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The Motivational Context for Mandated Alcohol Interventions for College Students by Gender and Family History

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Abstract

Objective—Alcohol interventions to reduce drinking for college students sanctioned for alcohol use reduce drinking and/or problems. However, intrinsic motivation to change cannot be assumed if students are mandated to receive interventions. The purpose of this study was to explore the influence of both gender and family history on motivational variables prior to a mandated intervention.

Method—Participants were 677 students (63% male) who violated residence hall alcohol policy and were mandated to participate in an alcohol abuse prevention intervention. During a baseline assessment, students described their drinking patterns and completed an assessment of biological risk for alcohol problems; they also reported attitudes regarding the sanction event, perceived peer norms regarding sanctions, resistance to influences on their alcohol use, motivation to change alcohol use, and decisional balance regarding current alcohol use.

Results—Many gender differences emerged on the motivational variables suggestive of more motivation to change among female students; family history was related only to drinking patterns and decisional balance.

Conclusions—If motivational factors influence receptivity and response to mandated interventions, then these findings suggest that greater attention to enhancing motivation to change in male students is warranted.

Keywords

brief intervention; college drinking; alcohol abuse prevention; mandated students; gender; family history

Approximately 70% of college students have consumed alcohol in the last month, a figure consistent across data sources and over time (O'Malley & Johnston, 2002). Because many are under the minimum legal drinking age of 21, most campuses have established policies restricting undergraduate alcohol use. According to the Department of Education, the number of disciplinary actions, or referrals to a campus official for which a record is kept and possible sanction imposed, for on-campus liquor law violations at 4-year schools has been increasing for over a decade (USDOE, 2007). Consistent with this trend, students self-report that the frequency of receiving alcohol-related sanctions has been increasing, and the percentage of students required to attend an alcohol education program is steadily going up (Wechsler et al.,

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2002). Estimates suggest that over half of all violations of campus policies involve alcohol (Anderson & Gadaletto, 2001).

Interventions provided to students sanctioned for alcohol violations are associated with reduced drinking and/or problems (Barnett & Read, 2005; Larimer & Cronce, 2007). However, experience suggests that receptivity to an alcohol intervention can be different when the intervention is mandated than when undertaken voluntarily (cf. Dimeff et al., 1999). Intrinsic motivation to change cannot be assumed if a student is required to attend the program. Even very heavy drinkers in college rarely perceive their drinking as a “problem” (Wechsler et al., 2002) and so may be difficult to engage in an intervention. Some students feel singled out as the unlucky ones who got caught doing what they perceive as normative behavior. This perception may result in some resistance to risk reduction messages.

These observations generate interest in the motivational context in which students present themselves for mandated interventions. Recent findings suggest that the circumstances of referral may be relevant to motivation for change. For example, students referred for serious violations (e.g., medical or legal reasons for referral) initiated greater drinking reduction prior to receiving an intervention than did students referred for lower severity residence hall violations (Morgan et al., 2008). This finding suggests that more serious events leading to referral enhance risk perceptions, which may lead to risk reduction. Barnett and colleagues (2008) discerned three distinct subtypes among students referred for campus alcohol violations, based on the combination of baseline drinking, sanction day drinking, the degree of expressed responsibility for the incident, and the aversiveness of the incident. The first cluster consisted of relatively light drinking students who were not drinking much at the time of the sanction event, and did not feel at fault; they were typically sanctioned for being in the presence of or possessing alcohol. The second cluster consisted of heavy drinking students with a history of problems, with mid-levels of felt responsibility; these students did not find the sanction event aversive. The third cluster represented relatively light drinkers whose sanction day drinking was much higher than usual, who found the experience aversive and took responsibility for it – these stand out as those whose sanction event represented a bad experience such as a medical emergency. Taken together, it appears that distinctions can be made among the relatively heterogeneous population of mandated students that may have implications for receptivity and response to intervention. Notably, however, neither of these studies directly assessed variables reflecting motivation for change.

Male gender continues to be correlated with drinking risk (O'Malley & Johnston, 2002), but findings regarding the effect of gender on college drinking intervention outcomes is mixed. Some studies reveal greater responsiveness of female students to some brief interventions (Carey et al., 2009; Murphy et al., 2004), whereas others have not found gender moderation (Carey et al., 2006; Marlatt et al., 1998). Some have suggested that gender roles support heavier drinking for men more so than women, and under some conditions, men feel less free to alter their drinking behaviors (Borsari & Carey, 2006).

Recent research also suggests that a family history of alcoholism is associated with heavier drinking (e.g., LaBrie et al., 2009) and problems (Capone & Wood, 2008) in college students, as well as greater responsiveness to interventions (LaBrie et al., 2009). Thus the purpose of this study was to explore the influence of both gender and family history on motivational variables prior to a mandated intervention. The goal was to better understand motivational factors that might influence receptivity and response to mandated interventions.

To accomplish this, we measured several motivationally-relevant variables in a baseline assessment for a randomized controlled trial of alcohol abuse prevention interventions for mandated students. The first was drinking at the time of the sanction and its relationship to

typical day drinking. This provides information about the representativeness (with regard to drinking) of the event leading to the sanction. In addition, we considered several variables traditionally related to motivation for changing alcohol-related behaviors. These included attitudes regarding the sanction event, perceived peer norms regarding sanctions, resistance to influences on their alcohol use, readiness to change alcohol use, and pros and cons of current alcohol use.

We evaluated these motivationally-relevant variables as a function of person factors known to be risk factors for heavy drinking and/or intervention response, specifically gender and family history of alcohol problems. If these person variables are shown to be related to pre-intervention motivational indicators, then it may be possible to tailor interventions to maximize student receptivity and response to the interventions.

Method

Participants

Participants were students enrolled in a private university in the northeast who had violated campus alcohol policy and were required to participate in an alcohol education program. Students were eligible for the intervention trial if their violation was alcohol-related with no drug involvement, it was a first disciplinary sanction, and their violation occurred in the residence halls. Of the 1207 students referred to the research team, 17 (1%) students never made contact with the research team, leaving a pool of 1190 (99%) from which to recruit. Of those, 395 (33%) declined research participation, 80 (7%) were ineligible (because they had previously participated in the study, were under 18 years of age, or could not be scheduled because it was the end of the semester), and 5 (0.42%) did not attend their first appointment and could not be reached to reschedule. A total of 6 (0.5%) students were withdrawn from the study due to either a retraction of their sanction ($n = 4$) or withdrawal from the university ($n = 2$). Thus, 704 provided informed consent and participated in the intervention study to satisfy their sanction and were randomized to receive one of four experimental conditions. The current analyses focus on data from the baseline assessment only and include only those participants ($N = 677$, 57% of eligible students) who reported current drinking (i.e. one or more drinks in the last month).

Measures

Descriptive information—Participants provided information regarding gender, age, weight, race/ethnicity, and residence.

Alcohol use—For all assessments, a standard drink was defined as a 12 oz. can or bottle of beer; 5 oz. glass of wine; or 1 oz. shot of hard liquor either straight or in a mixed drink. Baseline measures covered the month prior to and including the event leading to the sanction. The Daily Drinking Questionnaire (Collins et al., 1985) used a 7-day grid to assess drinking during a typical week and average drinks per drinking day in the month before the sanction event. Participants also reported the number of standard drinks consumed on the day of the sanction.

Family history—Participants provided information regarding whether their parents (biological, step and/or adopted), siblings, grandparents, and aunts/uncles had problems with alcohol consumption at any point in their lives (1 = yes, 2 = no, 3 = don't know). A dichotomous variable (1 = yes, 0 = no) was created for biological family risk. Positive biological family history was indicated if a biological parent, sibling, grandparent, and/or aunt/uncle had past problems with alcohol consumption.

Motivational indicators—Three items assessed attitudes and norms regarding the sanction. First, participants rated how important it was to avoid receiving another alcohol sanction on a 1–7 Likert scale (1 = not important, 7 = extremely important). Second, they rated how confident they were in their abilities to avoid receiving another sanction on a similar 1–7 Likert scale. Third, peer approval of receiving a sanction was assessed with two items: “How would your friends respond if they knew ... you had violated university alcohol policy once” and “How would your friends respond if they knew you had violated the university alcohol policy twice?” Participants rated each item on a 1–7 scale (1 = strong disapproval, 7 = strong approval). Scores on each single item were averaged to create a composite perceived friends norm variable. Alpha in the present sample was 0.74.

Resistance to changing drinking was measured with six items developed for use with college students (R.G. LaForge, personal communication, July 27, 2003). The items represent both rationalization for drinking (e.g., If I did not drink my social life would suffer) and resistance to control efforts (e.g., the laws against drinking limit my rights) and are all rated on a 5-point frequency scale (1 = never to 5 = repeatedly). Alpha in the present sample was 0.73.

The Readiness Ruler (LaBrie et al., 2005) assessed readiness-to-change. The Ruler is an 11-point continuous scale. The anchors correspond to precontemplation (0 = not concerned about my current drinking patterns), contemplation (5 = I have decided to drink less), and action (10 = my drinking has changed. I now drink less than before). This measure has been found to be a more effective tool for behavior change prediction in college students than more traditional multi-item scales (LaBrie et al., 2005).

The Decisional Balance for Immoderate Drinking (DBIM; Migneault et al., 1999) assessed pros and cons of current drinking, and its factor structure was confirmed using a sample of undergraduate drinkers ($\leq$ at least one drink in the past month). Each item is rated on a 5-point Likert scale that represents how important each item is with regard to drinking decisions (1 = not at all important, 5 = extremely important). Both the Pros subscale (e.g., “I am more self-confident when I drink”) and Cons subscale (e.g., “I do not do as well at school because of my drinking”) were internally consistent in this sample; coefficient alphas were 0.85 and 0.76, respectively.

Recruitment

All recruitment took place during three academic years between 2005 and 2008. Research Assistants met with all sanctioned students to explain study procedures. The median number of days between sanction event and the recruitment meeting was 19. Students learned that participation through the one-month follow-up would fulfill the sanction requirement, that students could earn \$35 and \$40 for participating in the 6- and 12-month follow-ups, respectively, and that a Certificate of Confidentiality protected the confidentiality of their responses. Students who did not choose the research option were assigned the standard sanction (AlcoholEdu for Sanctions™). Students who consented to participate provided contact information, completed the initial baseline assessment, received their condition assignment and an intervention appointment.

Data Analytic Plan

First, descriptive statistics (t-tests, chi-squares) characterized typical drinking patterns (e.g. total drinks in a typical week and typical drinks on a drinking day) and event day drinking (any, number of drinks) for the sample and separately by gender and by family history. Descriptive statistics also characterized the motivational patterns of the whole sample and by gender and family history. To compare sanction day drinking with typical day drinking, difference scores were calculated between the self-reported number of drinks on a typical day and the self-

reported number of drinks consumed on the sanction event day. To address the main research questions, 2 (gender) $\times$ 2 (biological family history) ANOVAs were calculated for all the pre-intervention motivational variables. Finally, correlations were calculated to explore the relationships between pre-sanction drinking patterns and motivational variables.

Results

Sample Characteristics

On average, participants were 19.04 years of age ($SD = 0.71$), predominantly male ($n = 429$, 63%), white ($n = 571$, 85%), and in their freshmen ($n = 448$, 67%) or sophomore ($n = 192$, 29%) year of college. The event that led to the sanction was classified according to the Code of Student Conduct, with multiple violations possible per student. The most common violations were possession of alcohol ($n = 641$, 96%), possession of alcohol with failure to comply with university officials ($n = 11$, 2%), and possession of alcohol with conduct threatening the health or safety of others and with disorderly conduct ($n = 4$, 1%). A positive biological family history of alcoholism was reported by 42% of participants ($n = 282$). Of those with a positive family history, about half ($n = 118$ or 48%) were female.

Participants reported drinking an average of 13.33 ($SD = 9.71$) drinks per week and 4.65 ($SD = 3.25$) drinks per drinking day. The majority (79%) of participants reported consuming alcohol on the day of their sanction, and the average number of drinks consumed on sanction day for those who drank on sanction day ($N = 526$) was 4.45 ($SD = 3.04$). The number of drinks consumed on sanction day was significantly less than drinks consumed on a typical drinking day, $t(525) = -2.57$, $p < 0.05$.

Overall, participants rated that it was important for them to avoid receiving another alcohol sanction ($M = 6.35$, $SD = 1.08$), but expressed less confidence in their abilities to avoid future sanctions ($M = 5.71$, $SD = 1.23$). They rated friend approval of another sanction as neutral ($M = 3.45$, $SD = 1.07$) and reported some degree of resistance to influences on their drinking ($M = 12.21$, $SD = 4.15$). Overall, readiness to change was low, averaging 3.00 ($SD = 2.93$) on the 11-point Ruler. Accordingly, participants rated pros of drinking ($M = 31.03$, $SD = 6.39$) slightly higher than cons of drinking ($M = 27.39$, $SD = 5.42$).

Alcohol Use by Gender and Family History

Two-factor between-groups ANOVAs were used to examine gender and family history differences on alcohol use variables. On the total number of drinks in a typical week, there were significant main effects for both gender, $F(1, 672) = 28.23$, $p < 0.001$, and family history of alcoholism, $F(1, 672) = 10.69$, $p < 0.01$. Males reported consuming more drinks in a typical week ($M = 14.72$, $SD = 10.29$) than did females ($M = 10.93$, $SD = 8.11$), and participants with a positive family history reported consuming more drinks per week ($M = 14.62$, $SD = 10.12$) than those without a family history ($M = 12.41$, $SD = 9.33$). Similarly, significant main effects of gender, $F(1, 672) = 49.52$, $p < 0.001$, and family history, $F(1, 672) = 5.64$, $p < 0.05$, were seen for the number of drinks in a typical drinking day. Males reported a greater number of drinks per drinking day ($M = 5.12$, $SD = 2.64$) than females ($M = 3.80$, $SD = 2.09$). Participants with a positive family history reported more drinks per drinking day ($M = 4.86$, $SD = 2.59$) than those without a family history ($M = 4.48$, $SD = 2.48$).

Examining any sanction day alcohol use, there was a significant relationship between any alcohol consumption on sanction day and gender ($\chi^2[1] = 7.36$, $p < 0.01$), with males (66%) being more likely to drink on sanction day than females (34%). No relationship was found between any sanction day drinking and a positive family history ($\chi^2[1] = 1.07$, $p = 0.30$). Among participants who drank on sanction day, there was a significant main effect of gender,

$F(1, 522) = 10.90, p < 0.01$, and a significant gender X family history interaction, $F(1, 522) = 5.61, p < 0.05$. Males reported significantly more drinks on sanction day ($M = 4.73, SD = 3.16$) than females ($M = 3.90, SD = 2.71$), $F(1, 525) = 9.00, p < 0.01$. The nature of the interaction was examined using simple effects tests. For males, those with a positive family history reported significantly more drinks on sanction day ($M = 4.34, SD = 3.53$) than those without a positive family history ($M = 3.59, SD = 3.28$), $F(1, 522) = 6.22, p < 0.05$. For females, there was no difference in drinks on sanction day for those with a family history ($M = 2.66, SD = 2.58$) and those without ($M = 3.02, SD = 3.15$), $F(1, 522) = 0.86, p > 0.05$.

Motivational Context by Gender and Family History

Two-factor between-groups ANOVAs were used to examine gender and family history differences on variables hypothesized to reflect the motivational context. Group means for gender appear in Table 1, and group means for family history appear in Table 2. Examining the difference scores representing the number of sanction day drinks compared to the number of drinks on a typical drinking day for sanction day drinkers, we observed a significant main effect for gender ($F[1, 522] = 5.54, p < 0.05$) but not for biological family history ($F[1, 522] = 2.55, p = 0.11$). Specifically, as shown in Table 1, males averaged 1.25 ($SD = 3.54$) fewer drinks on sanction day than on a typical day, whereas females reported no significant difference between sanction day drinking and typical day drinking.

Significant main effects for gender but not family history emerged for the attitudes and norms regarding future sanctions. Females rated the importance of not receiving an additional sanction higher than did males, $F(1, 670) = 12.17, p < 0.001$. Females reported higher confidence avoiding future sanction than did males, $F(1, 670) = 4.01, p < 0.05$. There was also a significant main effect of gender, $F(1, 671) = 6.23, p < 0.05$ on perceived friend approval of sanctions. Females rated friends as less approving of sanctions ($M = 2.93, SD = 0.93$) than did males ($M = 3.12, SD = 1.10$).

Males reported higher levels of resistance than did females, $F(1, 671) = 11.47, p < 0.001$, and lower levels of readiness to change on the Readiness Ruler, $F(1, 670) = 4.40, p < 0.05$. With regard to the decisional balance variables, significant main effects of gender, $F(1, 671) = 8.90, p < 0.01$, and family history, $F(1, 671) = 4.60, p < 0.05$, emerged on the pros of current drinking. Males rated pros more highly than did females, and participants with a positive family history rated pros more highly than did those without a positive history. On the cons of current drinking, there was a significant main effect only for positive family history, $F(1, 671) = 14.11, p < 0.001$. Participants with a positive family history had higher cons scores than those without a positive history.

Discussion

Sanctions provide opportunities for teaching moments, and there is evidence that consistent enforcement of alcohol policy at both the levels of campus (Knight et al., 2003) and the state (Nelson et al., 2005) is associated with lower heavy drinking rates among college students. However, the impact of those opportunities for alcohol abuse prevention may be optimized with a better understanding of the motivational context in which those prevention interventions take place. The current study reveals patterns related to gender and family history of alcoholism that can inform development and implementation of mandated interventions for students sanctioned for alcohol policy violations.

Our study revealed more gender differences in motivational variables than differences related to biological family history. Specifically, for female students, the drinking associated with the sanction event was representative of their typical drinking, but for male students, they received a sanction on a relatively light drinking day. Female students also reported that avoiding another

sanction was more important to them and they had more confidence in their ability to do so, when compared to male students. Thus, female students would be more likely to behave in ways to avoid future sanctions, consistent with both self-efficacy theory (Bandura, 1997) and recent conceptualizations of motivation that emphasize importance and confidence as key elements of motivation to change (e.g., Miller & Johnson, 2008). In addition, female students perceived more peer disapproval for alcohol sanctions. This represents an injunctive norm, or a judgment of what is acceptable or expected for a group member. The influence of peer norms on college drinking is well established (e.g., Borsari & Carey, 2003). One source of the power of norms over behavior is that conformity to perceived norms engenders social approval and behavior counter to norms might engender social censure (e.g., Cialdini & Trost, 1998). Thus, for female students, their perceived social environment is less forgiving of getting alcohol-related sanctions, so they may be more motivated to change behaviors that led to the sanction.

Taken together, our findings suggest that female students may be more receptive to alcohol abuse prevention messages after a sanction experience than male students. This raises the potential for gender tailoring of alcohol interventions administered as a result of minor sanctions. The female students as a group were lighter drinkers, overall, but they may be more motivated to avoid another sanction. Prevention messages may emphasize how to change their behavior so as to not incur the perceived social censure of a repeated sanction. In addition, recent research suggests that at equal levels of alcohol consumption, female students report more personal harm (e.g., blackouts, injury) and dependence symptoms (e.g., tolerance, inability to limit drinking) than male students (Sugarman et al., 2009). Thus interventions may explore the extent to which such personally relevant consequences relate to the greater readiness-to-change expressed by female students.

In contrast, male students received a sanction on a relatively light drinking day. Although we did not directly assess their appraisal of this discrepancy, one can hypothesize that the significance of the sanction may vary according to how well it represents their typical behavior. This may explain in part why the male students expressed higher levels of resistance to changing their drinking, and lower levels of readiness-to-change. The pattern of responses among male students is further reinforced by gender differences in the perceived benefits of alcohol use. According to the Transtheoretical Model, strong endorsement of benefits from drinking is associated with more alcohol involvement and earlier stages of change (Migneault et al., 1999). Taken together, this profile suggests that male students may enter into an alcohol abuse prevention intervention in a less receptive frame of mind than female students. Male students may benefit more from explicit motivational enhancement techniques that (a) acknowledge perceived benefits of drinking (while eliciting personally-meaningful costs to shift the decisional balance), and (b) develop discrepancy between their typical behavior (not necessary the behavior that led to the sanction event) and personal goals or values (cf. Miller & Rollnick, 2002).

Moreover, both qualitative (Kuh & Arnold, 1993) and quantitative (Kirchner et al., 2006) research reveals that alcohol consumption facilitates social bonding among male students. Given the fundamental importance of belonging to a group (Baumeister & Leary, 1995), it is understandable that male students are more resistant to alcohol use reduction messages if drinking is a key way that such group affiliation is established and maintained. Thus, interventions designed for male students may emphasize developing alternative strategies to meet their social affiliative needs without drinking as much. Also, given that male students perceive less social disapproval for receiving a sanction, interventions that correct misperceptions and/or weaken the strength of peer influence may be worth considering (Prentice, 2008).

We found relatively fewer effects of biological family history on motivational variables prior to a mandated intervention. Students with a positive family history reported both more pros of drinking and more cons. This pattern suggests that they are more experienced with the effects of alcohol and more aware of the potential positive and negative consequences that can occur as a result of drinking. Students with a positive family history tended to drink more in general, and males with a positive family history drank more on sanction day than did males without a family history. Both findings related to family history are consistent with greater alcohol involvement but not with systematic differences in motivation for change.

Findings should be considered in light of four limitations of the study. First, our sample consisted of first-time violators of residence hall alcohol policies, with generally low-level infractions associated with possession and presence of alcohol rather than more serious infractions as described by Morgan et al. (2008) and Barnett et al. (2008). We do not know if patterns observed here would generalize to students who received sanctions for serious legal or medical events. Second, our assessment of family history of alcoholism was relatively brief and based on self-report, as opposed to testing for biological markers of alcoholism (i.e. Soyka et al., 2008). This measurement approach may have resulted in misclassification if some positive cases were missed due to lack of awareness on the part of the student informant. Third, alcohol policies and response to violations of those policies on college campuses vary considerably; thus replication of these findings at other institutions is needed. Fourth, given the large sample size, it is possible that some findings were the result of small absolute differences between groups. These results need to be replicated in order to enhance generalizability.

In this sample of mandated students, both males and students with a family history of alcohol problems drank more than females and those without a family history, a pattern consistent with epidemiological trends. Family history status had little relationship to indicators of motivation for change. However, this study revealed systematic gender differences in the motivational context of students mandated to an alcohol intervention. Specifically, female students presented with a profile more amenable to engaging in a risk reduction intervention than did male students. These findings suggest that gender-specific tailoring may enhance the efficacy of brief alcohol interventions offered to mandated students.

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Table 1

Mean values on motivationally-relevant variables for the complete sample and by gender

	Gender			F-Value
	Total	Males	Females	
Typical Day vs. Sanction Day ^a	1.14 (3.35)	1.25 (3.54)	0.95 (2.99)	5.54*
Importance of Avoiding Sanction	6.35 (1.08)	6.25 (1.14)	6.54 (0.96)	12.17***
Confidence of Avoiding Sanction	5.71 (1.23)	5.64 (1.29)	5.82 (1.17)	4.01*
Friend Approval of Sanctions	3.05 (1.04)	3.12 (1.10)	2.93 (0.93)	6.23*
Resistance	12.21 (4.15)	12.58 (4.25)	11.56 (3.88)	11.47***
Readiness Ruler	3.00 (2.93)	2.79 (2.89)	3.35 (2.97)	4.40*
Decisional Balance				
Pros	31.03 (6.39)	31.54 (6.30)	30.15 (6.46)	8.90**
Cons	27.39 (5.42)	27.63 (5.44)	26.99 (5.37)	3.63

^a This represents the difference score formed by subtracting the value of drinks on sanction day from typical drinks per drinking day. Positive values indicate that sanction day drinking was less than typical drinking.

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Table 2

Mean values on motivationally-relevant variables for the complete sample and by family history status

	Family History			F-Value
	Total	Positive	Negative	
Typical Day vs. Sanction Day ^a	1.14 (3.35)	1.22 (3.40)	1.09 (3.33)	2.55
Importance of Avoiding Sanction	6.35 (1.08)	6.28 (1.16)	6.40 (1.03)	3.27
Confidence of Avoiding Sanction	5.71 (1.23)	5.61 (1.26)	5.77 (1.21)	2.92
Friend Approval of Sanctions	3.05 (1.04)	3.10 (1.02)	3.02 (1.06)	1.05
Resistance	12.21 (4.15)	12.57 (4.33)	11.95 (3.99)	3.72
Readiness Ruler	3.00 (2.93)	3.22 (2.97)	2.83 (2.89)	1.29
Decisional Balance				
Pros	31.03 (6.39)	31.62 (6.24)	30.61 (6.47)	4.60*
Cons	27.39 (5.42)	28.33 (5.38)	26.72 (5.37)	14.11***

^aThis represents the difference score formed by subtracting the value of drinks on sanction day from typical drinks per drinking day. Positive values indicate that sanction day drinking was less than typical drinking.

*
 $p < 0.05$

 $p < 0.001$