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Feeling Controlled and Drinking Motives Among College Students: Contingent Self-Esteem as a Mediator

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This article presents an examination of college student drinking motives from a self-determination perspective. We predicted positive associations between controlled orientation (a chronic orientation toward pressures and experiencing a lack of choice in one's behaviors), and drinking as a means of regulating affect (enhancement and coping motives) and social approval (social rewards and conformity motives). Contingent self-esteem involves deriving self-worth from meeting expectations and was expected to mediate the relation between controlled orientation and drinking motives, which were in turn expected to predict alcohol consumption and related consequences. College students' (N = 204) controlled orientation, contingent self-esteem, motives for drinking, and patterns of alcohol use were assessed. Mediation analyses provided support for our theoretical framework. Results suggest that "controlled" individuals drink to regulate affect and social approval in part because they have a greater tendency to base self-worth on contingencies.

Self-determination theory (Deci & Ryan, 1985b, 2000) proposes that individuals have innate psychological needs for autonomy, competence and relatedness and has been broadly applied to the explanation of several health-related/high-risk behaviors including adherence to medical prescriptions (Williams, Rodin, Ryan, Grolnick, & Deci, 1998), weight loss (Williams, Grow, Freedman, Ryan, & Deci, 1996), driving anger and aggression (Knee, Neighbors & Vietor, 2001; Neighbors, Vietor & Knee, 2002), gambling (Neighbors & Larimer, in press) and drinking behavior (Knee & Neighbors, 2002; Neighbors, Walker, & Larimer, 2003; Ryan, Plant, & O'Malley,

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1995). According to self-determination theory, individual differences in self-determination emerge over time as a function of the interaction between the self and the environment. Individuals who are chronically exposed to autonomy supportive factors in the environment (e.g., opportunities to make choices and autonomy supportive caregivers; Ryan & Deci, 2000) are likely to develop a general orientation toward autonomy. In contrast, individuals who are chronically exposed to controlling environmental factors (e.g., salient contingencies, threats, deadlines, directives, and pressured evaluations; Ryan & Deci, 2000) are more likely to develop a controlled orientation, where actions are focused on extrinsic goals and internalized pressures in the form of “shoulds” and “oughts” rather than genuine choices based on interest or personal values.

Controlled Orientation

The controlled orientation refers to a general tendency to perceive pressure from one’s environment and is associated with experiencing a lack of true choice in regulating one’s behaviors (Deci & Ryan 1985a, 1985b). The controlled orientation has been associated with perceiving more pressure and ego-defensiveness in social interactions (Hodgins & Knee, 2002; Hodgins, Liebeskind, & Schwartz, 1996), and higher public self-consciousness (Deci & Ryan, 1985a) and self-monitoring (Zuckerman, Gioioso, & Tellini, 1988). In addition, controlled individuals appear to have more difficulty regulating emotions as evidenced by higher levels of stress (Deci & Ryan, 1985a), hostility (Deci & Ryan, 1985b), less-healthy forms of coping (Knee & Zuckerman, 1998), and more aggressive responses in driving situations (Knee, Neighbors, & Vietor, 2001; Neighbors, Vietor, & Knee, 2002). Thus, the controlled orientation has been associated with general concerns regarding social appearance and with difficulty in regulating emotions.

Previous authors have suggested that many of the outcomes associated with controlled orientation can be attributed more specifically to the way in which controlled individuals evaluate themselves, or the nature of their self-esteem (Deci & Ryan, 1995; Hodgins & Knee, 2002). Whereas autonomous individuals have been described as having relatively robust positive self-regard or “true” self-esteem, controlled individuals have been described as exhibiting a contingency-based sense of self-worth.

Contingent Self-esteem

Contingent self-esteem refers to the extent to which self-worth is based on standards or expectations regarding social approval, appearance, performance, or other criteria (Crocker & Wolfe, 2001; Deci & Ryan, 1995; Kernis, 2003). The notion that individuals vary in the extent to which their self-worth is dependent on meeting various criteria, particularly social approval is not new (e.g., James, 1890). Consistent with self-determination theory, the relevant prevailing theme in the views of John Bowlby (1953), Karen Horney (1950), and Carl Rogers (1951, 1959), among others, has been that interaction with evaluative, directive, and controlling figures, usually parents, has a critical impact on self-worth. Approval that is reliably contingent (e.g., based on achievement) presumably leads to attributions such as “I am good and valuable only if I perform well” and “I am not valuable and bad if I do not perform well”, whereas non-contingent approval leads to a more stable sense of self-worth. In this context non-contingent approval refers to unconditional positive

regard as described by Rogers (1951) versus random or inconsistent approval. Recent research by Baldwin and colleagues (Baldwin, 1992; Baldwin & Sinclair, 1996) suggests self-worth is contingent particularly when schemas of particular controlling others (such as an authoritarian parent or a peer group) are activated. Contingencies other than direct social approval (e.g., appearance, competition, and competency) have begun to be explored (Crocker & Wolfe, 2001). However, outcomes associated with the extent to which self-worth is based on contingencies more generally, regardless of the specific contingencies, has been relatively unexplored (but see Kernis, 2003).

That the defensive social processes and emotional instability associated with controlled orientation may be due in part to the tenuous, fragile, unstable, and contingent nature of self-esteem is also not a new idea (Deci & Ryan, 1995; Hodgins & Knee, 2002; Kernis, 2003; Kernis, Jadrach, Gilbert, & Sun, 1996; Kernis et al., 1998). Direct empirical examinations of the relationship between controlled orientation and contingent self-esteem, however, remain strikingly absent. Previous research has revealed controlled orientation to be unrelated to level of self-esteem (i.e., high or low self-esteem; Deci & Ryan, 1985a; Knee & Neighbors, 2002), however no research to date has empirically examined its relationship with contingent self-esteem.

The constructs of controlled orientation and contingent self-esteem have not previously been well distinguished. While there is clearly conceptual overlap between these two constructs, we suggest that they are not equivalent. The controlled orientation involves experiencing a sense of pressure and a lack of choice in one's behavior, whereas contingent self-esteem specifically refers to the nature of how one evaluates oneself. We presume that chronic exposure to situations involving pressure to perform or behave in particular ways combined with the lack of opportunity to express one's thoughts and feelings and to freely explore alternatives, leads individuals to begin evaluating themselves according to how well they live up to these perceived pressures, deadlines, and expectations. Thus, we propose that controlled orientation, marked by sensitivity to and awareness of internal and external pressures, is a causal antecedent in the development of contingent self-esteem. While this is likely to be a reciprocal relationship (i.e., basing self-worth on contingencies may also lead to greater sensitivity to and awareness of pressures), we view controlled orientation as being a more distal cause of many behavioral outcomes.

College Student Drinking

Understanding whether individuals who are higher in controlled orientation engage in maladaptive behaviors because of contingent self-esteem is particularly relevant in the context of college student drinking. Drinking among college students continues to be a considerable problem. In a recent national survey, more than 80% of college students reported consuming alcohol in the past year, with approximately 44% reporting heavy drinking episodes at least once in the previous two weeks (Wechsler, Lee, Kuo, & Lee, 2000). These statistics are especially concerning considering the consequences associated with heavy drinking. Excessive drinking among college students is associated with damaged property, poor class attendance, hangovers, trouble with authorities, and injuries (Wechsler et al., 2000; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994; Wechsler & Isaac, 1992). In addition, research has demonstrated links between college student drinking and

unwanted sexual advances, unplanned and unprotected sex, sexual aggression, and sexual assault (Abbey, 2002; Cooper, 2002; Larimer, Lydum, Anderson, & Turner, 1999; Wechsler et al., 2000, Wechsler et al., 1994).

Motives for Drinking

In order to deter excessive drinking among college students and prevent unwanted consequences, it is important to understand what motivates college students to drink. Drinking motives can be considered proximal antecedents of drinking behavior and have been shown to predict alcohol consumption and alcohol-related consequences (Cooper, 1994; Cooper, Russell, Skinner, & Windle, 1992; Cooper, Frone, Russell, & Mudar, 1995; Stewart, Loughlin, & Rhyno, 2001). Research concerning drinking motives has identified a four-factor model including affect enhancement, coping, social rewards, and conformity (Cooper, 1994; MacLean & Lecci, 2000; Stewart & Devine, 2000; Stewart et al., 2001). Affect enhancement motives refer to drinking in order to experience positive emotions, to feel good, or to experience excitement. Coping motives refer to drinking that is motivated by a desire to escape internal negative experiences such as anxiety, depression, or uncertainty. Social rewards motives are roughly analogous to drinking as a social lubricant, to help one be sociable and enjoy social gatherings. Conformity motives consist of drinking as a result of implicit or explicit social pressure. These motives have been described as two dimensions based on whether the source of the expected outcome is internal (enhancement and coping) or external (social rewards and conformity) and whether outcome expectancies are positively reinforcing (enhancement and social rewards) or negatively reinforcing (coping and conformity). We suggest that they can also be viewed as a means of regulating affect (enhancement and coping) and social functioning (social rewards and conformity). Thinking of alcohol as a means of regulating positive and negative emotions has shown much promise and has been mapped directly to enhancement and coping motives respectively (e.g., Cooper et al., 1995; Armeli, Carney, Tennen, Affleck, & O'Neil, 2000). Mohr and colleagues (2001) have demonstrated links between positive affect and social drinking and between negative affect and solitary drinking. However thinking of alcohol as a means of regulating social functioning has not been directly evaluated. We suggest that drinking to improve social functioning or to avoid being rejected by peers is, in essence, social regulation.

Controlled Orientation and Drinking Motives

Following Vallerand's (1997) proposal that global motivational orientations translate into motivations in specific contexts, Knee and Neighbors (2002) found that controlled orientation was associated with drinking for extrinsic reasons among college students. Extrinsic reasons in this research were operationalized as a combination of social approval and affect regulation motives. The present research was designed to more clearly evaluate relations between controlled orientation and specific motivations for drinking and to better explain how a global orientation towards pressure and control translates into drinking motivations. Figure 1 presents a conceptual model of our theoretical framework.

Controlled orientation has been associated with greater perceptions and responsiveness to social expectations and pressures. Consequently we expected controlled orientation to be associated with social drinking motives and conformity

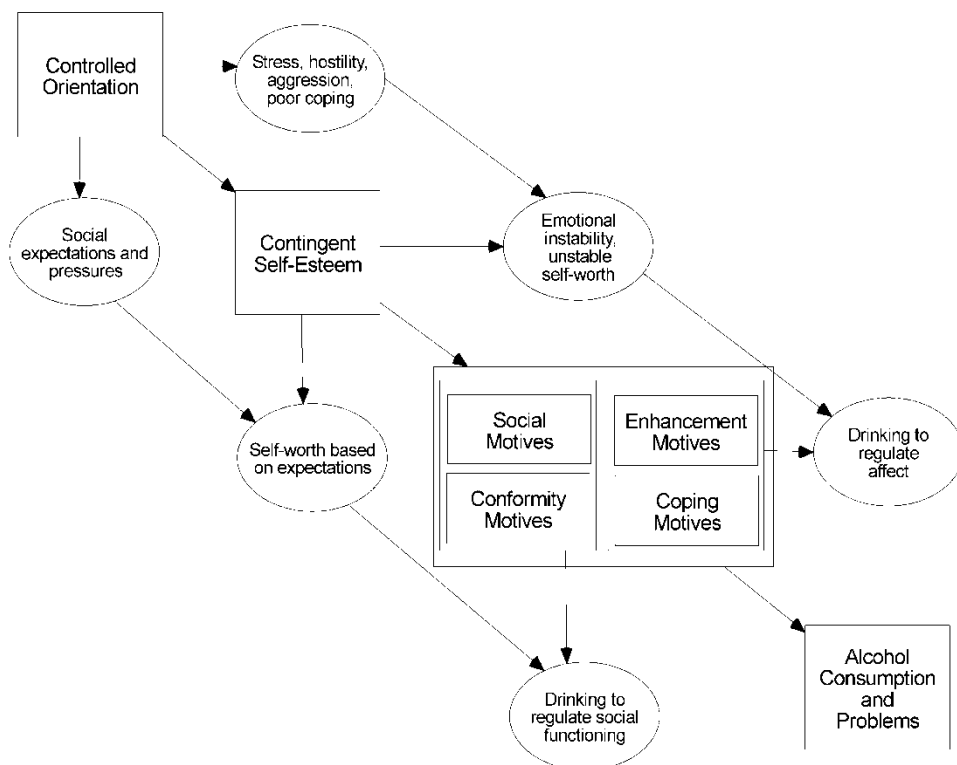


FIGURE 1 A conceptual model of the relationship between controlled orientation and drinking motives.

motives. However, we believe that the primary reason controlled individuals are so conscious of and concerned about social expectations is that they base their self-worth to a larger degree on how well they meet other people’s expectations. Chronic exposure to environments that emphasize how one should or ought to behave become internalized among individuals who are higher in controlled orientation resulting in an exaggerated need for social approval. In the specific context of college student drinking, this manifests itself as drinking to improve social functioning/performance (social rewards) and to fit in with others who are drinking (conformity).

Controlled orientation has also been associated with chronic stress, hostility, aggression, and poor coping, which suggests that individuals who are higher in controlled orientation have more difficulty regulating affect. Previous research has demonstrated that both adolescents and adults use alcohol as a means of regulating positive (enhancement motives) and negative (coping motives) affect (Cooper et al., 1995). Thus, we expected controlled orientation to be associated with enhancement and coping motives. However, we believe that the primary reason controlled individuals have difficulty regulating affect is tied to their contingency based self-worth. For controlled individuals, positive self-regard is based on performance and meeting one’s own and others’ standards. This results in emotional instability and volatility because the conditions for self-approval are never ending and offer only fleeting and temporary satisfaction when met. In the context of college student

drinking, alcohol offers a reliable means to relax and enjoy oneself (enhancement) and a way to escape stress and uncertainty (coping).

In sum, this research was designed to evaluate the relationship between controlled orientation and specific drinking motives and to examine contingent self-esteem as a possible mechanism through which controlled orientation (global motivation) is associated with drinking motives (specific motivation). We were also interested in evaluating whether contingent self-esteem mediates the relationship between controlled orientation and drinking behavior.

Method

Participants

Two hundred-four students (102 men and 102 women) enrolled in undergraduate psychology courses at the University of Washington participated in the study and received extra course credit for participation. The average age of participants was 19.0 years ($SD = 1.82$). Ethnicity was 51.7% Caucasian, 40.8% Asian/Asian American, and 7.5% other. The sample included 21.9% fraternity ($n = 23$) and sorority ($n = 21$) members. Participants were freshman (66.7%), sophomores (18.9%), juniors (9.0%), and seniors (5.5%). A majority of participants lived on campus in residence halls/dorm rooms (47.0%) or in a fraternity/sorority house (21.3%). Others lived off campus (19.8%) or with their parents (11.9%).

Procedure

Participants completed measures in small groups but were instructed not to communicate with each other during the assessment. Participants were urged to answer all items honestly and were reminded that all answers would remain anonymous. Following the assessment, participants were debriefed and thanked for their participation.

Measures

Controlled orientation. We used the controlled orientation subscale from the General Causality Orientations Scale (GCOS; Deci & Ryan, 1985a; revised: Hodgins, Koestner, & Duncan, 1996; autonomy and impersonal orientations were also assessed but were not of interest in the present study, but see discussion regarding autonomy). The revised GCOS contains 17 scenarios, each of which is followed by a controlled response. Respondents rate the extent to which a response would be characteristic for him/her. For example, one of the scenarios states: "A woman who works for you has generally done an adequate job. However, for the past two weeks her work has not been up to par and she appears to be less interested in her work. Your reaction is likely to be: _____" The controlled orientation is then measured by the response: "Tell her that her work is below what is expected and that she should start working harder". Another scenario states: "You have been invited to a large party where you know very few people. As you look forward to the evening you would likely expect that: _____" The controlled orientation is then measured by the response: "You'll try to fit in with whatever is happening in order to have a good time and not look bad." Participants rate each response on a scale from 1 (very

unlikely) to 7 (very likely). Scores are computed by averaging respondents' ratings across all 17 scenarios, with higher scores representing more controlled orientation. Internal consistency reliability (Cronbach alpha) in this study was .78.

Contingent self-esteem. The Contingent Self-Esteem Scale (Kernis, 2003; Kernis & Paradise, 2003) contains 15 items. Examples include, "An important measure of my worth is how competently I perform", and "An important measure of my worth is how well I perform up to the standards that other people have set for me". Participants rate the extent to which each statement is characteristic of him/her from 1 (not at all like me) to 5 (very much like me). Although this measure has not yet been used extensively, existing research supports its validity.

Kernis (2003) reported this measure to be negatively correlated with level of self-esteem and positively associated with instability of self-esteem. Kernis also summarized a study demonstrating that women who score higher on this measure respond to derogatory evaluations with more anger and hostility. Women who scored higher on this measure also report more anger and defensiveness in response to hypothetical scenarios. Patrick, Neighbors, and Knee (2004) found that appearance-related comparisons were most distressful to women who perceived themselves as less attractive and who scored higher on this measure. In these data, a principal components analysis suggested that the measure is comprised of one primary factor. Five eigenvalues were above one (4.11, 1.64, 1.43, 1.17, 1.05) but the scree plot revealed that only the first eigenvalue was distinctly higher than the remaining values. Kernis (2003) reported internal consistency and test–retest reliabilities (4 weeks) of .85 and .77, respectively. Internal consistency reliability (Cronbach alpha) in this study was .79.

Drinking motives. Drinking motives were assessed with the Drinking Motives Questionnaire (Cooper, 1994). This is a 20-item measure that assesses four drinking motives (social, enhancement, conformity, and coping). Five items assess each motive (e.g., social: "because it helps you enjoy a party"; enhancement: "because you like the feeling"; conformity: "so you won't feel left out"; coping: "to forget about your problems"). Participants respond to each item according to how often they drink for that reason from 1 (never/almost never) to 5 (almost always/always). Internal consistency reliabilities (Cronbach alpha) in this study were .91, .93, .83, and .84 for social, enhancement, conformity, and coping motives, respectively.

Alcohol consumption. Alcohol consumption was measured with three indices including peak alcohol consumption, frequency of alcohol use, and overall alcohol consumption. Both peak alcohol consumption and frequency of alcohol use were taken from the Frequency–Quantity Questionnaire (Dimeff, Baer, Kivlahan, & Marlatt, 1999). Peak alcohol was assessed with a single item asking participants how many drinks they had on the occasion during which they drank the most in the previous month. Frequency of use was measured with a single item asking participants how many days of the week they drank during the previous month. The Frequency–Quantity Questionnaire has been used extensively to assess college student drinking and has been shown to be reliable and valid in this context (Dimeff et al., 1999; Larimer et al., 2001; Marlatt et al., 1998). Overall alcohol consumption was measured with the Alcohol Consumption Inventory (ACI; Knee & Neighbors, 2002). This measure consists of eight items addressing quantity and frequency of alcohol consumption with four items directed at "binge" drinking (e.g., "During the

past month, how many times did you have five or more drinks on one occasion?") and four items assessing number of drinks consumed in a given timeframe (e.g., "On average, how many drinks per week do you consume?"). Participants respond on seven-point Likert-type scales. For example, "On average, how many drinks do you consume on weekends (Friday–Sunday)," anchors are 0, 1–3, 4–6, 7–9, 10–12, 13–15, and more. Items loaded on a single factor (Eigenvalue = 6.06) with factor loadings ranging from .79 to .93. Items were averaged to form a drinking index. Internal consistency reliability (Cronbach alpha) in this study was .95.

Alcohol-related problems. Alcohol-related problems were assessed with the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989). The RAPI consists of 23 items where respondents indicate how many times they have experienced each of 23 problems during the previous three months. Responses were given on 5-point Likert-type scales from never (1) to more than 10 times (5). Sample items included "Got into fights, acted bad, or did mean things," "Not able to do your homework or study for a test," and "Caused shame or embarrassment to someone." Two additional items, "Drove shortly after having more than two drinks" and "Drove shortly after having more than four drinks," were also included. Scores were calculated as the mean of the 25 items. Internal consistency reliability (Cronbach alpha) in this study was .88.

Results

Descriptive Information

Table 1 presents means and standard deviations for all variables. Table 2 presents zero-order correlations among variables. Average peak consumption in the previous month was just over five and a half standard drinks. Mean frequency was between once per month and two to three times per month, but closer to the latter category. As expected, both controlled orientation and contingent self-esteem were positively associated with all four drinking motives. All four drinking motives were positively associated with overall alcohol consumption, peak alcohol consumption, and frequency of alcohol consumption with the exception of conformity drinking, which

TABLE 1 Means and Standard Deviations of Variables

Variable	<i>M</i>	<i>SD</i>	<i>N</i>
Controlled orientation	4.09	0.66	204
Contingent self-esteem	3.43	0.46	202
Social drinking motives	3.00	1.20	203
Enhancement drinking motives	2.76	1.27	203
Coping drinking motives	1.90	0.90	203
Conformity drinking motives	1.50	0.67	203
Alcohol consumption inventory	1.14	1.23	202
Peak alcohol consumption	5.64	5.01	203
Frequency of alcohol use	2.77	1.34	203
Alcohol related problems	4.27	4.64	204

TABLE 2 Zero-order Correlations Among Measures

Measure	1	2	3	4	5	6	7	8	9	10
Controlled orientation	—									
Contingent self-esteem	.22**	—								
Social drinking motives	.19**	.22**	—							
Enhancement drinking motives	.15*	.21**	.75***	—						
Coping drinking motives	.17*	.32***	.49***	.43***	—					
Conformity drinking motives	.24***	.18*	.44***	.24***	.51***	—				
Alcohol consumption inventory	.10	.10	.56***	.53***	.31***	.13	—			
Peak alcohol consumption	.11	.08	.58***	.53***	.34***	.10	.80***	—		
Frequency of alcohol use	.14*	.17*	.66***	.56***	.35***	.15*	.79***	.74***	—	
Alcohol related problems	.27***	.21**	.52***	.42***	.53***	.34***	.54***	.55***	.54***	—

Note. *N*'s ranged from 201–204, depending on missing data. * $p < .05$; ** $p < .01$; *** $p < .001$.

was not significantly associated with peak consumption or overall consumption. All four drinking motives were positively associated with alcohol-related problems. Overall consumption, peak consumption, and frequency were also all positively associated with alcohol-related problems.

Exploratory analyses were conducted to examine demographic differences in controlled orientation, contingent self-esteem, drinking motives, alcohol consumption, and drinking problems. We examined differences as a function of sex, Greek affiliation (fraternity/sorority), and ethnicity. With regard to ethnicity, we examined Asian/Asian Americans versus others given the relatively large proportion of these students in our sample. Bonferroni corrected *t*-tests (alpha adjusted to .005) were conducted for each demographic variable. Tests of sex differences revealed that men had lower levels of contingent self-esteem but reported higher peak alcohol consumption than did women. Greek students reported higher social drinking motives and higher scores on the alcohol consumption inventory, peak consumption, and drinking frequency than non-Greek students. Asian/Asian American students scored higher on conformity drinking motives but lower on enhancement motives, the alcohol consumption inventory, peak consumption, and drinking frequency.

Mediation

We evaluated contingent self-esteem as a mediator of the relationship between controlled orientation and drinking motives according to Baron and Kenny's (1986) criteria, which suggest mediation when: (1) there is a significant relationship between X (predictor) and Y (criterion); (2) there is a significant relationship between X and M (mediator); (3) there is a significant relationship between M and Y controlling for X; and (4) the effect of X on Y is no longer significant or is substantially reduced when controlling for M. According to Kenny, Kashy, and Bolger (1998) meeting the first three criteria are sufficient to establish partial mediation. "Step 4 does not have to be met unless the expectation is for complete mediation" (p. 260). However, after establishing the first three criteria it is desirable to empirically evaluate whether the reduction described in the 4th criterion is significant.

The procedure for evaluating the magnitude of this reduction has been described in detail (Baron & Kenny, 1986; Goodman, 1960; Kenny et al., 1998; McKinnon & Dwyer, 1993; Sobel, 1982). The difference in the effect of X on Y with and without controlling for M is equal to the product of the effect of X on M (*a*) and the effect of M on Y controlling for X (*b*). There is no contention that the appropriate test is *ab* divided by the standard error of *ab* and that this ratio is approximately *z* distributed. The standard error of *ab* is simply the square root of the variance of *ab*. There has been some discussion regarding the calculation of the variance of *ab*. Sobel (1982) proposed estimating the variance of *ab* as $b^2s_a^2 + a^2s_b^2$ where *b* is the unstandardized coefficient for the association between X and M and *a* is the unstandardized coefficient for the association between X and Y. The s_a and s_b symbols represent the standard errors for *a* and *b* respectively. Similar and more accurate estimates have been suggested (Baron & Kenny, 1986; Goodman, 1960; Kenny et al., 1998; McKinnon & Dwyer, 1993). These involve the addition or subtraction of the product of the standard errors to this equation where the population formula for the variance of *ab* is given by $b^2s_a^2 + a^2s_b^2 + s_a^2s_b^2$ and the sample based unbiased estimate for the variance of *ab* is given by $b^2s_a^2 + a^2s_b^2 - s_a^2s_b^2$. In our analyses we used the sample based unbiased estimate, where $z = ab/\sqrt{(b^2s_a^2 + a^2s_b^2 - s_a^2s_b^2)}$. Note the

same z can be computed with only the t 's for the effect of X on M (t_1) and the effect of M on Y controlling for X (t_2), where $z = (1/t_1^2 + 1/t_2^2 - [(1/t_1^2)(1/t_2^2)])$.

Contingent self-esteem as a mediator of the relation between controlled orientation and drinking motives. Table 3 presents regression results for evaluating the mediation criteria. Criterion 1 was evaluated for each drinking motive by examining the relationship between controlled orientation and drinking motives. Controlled orientation was positively associated with all four motives. Support for criterion 2 was evident given that controlled orientation was positively associated with contingent self-esteem. Support for criterion 3 was evident for three of the four drinking motives. Controlling for controlled orientation, contingent self-esteem was associated with higher social motives, enhancement motives, and coping motives but was not significantly associated with conformity motives. Support for the first three criteria was obtained for social, enhancement, and coping motives, indicating that contingent self-esteem at least partially mediates the relationship between controlled orientations and three of the four drinking motives.

Criterion 4 was evaluated by testing the reductions in the effect of controlled orientation on drinking motives with and without contingent self-esteem in the model using the procedure described above (see Table 4). Contingent self-esteem significantly reduced the effect of controlled orientation on drinking motives for social, enhancement, and coping motives. Although the standardized coefficients do not appear to change much in these analyses (e.g., .19 to .14 for social), the estimated standard errors associated with these reductions are quite small and the resulting z 's are statistically significant.

Contingent self-esteem as a mediator of the relation between controlled orientation and drinking. We were primarily interested in determining whether contingent self-esteem provides the link between controlled orientation and specific motives for drinking. We were also interested in evaluating whether contingent self-esteem

TABLE 3 Regression Results for Contingent Self-esteem as Mediator Between Controlled Orientation and Drinking Motives

Regression criterion	Predictor	<i>B</i>	<i>SE B</i>	β	R^2	<i>t</i>
Social motives	Controlled orientation	.34	.13	.19	.04	2.68**
Enhancement motives	Controlled orientation	.30	.13	.15	.02	2.22*
Coping motives	Controlled orientation	.24	.09	.17	.03	2.51*
Conformity motives	Controlled orientation	.24	.07	.24	.06	3.43***
Contingent self-esteem	Controlled orientation	.15	.05	.22	.05	3.12**
Social motives	Controlled orientation	.27	.13	.15	.07	2.12*
	Contingent self-esteem	.48	.18	.18	—	2.63**
Enhancement motives	Controlled orientation	.23	.14	.12	.06	1.68
	Contingent self-esteem	.51	.19	.19	—	2.63**
Coping motives	Controlled orientation	.16	.09	.12	.12	1.78
	Contingent self-esteem	.57	.13	.29	—	4.29***
Conformity motives	Controlled orientation	.21	.07	.21	.07	2.97**
	Contingent self-esteem	.19	.10	.13	—	1.89

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

mediates the relation between controlled orientation and drinking behavior. We tested this using the same strategy outlined above. Controlled orientation was not directly associated with ACI or peak consumption but was associated with frequency of consumption and alcohol related problems (criterion 1). Thus, tests of mediation were only appropriate for the latter two alcohol variables. Table 5 presents results from mediation analyses. As previously noted, controlled orientation is positively associated with contingent self-esteem (criterion 2). Contingent self-esteem was positively associated with both frequency and problems (criterion 3). Support for the first three criteria was obtained for drinking frequency and problems, indicating that

TABLE 4 Evaluation of Mediation: Tests of the Magnitude of Reduction in Predicting Drinking Motives from Controlled Orientation With and Without Contingent Self-esteem in the Model

Drinking motive	<i>ab</i>	<i>SE ab</i>	<i>z</i>	<i>p</i>
Social motives	.072	.035	2.08	.04
Enhancement motives	.076	.037	2.08	.04
Coping motives	.085	.033	2.57	.01
Conformity motives	.029	.017	1.69	.09

Note. *ab* = the magnitude of reduction in predicting drinking motives from controlled orientation with and without contingent self-esteem in the model. *ab* = the product of the unstandardized coefficients for the effect of controlled orientation on contingent self-esteem (*a* = .15 for each test) and the effect of contingent self-esteem on drinking motives (*b*). So, for example, the reduction in the unstandardized coefficient for controlled orientation predicting social motives with (.34) and without (.27) contingent self-esteem in the model = .07. This is exactly equal (within rounding error) to the product of the unstandardized weight for controlled orientation predicting contingent self-esteem (.15) and the unstandardized weight for contingent self-esteem predicting social motives (.48) = .072. *SE* = standard error for *ab*.

TABLE 5 Summary of Regression Results for Contingent Self-esteem as Mediator of the Relation Between Controlled Orientation and Drinking Behavior

Regression criterion	Predictor	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>t</i>
Drinking frequency	Controlled orientation	.28	.14	.14	.02	2.00*
Drinking problems	Controlled orientation	.16	.03	.34	.11	5.11***
Contingent self-esteem	Controlled orientation	.15	.05	.22	.05	3.12**
Drinking frequency	Controlled orientation	.22	.14	.11	.04	1.55
	Contingent self-esteem	.42	.21	.14	—	1.99*
Drinking problems	Controlled orientation	.14	.03	.31	.16	4.62***
	Contingent self-esteem	.13	.04	.19	—	2.86**
Criterion	<i>ab</i>	<i>SE ab</i>	<i>z</i>	<i>p</i>		
Drinking frequency	.06	.035	1.75	.08		
Drinking problems	.02	.009	2.17	.03		

Note. * *p* < .05; ** *p* < .01; *** *p* < .001. *ab* = the magnitude of reduction in predicting drinking motives from controlled orientation with and without contingent self-esteem in the model. *ab* = the product of the unstandardized coefficients for the effect of controlled orientation on contingent self-esteem (*a* = .15 for each test) and the effect of contingent self-esteem on drinking motives (*b*). *SE* = standard error for *ab*.

contingent self-esteem at least partially mediates the relationship between controlled orientations and these two indices of drinking behavior. Criterion 4 was evaluated by testing the reductions in the effect of controlled orientation on frequency and problems with and without contingent self-esteem in the model using the procedure described above (see bottom of Table 5). Contingent self-esteem significantly reduced the effect of controlled orientation on drinking problems but not drinking frequency.

Discussion

The present research extends previous work examining self-determination and college student drinking (Knee & Neighbors, 2002) by investigating the relationship of controlled orientation with specific drinking motives and the mediating role of contingent self-esteem. Results were generally consistent with previous work examining drinking motives. While previous research has shown controlled orientation to be associated with more extrinsic reasons for drinking (Knee & Neighbors, 2002), the present research went beyond this. First, we examined specific motives for drinking rather than more general extrinsic reasons. Second, drinking outcomes were not limited to consumption but included actual consequences related to drinking. Third, empirical support was provided for the notion that specific drinking motives function as a means of regulating self-esteem. Individuals who base their self-worth on living up to expectations and matching standards reported drinking as a means of regulating affect, whether to increase positive affect or reduce negative affect. Similarly, those higher in contingent self-esteem reported greater likelihood of drinking as a means of gaining social approval or avoiding social rejection. Furthermore, the relationship between controlled orientation and drinking motives was partly mediated by contingent self-esteem, especially for drinking as a means of regulating emotion, but less for drinking to gain social approval. In addition, the relationships between controlled orientation and drinking frequency and drinking problems were partially mediated by contingent self-esteem. These results suggest that, for controlled oriented individuals, drinking can be seen, to some extent, as a tool for maintaining/enhancing self-esteem indirectly through the impressions of others and more directly by regulating the emotional volatility that comes from conditional self-worth. This study provides an important contribution by empirically distinguishing two central constructs in self-determination theory: controlled orientation and contingent self-esteem. Our results suggest that, at least in the context of college student drinking, controlled orientation is the more distal antecedent, and its effects on drinking to regulate affect and social approval are partly accounted for by contingent self-esteem.

It is important to identify some of the limitations of this research. First, while we were primarily interested in college student drinking, generalizability is still an issue. As is the case with the majority of studies on college student drinking, most of our students were underage (91% in this sample). Our findings may not generalize to older college students. We do not view this as a significant problem given that most college student drinking is underage drinking, and natural history studies have shown that, in the USA, heavy drinking tends to peak in late adolescence and early adulthood and actually begins to decline around the legal drinking age (Johnson, O'Malley, & Bachman, 2000; Larimer & Kilmer, 2000; Schulenburg & Maggs, 2002). The legal drinking age in Washington State is 21. Another generalizability issue concerns the relatively large proportion of Asian/Asian American participants.

However, because these participants were not significantly different from the rest of the sample in controlled orientation or contingent self-esteem, we do not believe this had an impact on our findings. An additional limitation is that all measures were retrospective self-report indices rather than actual observations of behavior.

In addition, the non-experimental cross-sectional nature of the data does not allow determination of causal direction. However, our data were consistent with the proposed causal chain represented by our conceptual model. All theoretical models are limited by lack of inclusion of other potentially relevant variables. With regard to the framework employed in this study, two come immediately to mind. First, just as individuals vary in the extent to which they are oriented toward pressure, they also independently vary in the extent to which they are autonomously oriented (Deci & Ryan, 1985a, 1985b). In these data, preliminary analyses revealed that autonomy orientation was not associated with controlled orientation or contingent self-esteem. Nor was it associated with any of the drinking motives, alcohol consumption variables, or alcohol-related negative consequences, with the exception of conformity motives to which it was negatively associated. Thus, while autonomy orientation may play some role in determining college student drinking, our data suggest that it is not through a relationship with contingent self-esteem.

A second, potentially meaningful, variable in this framework is level of self-esteem, which was not included in the measurement battery. While level of self-esteem is negatively associated with contingent self-esteem (Kernis, 2003), it is not associated with controlled orientation (Deci & Ryan, 1985a, 1985b; Knee & Neighbors, 2002). Thus, level of self-esteem had no bearing on the primary focus of this study, which was to examine contingent self-worth as the mechanism through which feeling controlled is associated with drinking as a means of regulating affect and social approval. However, level of self-esteem is important in the conceptualization of contingent self-esteem. High self-esteem that is contingent is conceptually very different from low self-esteem that is contingent or high or low non-contingent self-esteem. Thus we recommend that future research examining the construct of contingent self-esteem also include a measure of level of self-esteem.

Additional research examining specific contingencies in this framework may be fruitful. The measures we employed assess the extent to which self-esteem is generally based on contingencies. An alternative approach, following Crocker and Wolfe (2001) would be to examine the extent to which self-worth is based on contingencies in specific domains (e.g., family support, appearance, academic competence, and others' approval). Our data suggest that self-esteem that is generally more contingent appears to play an important etiological role in college student drinking. It is unclear how specific motives for drinking might differentially relate to specific contingencies of self-esteem. For example, self-esteem that is contingent on others' approval is likely to be more strongly linked to drinking as a means of regulating social approval whereas self-esteem that is contingent on performance criteria might be more strongly linked to drinking as a means of regulating affect.

Conclusions

Our findings strongly support motivational approaches to understanding problem drinking among college students and are consistent with previous research in showing drinking motives to be a crucial determinant of college student drinking. Our findings provide a broader framework for understanding specific drinking motives by elaborating on their relationship to a more global orientation toward

pressure, stress, and lack of choice. These findings suggest numerous possibilities for further exploration. Reviewing positive expectancies associated with alcohol consumption is a commonly included component in brief alcohol interventions (Bosari & Carey, 2000; Dimeff et al., 1999; Marlatt et al., 1998). The present findings warrant exploring whether examination of deeper, more global motivations underlying specific motives for drinking would provide an effective additional step in prevention and/or treatment of problem drinking among college students. These findings further suggest that autonomy-supportive interventions that are able to bolster stable and non-contingency-based self-esteem might be especially effective in reducing problem drinking among college students. Additional research examining the content of self-attributions made prior to and after consuming alcohol would offer additional insight into the impact of self-determination and contingent self-esteem on decisions to drink. In sum, while the present research offers important contributions to our understanding of college student drinking from a self-determination perspective, numerous avenues remain for further investigation.

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