Drinking to Cope Motivation as a Prospective Predictor of Negative Affect

STEPHEN ARMELI, PH.D.,^a TAMI P. SULLIVAN, PH.D.,^b & HOWARD TENNEN, PH.D.^{c,*}

^a*Department of Psychology, Fairleigh Dickinson University, Teaneck, New Jersey*

^b*Department of Psychiatry, Yale University School of Medicine, New Haven, Connecticut*

^c*Department of Community Medicine and Health Care, University of Connecticut Health Center, Farmington, Connecticut*

ABSTRACT. Objective: Consistent with research indicating that drinking to cope (DTC) motivation might exacerbate negative affective states within or immediately proximal to discrete drinking episodes, we examined whether yearly deviations in more global levels of DTC motivation prospectively predicted depressive and anxious affect over several weeks. **Method:** College students ($N = 521$, 52% women) completed baseline measures of drinking motives, recent depression and anxiety symptoms, recent alcohol use, and alcohol use disorder symptoms on a secure website. Approximately 2 weeks after completing this survey, participants completed the 30-day daily diary portion of the study in which they reported on their current-day affective states. This yearly

assessment burst in which participants completed a baseline survey and a daily diary assessment was repeated for 3 additional years. **Results:** We found that changes in DTC motivation were positively associated with changes in depressive and anxious affect in the subsequent month, after we controlled for changes in concurrent anxiety and depressive symptoms, drinking level, enhancement drinking motivation, and alcohol use disorder symptoms. **Conclusions:** Our findings are consistent with the notion that DTC motivation confers a unique vulnerability for emotion dysregulation, and that drinking for such reasons possibly prolongs or exacerbates negative affective states. (*J. Stud. Alcohol Drugs*, 76, 578–584, 2015)

SOCIAL LEARNING–BASED COPING-DEFICIT models of alcohol misuse posit a feedback loop in which drinking to cope with negative affect, because of its maladaptive nature, results in continued distress and a cycle of continued drinking, eventually leading to dependence and withdrawal symptoms (Abrams & Niaura, 1987). Generally consistent with this notion, research measuring individuals' motivation for drinking has shown that drinking to cope (DTC) motivation is associated with drinking-related problems over and above drinking level (Cooper et al., 1995; Merrill & Read, 2010; Merrill et al., 2014), indicating that the specific reason for drinking, and not just the amount consumed, confers a risk for negative consequences. Indeed, findings from micro-longitudinal studies focusing on the drinking-episode level of analysis indicate that DTC motivation might exacerbate proximal levels of distress (Armeli et al., 2014; Piasecki et al., 2014). In the present study, we further examined DTC motivation as an antecedent to negative affective states by examining whether within-person changes in more characteristic use of this reason for drinking were associated with changes in negative affect in the month after assessment.

Recent studies have begun to systematically test the idea that drinking with the purpose of reducing negative affect

might, paradoxically, sustain or even intensify such affect (e.g., Armeli et al., 2014). This finding could help explain the unique effect of DTC motivation on drinking-related problems that require self-control and discipline, such as missing work/school, neglecting obligations, or engaging in risky sex (Merrill et al., 2014). Drawing on tenets of attention-allocation theory (Steele & Josephs, 1988, 1990) and Baumeister and colleagues' ego-depletion model (e.g., Baumeister et al., 2007; Muraven & Baumeister, 2000), Armeli et al. (2014) posited that exacerbated negative affect as a result of DTC might be attributable to alcohol-induced increased focus on such distress, resulting in continued efforts to regulate such emotion and a drain on the individual's self-control resources. Results from their daily diary study of college students were consistent with these predictions; they found that on days following nighttime drinking episodes characterized by relatively higher levels of DTC motivation, participants reported higher levels of negative affect and fatigue, when the number of drinks consumed was controlled for. Also consistent with these posited mechanisms, results from Piasecki et al.'s (2014) ecological momentary assessment study of community adult drinkers indicated that individuals who endorsed high levels of DTC motivation, compared with individuals low in this motivation, were more likely to report feeling worse after consuming their first drink.

Although findings from these micro-longitudinal studies support the notion that DTC motivation might either sustain or increase negative affect and hinder one's ability to cope with subsequent distress, the observed associations might represent somewhat fleeting and inconsequential effects. Indeed, Piasecki et al.'s (2014) findings were limited to the

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*Correspondence may be sent to Howard Tennen at the Department of Community Medicine and Health Care, University of Connecticut Health Center, 263 Farmington Avenue, Farmington, CT 06030-1410, or via email at: tennen@nso1.uchc.edu.

period immediately after the participants consumed their first drink. Also, although Armeli et al.'s (2014) supplemental analyses did show an association between episode-specific DTC motivation and negative mood 2 days after the drinking episode, the effects were considerably weaker compared with those on the day after drinking. Stronger support for the role of DTC motivation in causing more chronic deficits in the ability to regulate negative affect would come from demonstrating that DTC motivation is prospectively associated with changes in negative affect over longer periods. One possibility is that more pronounced and longer lasting effects on negative affect might be observed from examining variation in more characteristic motivation for DTC and not simply the DTC motivation from a single drinking episode. The notion that the cumulative effect of DTC motivation from multiple episodes might have long-term negative consequences is consistent with Winograd et al.'s (2014) recent findings indicating that individuals who display high levels of emotional instability when drinking report higher levels of drinking-related problems when drinking levels and usual levels of emotional stability are controlled for.

Toward this end, we examined whether college students' reports of usual levels of DTC motivation, over and above current levels of anxiety and depression symptoms and alcohol use, prospectively predicted their daily anxious and depressive affect reported, on average, about a month later. We focused on anxious and depressive affect because both are implicated as core correlates of problematic drinking (Greeley & Oei, 1999). Thus, both would be likely candidates to display chronically high levels as a result of high levels of DTC motivation. In addition, because individuals repeated these two assessment protocols at yearly intervals (for up to 4 years), we were able to examine how relative levels (i.e., deviations from an individual's mean levels) of DTC motivation uniquely predicted affective states, after we controlled for relative levels of alcohol use and anxiety and depression symptoms. Indeed, previous analyses (Armeli et al., 2008) of DTC motivation using the current data showed that approximately half of the variation was within person (i.e., that this reason for drinking varied from year to year); Holahan et al. (2001) found similar results among community adults. Such variation in DTC motivation is consistent with Cooper and colleagues' (1995, 2008) assertion that DTC is a reactive process, and thus DTC motivation should ebb and flow in response to life circumstances.

Also, given previous theory and research linking DTC motivation with physiological and psychological dependence and withdrawal symptoms (e.g., Cooper et al., 1988; Littlefield et al., 2010; Merrill et al., 2014), we wanted to examine whether any observed association between changes in DTC motivation and the subsequent month's negative affect simply reflected relative levels of alcohol use disorder (AUD) symptoms. Thus, we first examined whether DTC motivation was associated with AUD symptoms and then

examined whether the effect of DTC motivation on the subsequent month's affect was reduced when AUD symptoms were taken into account. Last, we controlled for concurrent levels of individuals' motivation to drink to enhance positive emotions. Previous research has linked such motivation to drinking-related problems (e.g., Cooper et al., 2008), and analysis of the current data (Armeli et al., 2010) suggests a role of enhancement motivation in the link between negative affect and drinking level.

Method

Participants

We recruited 575 college students for a 4-year study of daily experiences and health-related behavior through the University of Connecticut Introductory Psychology subject pool who initially reported drinking alcohol at least twice in the past month (measured during prescreening). Analyses are reported for a final sample of 522 students (52% women; 87% White) who had at least 1 year of data. The inclusion of all participants, regardless of the number of data points, is consistent with recommendations for maximizing the accuracy of parameter estimates derived from maximum likelihood-based models (Singer & Willett, 2003). At the start of the study, participants had a mean age of 18.9 years ($SD = 1.1$); most were freshmen (58%), followed by sophomores (33%) and juniors or beyond (9%).

Procedure

Approximately 1 month after the start of the semester, participants completed measures of drinking motives, recent depression and anxiety symptoms, recent alcohol use, and AUD symptoms on a secure website (we refer to this as the *baseline survey*). Approximately 2 weeks after completing the baseline survey, participants commenced the daily diary portion of the study. Each day thereafter for 30 days (i.e., through approximately 6 weeks after baseline), participants accessed a secure website and completed a brief survey between 2:30 P.M. and 7:00 P.M. Relevant to our study, participants were asked about their current-day affective states. Affect assessed in the daily diary corresponds to the 1-month period that commenced 2 weeks after the baseline survey; we refer to this as the *subsequent month's affect*. This yearly assessment burst in which participants completed a baseline survey and a daily diary assessment was repeated for up to 3 additional years (resulting in a maximum of 4 years with baseline and daily diary data). Each year, participants received \$20 for completion of the baseline surveys and up to \$100 (based on verified electronic diary adherence) for daily diary reports. Participants who completed all 30 days were also entered into a lottery drawing for a \$100 bonus.

For the final analyses, we retained data from years in which individuals had a daily survey compliance rate of 15 or more days. Of the 575 people who initially enrolled in the study, 35 did not participate in the daily diary phase or did not meet the minimum daily diary requirement in at least one year. Eighteen additional students were excluded because they had missing data for baseline measures or they failed to have baseline and daily diary data for the same year. This resulted in a final sample of 522 students, who had a mean of 3.1 ($SD = 1.1$) completed yearly assessments (i.e., that included both the baseline assessment of predictors and the subsequent month's daily diary assessment of affect). Of the 1,616 person yearly reports, the majority (91.0%) were completed when the participant was still an undergraduate; 2.8% were completed when the participant was in graduate school, and 6.2% were completed when the participant was not a student.

Measures

Baseline drinking motives. Each year, participants completed the Motivations for Alcohol Use scale (Cooper, 1994); we used the coping and enhancement subscales. Participants were asked to think about all of the times they drank and how often they drank for coping and enhancement reasons. Responses were made using a 5-point scale (1 = *almost never/never* to 5 = *almost always/always*). Internal consistency estimates across the multiple years were high; α 's ranged from .88 to .90 for coping and .90 to .92 for enhancement.

Baseline depression and anxiety symptoms. Each year, participants completed the short form of the Beck Depression Inventory (BDI; Beck & Beck, 1972) and the State-Trait Anxiety Inventory (STAI; Spielberger, 1983). The 13-item short form of the BDI is a widely used measure of depressive symptoms. For each item, participants selected the description that best describes how they felt during the past week; responses were coded from 0 to 3, with higher scores representing greater depression. The STAI is a 20-item measure of general and long-standing anxiety. Participants were asked to respond regarding how they "feel in general" using a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). We used the trait version, rather than the state version, because we believed that it better captured participants' anxiety over the recent weeks (as compared with only at the time of assessment). It should be noted, however, that the state and trait components tend to be very highly correlated (r 's across studies in the .7 to .8 range; McDowell, 2006). Internal consistency estimates across the multiple years were high; α 's ranged from .83 to .86 for the BDI and from .91 to .93 for the STAI.

Baseline drinking level. Each year, participants reported the frequency of drinking occasions over the past 30 days; responses were made using a 7-point scale (0 = 0, 1 = 1–2, 2 = 3–5, 3 = 6–9, 4 = 10–19, 5 = 20–39, 6 = 40 or more).

Participants also reported the number of standard drinks they usually consumed per drinking occasion in the last 30 days; responses were made using a 10-point scale (0 = *no drinks*, 1 = *1 drink*, to 9 = *9 or more drinks*). We multiplied the frequency and quantity values to create an overall drinking composite. Drinking estimates based on quantity/frequency measures such as these have been found to be highly correlated with more sophisticated assessment approaches, such as timeline follow back procedures (Sobell et al., 2003; Collins et al., 2008).

Baseline alcohol use disorder symptoms. Each year, participants completed a five-item screener for AUD symptoms formulated by Chassin et al. (1988). Specifically, they were asked how often in the past year they "experienced blackouts (loss of memory for drinking episodes)?," "consumed alcohol instead of eating a meal?," "consumed alcohol before breakfast?," "consumed alcohol before a social occasion to be sure you'd get enough?," and "consumed alcohol faster than others you were drinking with?" Responses were made on a 5-point scale (1 = *never*, 5 = *very frequently*) and were averaged together to form a composite. Evidence for the validity of this measure was demonstrated by positive associations with measures of alcohol-related consequences and drinking level (Chassin et al., 1988). Internal consistency estimates across the multiple years were adequate; α 's ranged from .72 to .78.

Daily diary assessment of negative affect. In the daily survey, participants reported on their current affect states using a 5-point scale (1 = *not at all* to 5 = *extremely*). Daily depressive affect was assessed with the items "sad" and "dejected," and daily anxious affect was assessed with the items "jittery" and "nervous"; we computed composite scores by averaging together the appropriate items each day. We then computed month-level aggregate affect scores for each year by calculating the mean affect score for the available days. We estimated the reliabilities of the aggregate scores using procedures outlined by Raudenbush and Bryk (2002). Reliabilities for both aggregate depressive and anxious affect ranged from .93 to .95 over the multiple years.

Results

Descriptive statistics

There were no differences between the final sample and the excluded participants in terms of age, class year, and ethnicity. Similarly, the two groups did not differ on the following study variables (described below) in Year 1: DTC motivation, drinking to enhance (DTE) motivation, depression symptoms and anxiety symptoms, total drinking, and mean daily diary anxious and depressive affect. The two groups did differ on sex, $\chi^2(1) = 14.1, p < .01$, with excluded participants having a higher percentage of men (75%), and on Year 1 AUD symptoms, $t(563) = 2.87, p = .004$, with ex-

TABLE 1. Descriptive statistics and correlations

Variable	<i>M</i>	<i>SD</i>	Correlations							
			1.	2.	3.	4.	5.	6.	7.	8.
1. Drinking to cope	2.03	0.79	—	.50*	.16*	.20*	.22*	.27*	.11*	.10*
2. Drinking to enhance	3.11	0.95	.56*	—	.06*	.03	.25*	.28*	.04	.05
3. Depression symptoms (BDI)	0.31	0.26	.35*	.06	—	.41*	.06*	.07*	.11*	.20*
4. Anxiety symptoms (STAI)	2.04	0.38	.39*	.03	.69*	—	.04	.07*	.17*	.20*
5. Drinking level	12.91	9.47	.27*	.52*	-.01	-.07	—	.30*	-.03	-.04
6. AUD symptoms	1.92	0.59	.45*	.55*	.12*	.08	.72*	—	.06	.01
7. Daily anxiety	1.50	0.45	.28*	.08	.32*	.35*	.03	.10*	—	.54*
8. Daily depression	1.38	0.40	.34*	.08	.39*	.42*	.07	.15*	.75*	—

Notes: Means and *SD*s correspond to average levels across all years. Correlations above the diagonal are within-person associations (i.e., associations between deviations from mean levels); correlations below the diagonal are between-person associations (i.e., associations between average levels across all years). BDI = Beck Depression Inventory; STAI = State-Trait Anxiety Inventory; AUD = alcohol use disorder.

* $p < .05$.

cluded participants ($M = 2.20$, $SD = 0.66$) reporting higher levels compared with the final sample ($M = 1.91$, $SD = 0.66$).

Analyses examined 1,616 person-year reports nested within 522 college students. Descriptive statistics and correlations for the key study variables are shown in Table 1. Within-person correlations (above the diagonal) reflect strength of association between yearly deviations from mean levels, and between-person correlations (below the diagonal) reflect strength of associations between average levels (i.e., across all years). Significance tests for within-person associations (shown above the diagonal) were calculated using multilevel modeling procedures described below. DTC motivation was positively associated with all of the other variables at both levels of analysis. DTE motivation was also related to drinking level and AUD symptoms at both levels of analysis but was not associated with anxiety and depression symptoms or mean daily affect at either level of analysis. AUD symptoms were associated with anxiety and depression symptoms at the within-person level of analysis but only with depression symptoms at the between-person level of analysis. AUD symptoms were related to daily anxiety or depressive affect at the between-person level of analysis but to neither at the within-person level of analysis.

Multilevel regression results

Given the repeated-measures nature of the data, we used multilevel regressions (Raudenbush & Bryk, 2002) to test the central hypotheses. Specifically, we estimated two-level models with random intercepts. Quantitative predictors were person-mean centered at Level 1 (i.e., yearly assessments) and grand-mean centered at Level 2; this allowed us to disentangle the within-person and between-person associations of interest. All models controlled for sex, age, and school status (undergraduate vs. graduate student or other).

We first examined a model predicting AUD symptoms (Table 2). Mean levels of DTC and DTE motivation and drinking level were uniquely related to AUD symptoms in the positive direction. Similarly, deviations from mean levels

of DTC and DTE motivation and drinking level were also uniquely related to AUD symptoms in the positive direction. Stated in other words, individuals reported higher AUD symptoms in years when they reported relatively higher levels of DTC and DTE motivation and alcohol use. Neither mean levels nor deviations from mean levels in depression and anxiety symptoms were uniquely related to AUD symptoms.

Next, we examined models predicting the daily diary assessments of depressive and anxious affect. We examined depressive and anxious affect in separate models, controlling for their respective symptom levels (depression symptoms or anxiety symptoms). The results are shown in Table 3. Mean drinking levels were unrelated to aggregate daily affect, but deviations from mean levels of drinking were negatively related to both affective states. Mean levels of DTE motivation were negatively related to depression but unrelated to anxiety; deviations from mean levels of DTE motivation were not related to either outcome. Of central interest, both overall mean levels and relative yearly levels (i.e., deviations from mean levels) of DTC motivation were uniquely related (in the

TABLE 2. Multilevel regressions predicting AUD symptoms

Variable	<i>b</i>	<i>p</i>	[95% CI]
Sex ^a	.031	.068	[-.002, .064]
Age	.024	.006	[.007, .041]
School status ^b	-.083	.044	[-.165, -.002]
Mean drinking level	.039	<.001	[.035, .044]
Mean baseline anxiety (STAI)	.022	.724	[-.100, .144]
Mean baseline depression (BDI)	.091	.310	[-.085, .268]
Mean DTC	.136	<.001	[.082, .189]
Mean DTE	.092	<.001	[.045, .138]
Deviations from mean drinking level	.015	<.001	[.011, .018]
Deviations from mean DTC	.089	<.001	[.045, .132]
Deviations from mean DTE	.091	<.001	[.053, .129]
Deviations from mean BDI	.050	.310	[-.047, .147]
Deviations from mean STAI	.021	.695	[-.082, .123]

Notes: AUD = alcohol use disorder; *b* = unstandardized regression coefficient; CI = confidence interval; STAI = State-Trait Anxiety Inventory; BDI = Beck Depression Inventory; DTC = drinking to cope; DTE = drinking to enhance. ^aSex: -1 = male, 1 = female; ^bschool status: 0 = undergraduate years, 1 = graduate school or other.

TABLE 3. Multilevel regression results predicting daily diary affect outcomes

Variable	Daily anxiety			Daily depression		
	<i>b</i>	<i>p</i>	[95% CI]	<i>b</i>	<i>p</i>	[95% CI]
Sex ^a	-.010	.595	[-.047, .027]	-.020	.215	[-.051, .012]
Age	.005	.512	[-.009, .019]	-.011	.104	[-.024, .002]
School status ^b	-.092	.006	[-.158, -.026]	-.048	.128	[-.109, .014]
Mean drinking level	.000	.855	[-.005, .004]	.001	.646	[-.003, .005]
Mean baseline affect (STAI or BDI)	.319	<.001	[.216, .422]	.474	<.001	[.348, .600]
Mean DTC	.118	<.001	[.059, .177]	.146	<.001	[.097, .195]
Mean DTE	-.014	.598	[-.065, .038]	-.044	.046	[-.088, -.001]
Deviations from mean drinking level	-.003	.041	[-.006, .000]	-.004	.008	[-.006, -.001]
Deviations from mean DTC	.045	.010	[.011, .079]	.032	.047	[.001, .064]
Deviations from mean DTE	.002	.897	[-.028, .032]	.009	.512	[-.019, .037]
Deviations from mean STAI/BDI	.165	<.001	[.095, .236]	.214	<.001	[.144, .284]

Notes: *b* = unstandardized regression coefficient; CI = confidence interval; STAI = State-Trait Anxiety Inventory; BDI = Beck Depression Inventory; DTC = drinking to cope; DTE = drinking to enhance. ^aSex: -1 = male, 1 = female; ^bschool status: 0 = undergraduate years, 1 = graduate school or other.

positive direction) to both measures of daily affect. Similar results were found for anxiety and depression symptoms.

Last, we included AUD symptoms in the models shown in Table 3; this allowed us to evaluate whether AUD symptoms altered the findings for DTC motivation. Mean levels of AUD symptoms did not uniquely predict daily diary assessment of anxiety ($b = .028$, 95% CI [-.066, .122], $p = .557$) or depression ($b = .041$, 95% CI [-.039, .121], $p = .310$). Similarly, deviations from mean levels of AUD did not uniquely predict daily diary assessment of anxiety ($b = .027$, $p = .264$, 95% CI [-.020, .074]) or depression ($b = -.001$, 95% CI [-.046, .043], $p = .953$). The inclusion of these predictors did not alter any of the observed effects for DTC motivation.

Discussion

Our core finding was that, when individuals reported relatively higher levels of DTC motivation, they also were more likely to report higher levels of negative affect in the subsequent month after we controlled for concurrent levels of anxiety and depression symptoms and drinking level. This finding is consistent with the notion that DTC motivation confers a unique vulnerability related to regulating negative emotions and that it might function as both an outcome of and an antecedent to distress.

Our design allowed us to examine how within-person variation in characteristic use of alcohol as a method for coping with negative affect was prospectively associated with negative affect in the following month. These results extend findings from micro-longitudinal studies showing short-term effects of DTC motivation on distress (i.e., during the drinking episode or the day after the drinking episode). Our findings are consistent with the notion that the momentary and daily microprocesses captured in recent studies might accumulate across multiple drinking episodes. Specifically, exacerbated negative affect from repeated instances of DTC could result in a more chronic state of self-control resource

depletion. Reduced self-control resources could, in turn, impede effective coping, further perpetuating negative affect.

Although our results are generally consistent with our posited mechanisms, our findings might also reflect processes discussed in earlier frameworks (Abrams & Niaura, 1987): namely, that spikes in DTC motivation might reflect greater avoidance of problems in general (i.e., disengaging and avoiding via a variety of strategies besides drinking), which in turn aggravates such problems, resulting in increased negative affect. We would argue that these mechanisms are probably closely intertwined, with DTC motivation's deleterious effect on more adaptive coping making avoidance and disengagement strategies more likely. Future studies tracking the onset, progression, and resolution of discrete problems are needed to evaluate how DTC motivation and other forms of avoidance coping co-occur and are related to negative affect both directly and indirectly via their effect on the stressfulness of the problem at hand.

Although we focused on the notion that relative increases in DTC motivation precede increases in negative affect, consistent with theory (Abrams & Niaura, 1987) and past research examining negative affect as an antecedent to DTC motivation (Arbeau et al., 2011; Cooper et al., 1995), we believe that this process is bidirectional. One question that arises from this assumption concerns the duration of the feedback loop. We posit that, in many cases, this process starts to wane upon resolution of the underlying problem—which should result in decreasing levels of negative affect, thus weakening the feedback process. The interruption of the feedback loop might be more abrupt when problem resolution occurs regardless of the individual's behavior (e.g., the end of a problematic academic semester or an illness of family/friends that runs its course) compared with situations in which individuals have greater control (e.g., interpersonal conflict).

We also found that the effects of DTC motivation on subsequent levels of negative affect were distinct from changes

in drinking to enhance positive emotions, thus further supporting the validity of these two distinct strategies for regulating emotions. In addition, the effects of DTC motivation were not simply a result of relative levels of AUD symptoms. This is not to say that DTC is unrelated to the emergence of AUD symptoms; to the contrary, we found significant associations between changes in DTC motivation and AUD symptoms. What our findings indicate is that relative levels of the former, but not the latter, seem to confer a greater vulnerability for emotion dysregulation, at least in the form of increased negative affect in the following month. Our findings do not preclude the possibility that changes in more macro-level personality factors associated with regulating negative affect more directly influence (or are influenced by) AUD symptoms. For example, Littlefield et al. (2010) found that long-term changes (between ages 18 and 35) in DTC motivation and AUD symptoms were both related to changes in the personality dimension of neuroticism (i.e., low emotional stability). Future research is needed to explicate how the processes we identified relate to longer-term developmental patterns linking emotional stability, DTC motivation, and AUD symptoms.

Last, although we did demonstrate more distal prediction of daily negative affective states compared with previous micro-longitudinal studies, the size of our observed associations was indicative of small changes in negative affect for a unit change in DTC motivation. Although the population effects of interest might actually be small, we believe that our findings possibly underestimate the deleterious effects of DTC motivation, at least certain forms of it. One possibility is that not all types of DTC (or at least what respondents are recalling as DTC) are problematic.

For example, Piasecki et al. (2014) also found that high levels of DTC motivation were associated with reports of feelings relieved after the first drink. Although this might simply reflect successful (and temporary) short-term avoidance, it might also reflect situations in which drinking was used to unwind or relax after successful coping (which might be cognitively labeled by respondents as DTC). Our study was unable to tease out conceivably less problematic types of DTC motives (e.g., drinking after engagement in the stress and coping process) from more problematic forms (e.g., drinking as a primary coping strategy), which to some degree might have attenuated the size of our effects. Future studies should also identify stable person-level factors (e.g., personality traits, genes) and situational-contextual factors that might moderate the effect of DTC motivation on subsequent negative affect.

For example, Armeli et al. (2014) found that the effect of episode-specific reports of DTC motivation on next-day negative mood was stronger when individuals engaged in less social drinking (i.e., drinking alone or not interacting with others). We were unable to evaluate the social milieu in which drinking took place in the present study. For these

reasons, we are hesitant to discount the importance of our findings. Indeed, we believe that, given the lack of research examining the mechanisms linking the unique effect of DTC motivation on alcohol-related problems, our findings represent important initial steps in understanding these processes.

Several additional limitations of the current study should be noted. First, our assessment of AUD was brief, and thus might have attenuated its associations with other variables; future studies should use more accepted diagnostic procedures. Second, we did not use identical items to assess anxiety and depression in the baseline and daily surveys. Future studies should rule out alternative interpretations by using similar items across both waves. Third, our sample predominantly comprised Whites attending college (or who had recently attended college); thus, we cannot generalize to other ethnicities and noncollege populations. These limitations notwithstanding, our findings further support the notion that the unique relationship of DTC motivation with negative consequences that occur while drinking (e.g., impulsive behavior) and more distal from the drinking episode (e.g., reduced self-care, academic and occupational problems, diminished self-perception) might be, in part, associated with its deleterious effects on individuals' ability to manage negative emotions.

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