B**	**B**	**B**
Time since sanction	.009	.037**	.044***	.001***
Pre-sanction drinking	.707***	.679***	.659***	.618***
Descriptive norms	.031**	.073*	.042*	.001*
Injunctive norms	.373**	1.086**	.469*	.010*
Past 30-day consequences	.015	−.069	.042	.002*
Gender	.066	.367	−.108	−.014*
Descriptive x Gender	−.017	.004	−.035	−.001
Injunctive x Gender	.369	−.059	.087	−.006
Consequences x Gender	−.097	−.013	.056	.002
F	77.64***	116.05***	90.87***	73.19***
Adj R^2	.51	.61	.55	.50

Note: DDD = drinks per drinking day; DPW = drinks per week; Peak Drinks = peak drinks per drinking day; peak BAC = peak BAC per drinking day;

*** p<.001,

** p<.01,

* p<.05;

Models for all outcomes other than BAC (N=650) were run using the full sample (N=658)