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A Retrospective Examination of Changes in Drinking Motives During the Early COVID-19 Pandemic

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Abstract

Objective: The COVID-19 pandemic has led to substantial changes in college student alcohol use. Changes in drinking motives may explain some of these changes in drinking patterns. The purpose of the present study is to explore how drinking motives and alcohol use have changed amongst college students considering the timeframes before and after the onset of COVID-19 pandemic (i.e., March 2020) in the United States. We hypothesized that there would be significant changes in drinking motives after March 2020, which would be significantly related to changes in alcohol use.

Methods: Participants for the current study were undergraduate students reporting lifetime alcohol use (n = 198, M_{age} = 21.3, 66.7% female, 86.4% White) recruited through online advertisements in classes to complete an online survey in April 2020. Participants were asked to report on their drinking motives and alcohol use considering the timeframes before and after the onset of closures and stay-at-home orders during the COVID-19 pandemic (i.e., before and since March 2020).

Results: Paired samples t-tests revealed that endorsement of social (t[171] = 12.79, p < .001, d = 1.16) and conformity motives significantly decreased (t[170] = 4.46, p < .001, d = 0.31), while endorsement of coping motives significantly increased (t[172] = -2.70, p = .008, d = .15) after the onset of COVID-19. Linear regression analyses, controlling for

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drinking motives before March 2020, revealed that changes in enhancement (β = -.47, p < .001) and coping motives (β = -.22, p = .04) were significantly associated with changes in alcohol use quantity.

Conclusions: Findings of the present study support the need for interventions to target coping and social drinking to reduce risk for alcohol use.

Keywords

drinking motives, alcohol consumption, COVID-19, college students

Introduction

College student alcohol use is a significant concern given its high prevalence rates and numerous associated negative consequences. For example, alcohol use is associated with missing classes, poor academic performance, physical injuries, unwanted sexual contact, memory impairment, cognitive deficits,[1-3] and is responsible for more than 1500 college student deaths annually.[4] As college campuses closed and moved to distance learning due to COVID-19, some research suggests that both quantity and frequency of alcohol consumption increased over time.[5] However, other work has found that changes in alcohol use were not consistent across college students. For instance, those who moved home to live with parents because of school closures did not increase their alcohol consumption, but rather saw a decrease.[6] However, reasons for alcohol use (i.e., drinking motives) have yet to be explored as they relate to changes in college students' alcohol use due to COVID-19. It may be that shifts in drinking motives may help to shed light on the reasons for differential findings regarding changes in alcohol consumption.

Cooper[7] proposed a model of four categories of drinking motives, including: enhancement (i.e., to create, maintain, or increase positive affect), coping (i.e., to assuage negative emotions), social (i.e., to make social situations more enjoyable), and conformity (i.e., to fit in with others) motives. Each of Cooper's categories of drinking motives has been found to both proximally and distally predict the quantity/frequency of alcohol consumed, as well as the risk for experiencing negative alcohol-related consequences.[7-12] Overall, coping motives have been found to be associated with alcohol-related consequences,[11] social motives have been found to be related to a higher quantity of consumption of alcohol,[13] and enhancement motives have been found to associated with greater risk for heavy drinking.[14,15] Some studies have found that conformity motives are associated with alcohol-related problems and more alcohol use,[16] while other work has not found a relation between conformity motives and alcohol use.[10,17] Given that drinking motives tend to be malleable and change based on context, they represent useful targets for intervention.[18-20] For example, if students no longer have the option to drink socially at parties, social drinking motives may be

reduced; however, this may be associated with increased drinking to cope and solitary drinking.[21]

While there is limited published literature on COVID-19 and drinking motives specifically among college students, there is reason to believe that drinking motives are impacted by significant and stressful life changes. One study examining changes in drinking motives in the context of the COVID-19 pandemic reported that enhancement and social drinking prior to the pandemic predicted lower alcohol consumption during the pandemic, while coping drinking prior to the pandemic predicted increased alcohol consumption during the pandemic.[22] A significant limitation of this work, however, was the lack of attention paid to how drinking motives may have shifted as a result of the pandemic, and how those shifts might be uniquely related to shifts in alcohol consumption. Notably, due to the COVID-19 pandemic, business and schools have shut down and unemployment rates have risen, thereby increasing social isolation, mental distress, and daily life stress.[23,24] Some work has suggested that drinking to cope may increase as a result of depression, social isolation, and lack of social connectedness.[21,25,26] Further, increases in boredom or stressful life events may relate to changes in drinking motives among young adults.[27] It is possible that students are relying on alcohol use to elicit positive affect in response to such boredom (i.e., increased enhancement motives); however this has not been explored. Given the uncertainty characterizing the COVID-19 pandemic, it may be that intolerance of uncertainty (i.e., the tendency to interpret uncertainty as negative) among college students is related to more coping and conformity, but not enhancement or social drinking motives.[28] Therefore, it is likely that due to changes in stress, boredom, and alcohol use since the COVID-19 pandemic, drinking motives may also have changed and be differentially related to alcohol use.

The purpose of the present study is to explore how drinking motives and alcohol use have changed amongst college students following the onset of the COVID-19 pandemic in the United States (U.S.). We asked students to report on their drinking motives and alcohol use considering the timeframes before and shortly after the onset of closures and stay-at-home-orders during the COVID-19 pandemic (i.e., March 2020). We also examined the relations between changes in drinking motives and changes in alcohol use before and after the pandemic. We hypothesized that there would be significant changes in drinking motives after the onset of the COVID-19 pandemic, and that changes in drinking motives would be significantly related to changes in alcohol use.

Materials and Methods

Participants and Procedures

Participants were undergraduate students at a northeastern public university recruited through online classroom advertisements in April 2020. Prospective participants utilized a link within the advertisement to access more information about the study,

provide informed consent, and complete an approximately 30-minute online survey via REDCap. No identifying information was collected during the course of this study, and participants did not receive any compensation for completing the survey. All study procedures were reviewed and approved by the Institutional Review Board. A total of 383 students completed the online survey, of which 198 students who reported having drank alcohol in their lifetime were retained for the present analyses. See Table 1 for sample demographic information.

Measures

Drinking Motives. Drinking motives were measured with one question representing each category from Cooper's[7] Drinking Motives Questionnaire – Revised (i.e., Enhancement: "Because it gives you a pleasant feeling"; Social: "Because it improved parties and celebrations"; Coping: "To forget about your problems"; Conformity: "So you won't feel left out"). Of note, specific items were selected rather than using the full scale to reduce participant burden (i.e., because they were going to be asked to answer each question twice and were part of a larger battery of questionnaires). These specific items were chosen because they were among the highest-loading items in a validation study of this measure,[7] and because we believed they have strong face validity regarding the motives they are meant to reflect. Participants responded based on how often they drank for each reason both before March 2020 (i.e., prior to the COVID-19 pandemic in the U.S.) and since March 2020 (i.e., since the COVID-19 pandemic in the U.S.) on a five-point scale from 1 (*almost never/never*) to 5 (*almost always/always*).

Alcohol Use

Frequency of alcohol use was measured using the first item from the Alcohol Use Disorder Identification Test, [AUDIT[29]] which asks participants to report how often they have a drink containing alcohol both before and since March 2020 on a five-point scale from 0 (*never*) to 4 (*4 or more times a week*). Quantity of alcohol use was measured using the second item from the AUDIT, which asks participants to report how many drinks they consume on a typical day that they are drinking both before and since March 2020 on a five-point scale from 0 (*1 or 2*) to 4 (*10 or more*).

Data Analytic Strategy

As recommended by Tabachnick and Fidell[30] all variables of interest were assessed for adherence to assumptions of normality. Next, a series of paired samples *t*-tests with Cohen's *d* effect size estimates were used to examine whether there were significant differences in endorsement of each drinking motive, and in frequency and quantity of alcohol use before versus after March 2020. A change score was computed by subtracting scores for each drinking motive and for quantity of alcohol consumption since March 2020 from scores for each drinking motive and for quantity of alcohol

Table 1. Sample demographic information.

	M (*SD*)	Range	*n* (%)
Age	21.26 (3.98)	18–68	
Gender identity			
Female			132 (67.0%)
Male			61 (31.0%)
Transgender female to male			2 (1.0%)
Genderqueer/Non-binary			2 (1.0%)
Ethnicity			
Not Hispanic or Latinx			183 (92.9%)
Hispanic or Latinx			14 (7.1%)
Race			
American Indian/Alaska Native			2 (1.0%)
Asian			4 (2.1%)
Native Hawaiian or Other Pacific Islander			2 (1.0%)
Black or African American			7 (3.6%)
White			171 (87.7%)
Bi-/Multiracial			9 (4.5%)
Year in School			
1st Year/Freshman			26 (13.2%)
2nd Year/Sophomore			20 (10.2%)
3rd Year/Junior			69 (35.0%)
4th Year/Senior			69 (35.0%)
Other			13 (6.6%)
Living Situation			
On-campus			27 (13.7%)
Off-campus			170 (86.3%)
With parents/family			85 (43.1%)
With a roommate(s)			97 (49.2%)
Alone			9 (4.6%)
With a significant other			6 (3.0%)
How has the COVID-19 pandemic changed your drinking?			
Drinking a lot less			45 (25.0%)
Drinking somewhat less			30 (16.7%)
Drinking about the same			53 (29.4%)
Drink somewhat more			36 (20.0%)
Drinking a lot more			16 (8.9%)

Note. Percentages reflect valid percentages to account for missing data.

Table 2. Descriptive statistics regarding drinking motives over time.

	Spring 2017 (n = 261)		Prior to March 2020 (n = 198)		Since March 2020 (n = 198)	
	M (*SD*)	Range	*M* (*SD*)	Range	*M* (*SD*)	Range
Enhancement Motives	2.95 (1.38)	1–5	3.59 (1.16)	1–5	3.47 (1.29)	1–5
Social Motives	3.13 (1.36)	1–5	3.81 (1.11)	1–5	2.28 (1.45)	1–5
Coping Motives	1.84 (1.19)	1–5	1.94 (1.16)	1–5	2.13 (1.35)	1–5
Conformity Motives	1.62 (1.07)	1–5	1.90 (1.13)	1–5	1.58 (0.97)	1–5

Note. Data collected in Spring 2017 reflects students reporting any amount of past-month alcohol use, whereas data from the present study represents students reporting any amount of lifetime alcohol use. Drinking motives are coded on a 5-point scale (1 = *Almost never*/Never, 2 = *Some of the* time, 3 = *Half of the* time, 4 = *Most of the* time, 5 = *Almost always*/Always).

consumption before March 2020. Then, Pearson product-moment correlations were calculated between study variables of interest to explore their bivariate correlations. Finally, a series of four linear regression models were estimated to assess how change in each drinking motive affected change in alcohol use, controlling for baseline (i.e., before March 2020) endorsement of each motive and quantity of alcohol use. A fifth linear regression model was estimated to examine the unique influence of changes in each drinking motive on change in alcohol use when the four motives were included in one model.

Results

Scores for primary variables of interest were approximately normally distributed based on guidelines of absolute values of skewness > 2 and kurtosis > 4 indicating non-normality.[31,32] For descriptive purposes, we examined means on each of the drinking motives questions prior to and shortly after the onset of the pandemic in the present study, as well means for these same questions in a separate sample of college students recruited from the same university in Spring 2017 (see Schick et al.[33,34] for further details regarding this study). Means for each item at each time point are presented in Table 2.

Paired Sample t-Tests

Results of paired sample *t*-tests are summarized in Table 3; means and standard deviations for alcohol use and each category of drinking motive are graphically depicted in Figure 1. Endorsement of social motives ($t[171] = 12.79$, $p < .001$, $d = 1.16$) and conformity motives ($t[170] = 4.46$, $p < .001$, $d = 0.31$) were significantly lower when respondents were prompted to consider since March 2020 than when they were prompted to consider the time before March 2020. Endorsement of coping motives ($t([72] = -2.70$, $p = .008$, $d = .15$) were significantly higher when respondents were

Table 3. Paired sample t-tests examining changes in drinking motives and alcohol use.

		M	*SD*	Test Statistic
Enhancement Motives	Prior to March 2020	3.58	1.15	t (172) = 1.73, p = .09, d = .09
	Since March 2020	3.47	1.29	
Social Motives	Prior to March 2020	3.79	1.12	t (171) = 12.79, p < .001, d = 1.16
	Since March 2020	2.28	1.45	
Coping Motives	Prior to March 2020	1.94	1.16	t (172) = -2.70, p = .008, d = .15
	Since March 2020	2.13	1.35	
Conformity Motives	Prior to March 2020	1.91	1.14	t (170) = 4.46, p < .001, d = 0.31
	Since March 2020	1.58	0.97	
Frequency of Alcohol Use	Prior to March 2020	2.26	.88	t (179) = 0.80, p = .94, d = 0.00
	Since March 2020	2.26	1.19	
Quantity of Alcohol Use	Prior to March 2020	.86	.91	t (177) = -1.24, p = .22, d = 0.11
	Since March 2020	.99	1.49	

Note. Drinking motives coded on a 5-point scale (1 = *Almost never*/Never, 2 = *Some of the* time, 3 = *Half of the* time, 4 = *Most of the* time, 5 = *Almost always*/Always); Frequency of alcohol use coded on a 5-point scale (0 = *never*, 1 = *monthly or less*, 2 = *2-4 times a week*, 3 = *2-3 times a week*, 4 = *4 or more times a week*); Quantity of alcohol use coded on a 5-point scale (0 = *1 or 2*, 1 = *3 or 4*, 2 = *5 or 6*, 3 = *7, 8, or 9*, 4 = *10 or more*).

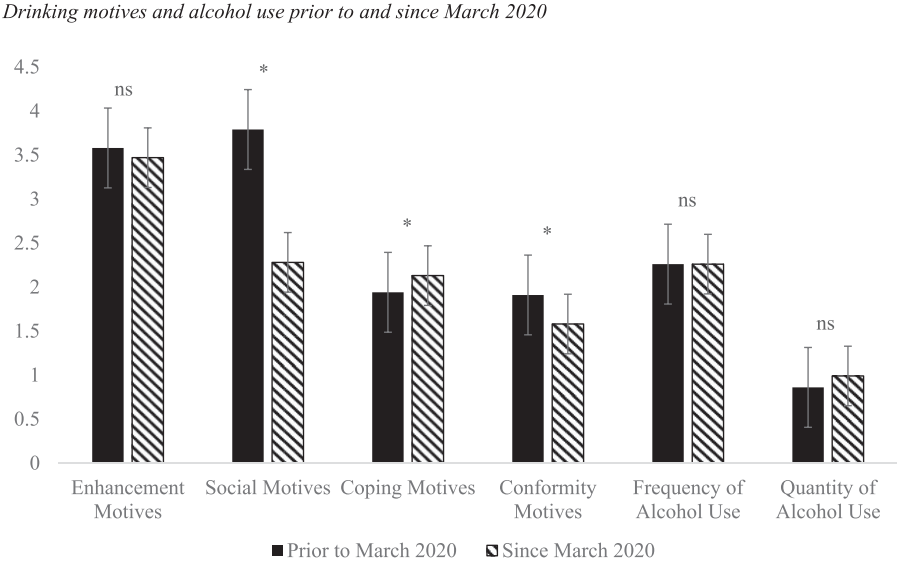

Figure 1. Drinking motives and alcohol use prior to and since March 2020.
Note. * indicates significant difference at level p < .05, ns = nonsignificant.

Table 4. Bivariate correlations and descriptive statistics.

	1	2	3	4	5	*M* (*SD*)	Range
1. Δ Enhancement Motives	-					-0.12 (0.88)	-4–3
2. Δ Social Motives	.14	-				-1.51 (1.55)	-4–0
3. Δ Coping Motives	.09	-.08	-			0.20 (0.95)	-3–4
4. Δ Conformity Motives	.11	.34**	.09	-		-0.32 (0.94)	-4–2
5. Δ Alcohol Use Quantity	-.31**	.07	-.14	-.05	-	0.13 (1.46)	-3–5

Note. Δ = change in; ranges reflect observed (vs. possible) scores; *p < .01, **p < .001.

prompted to consider since March 2020 than when they were prompted to consider the time before March 2020. There were no significant differences with respect to enhancement motives, nor with respect to frequency or quantity of alcohol use.

Bivariate Correlations

Bivariate correlations are summarized in Table 4. Endorsement of enhancement motives since March 2020 and change in enhancement motives were significantly negatively associated with changes in alcohol use quantity since March 2020. Endorsement of any category of drinking motives prior to March 2020 was not significantly related to change in alcohol use since March 2020.

Regression Analyses

Linear regression analyses are summarized in Table 5. Change in enhancement motives (β = -.47, p < .001) and coping motives (β = -.22, p = .04) were significantly associated with change in alcohol use quantity when controlling for endorsement of each motive prior to March 2020 and alcohol use quantity prior to March 2020. With all motives entered together into one model, only change in enhancement motives (β = -.49, p < .001) remained significantly associated with change in alcohol use quantity.

Discussion

The purpose of this study was to examine how drinking motives and alcohol use changed amongst U.S. college students during the early COVID-19 pandemic. Such studies are of great importance given that the increased social isolation and mental distress[23,24] may increase risk for engagement in health-risk behaviors,[35] like alcohol use. First, we found that students reported significantly higher levels of coping motives after the onset of the COVID-19 pandemic than before the COVID-19 pandemic, consistent with prior work finding stress and social isolation to be risk factors for drinking to cope.[25] Further, social distancing guidelines and closures may have left many individuals without access to more adaptive coping resources (e.g., social

Table 5. Linear regression analyses examining the effect of change in drinking motives on change in alcohol use quantity.

	Unstandardized Coefficients		Standardized Coefficients			
	b	SE	β	t	p	95% CI
Model 1: Enhancement Motives						
Intercept						
Δ Enhancement Motives	-.47	.11	-.30	-4.23	<.001	[-.69, -.25]
Enhancement Motives Prior to March 2020	-.08	.09	-.06	-0.88	.38	[-.25, .10]
Alcohol Use Quantity Prior to March 2020	-.42	.11	-.28	-3.92	<.001	[-.63, -.21]
Model 2: Social Motives						
Intercept						
Δ Social Motives	.03	.07	.03	0.40	.69	[-.10, .16]
Social Motives Prior to March 2020	.01	.09	.01	0.13	.90	[-.17, .19]
Alcohol Use Quantity Prior to March 2020	-.47	.11	-.32	-4.17	<.001	[-.69, -.25]
Model 3: Coping Motives						
Intercept						
Δ Coping Motives	-.22	.11	-.15	-2.11	.04	[-.43, -.01]
Coping Motives Prior to March 2020	.04	.09	.03	0.40	.69	[-.14, .21]
Alcohol Use Quantity Prior to March 2020	-.49	.11	-.33	-4.48	<.001	[-.71, -.28]
Model 4: Conformity Motives						
Intercept						
Δ Conformity Motives	-.07	.11	-.05	-0.63	.53	[-.28, .14]
Conformity Motives Prior to March 2020	.01	.09	.01	0.12	.91	[-.17, .19]
Alcohol Use Quantity Prior to March 2020	-.48	.11	-.32	-4.24	<.001	[-.70, -.26]
Model 5: All Motives						
Intercept						

(continued)

Table 5. (continued)

	Unstandardized Coefficients		Standardized Coefficients			
	b	SE	β	t	p	95% CI
Δ Enhancement Motives	-.49	.11	-.31	-4.33	<.001	[-.71, -.27]
Δ Social Motives	.14	.07	.16	1.89	.06	[-.01, .28]
Δ Coping Motives	-.18	.11	-.12	-1.60	.11	[-.39, .04]
Δ Conformity Motives	-.01	.14	-.01	-0.07	.94	[-.28, .26]
Enhancement Motives Prior to March 2020	-.15	.10	-.12	-1.53	.13	[-.34, .04]
Social Motives Prior to March 2020	.30	.11	.24	2.79	.006	[.09, .51]
Coping Motives Prior to March 2020	.11	.10	.09	1.14	.26	[-.08, .29]
Conformity Motives Prior to March 2020	-.02	.11	-.01	-0.14	.89	[-.24, .21]
Alcohol Use Quantity Prior to March 2020	-.49	.11	-.33	-4.46	<.001	[-.70, -.27]

Note. Δ = change in; Bolded typeface indicates significance at the level $p < .05$.

support, recreation) that they typically would have relied on. Indeed, previous research has found that availability of alternative substance-free activities is associated with decreased likelihood of alcohol use.[36,37] We found that changes in coping motives were significantly associated with changes in alcohol consumption such that increased coping motives since March 2020 were related to increased alcohol consumption since March 2020. These findings are further consistent with work suggesting that greater social disconnection is associated with greater alcohol consumption, especially in the context of coping motives for drinking,[14,26,38] and offer important targets for intervention among those reporting higher alcohol use during the pandemic.

Further, we found that endorsement of social motives greatly decreased over time. In fact, endorsement of social motives represented the most significant change (using standard conventions, the magnitude of the change represents a very large effect size; $d = 1.16$). This is likely related to closures and physical distancing measures in effect, limiting the opportunity for college students to drink alcohol socially. College students typically drink for social reasons[15,39] and in social contexts.[21,40] Yet, changes in social motives were not found to be significantly related to changes in alcohol consumption. Bollen & Pabst[22] found that social drinking prior to the COVID-19 pandemic was associated with decreased alcohol consumption during the pandemic, but our results suggest that those changes in consumption may not be related to the observed changes in social drinking motives.

Next, we found that conformity drinking motives significantly decreased over time, which is also likely related to changing contexts. Conformity motives are most likely to be endorsed with respect to social drinking situations wherein students may feel a pressure to fit in with their peers who are drinking.[41,42] Thus, it is unsurprising that endorsement of conformity motives would have decreased in the context of the COVID-19 pandemic when social drinking contexts are likely more limited. While enhancement motives were not found to significantly change over time, when changes in all drinking motives were entered into one model, changes in enhancement motives emerged as the only significant predictor of changes in quantity of alcohol use consumed. It may be that students drink to enhance or elicit positive affect in both social and solitary drinking contexts, whereas social and conformity motives [typically associated with social drinking contexts;[21]] require a social context to occur.

In contrast to prior work, participants reported no overall changes in their alcohol consumption after the onset of the pandemic. This may be a function of our sample characteristics. For instance, previous work reporting changes in alcohol consumption used a sample of older students (e.g., mean age of 25), whereas the mean age in our sample was 21. It may be that our relatively younger sample was more likely to have gone to their parents' homes upon university closures, and that parent monitoring has decreased their access to alcohol use. Previous research has found that parent permissiveness with respect to alcohol consumption is positively associated with college student alcohol use.[43,44] Indeed, the present sample had a greater proportion of students living with their parents and/or families compared to data collected from the same university in Spring 2017, at which time only 17.1% of students reported living with

their parents/family (compared to 43.1% in the present sample). Differences between our findings and findings of previous studies may also be an artifact of when our data was collected. For instance, Lechner & Laurene[5] found evidence for increases in alcohol use following the onset of the COVID-19 pandemic, but collected their data during the university's spring break. On the other hand, our data were collected in April 2020, after the university had been fully remote for nearly a month and closer to the end of the semester (when students may be drinking less due to increased workload demands).[45]

The present study has several implications, some of which may extend beyond the pandemic. A major component of interventions focused on reducing risky drinking among college students focuses on the provision of normative feedback regarding peer alcohol use.[46,47] However, our results suggest that, given that college students may be drinking in response to heightened stress and social isolation, treatments focusing on coping skills may be more appropriate. For instance, Cognitive Behavioral Therapy (CBT) focuses on assisting individuals with developing cognitive and behavioral strategies for coping with undesirable cognitions and emotions,[48,49] such as those that coping drinking motives may currently be targeting. Alternatively, Acceptance and Commitment Therapy or Mindfulness-Based Cognitive Therapy focus on accepting one's current situation without judgment rather than avoiding negative feelings and using alcohol use to cope;[50,51] such interventions have also been found to be efficacious for use with college students.[52,53] Finally, the distress tolerance skills component of Dialectical Behavioral Therapy may also be of relevance and could be useful in helping individuals to find ways other than alcohol to deal with the distress related to feeling isolated and disconnected.[54] The utility of these interventions to reduce college students' risky alcohol use through distressing life situations, such as the COVID-19 pandemic, should be empirically explored.

This study has several limitations that should be considered. First, the cross-sectional nature of the data precludes examining temporal relationships among variables. Although we were able to model changes in drinking motives, we did so with retrospective reports of drinking motives and alcohol use before and since the onset of the COVID-19 pandemic in the U.S. Further, we examined changes in drinking motives in the first month of closures related to the COVID-19 pandemic in the United States. It is possible that, as guidelines have shifted, findings from varying timepoints may be different. Our study provides support for the use of longitudinal, prospective designs to confirm these relations and to examine how shifts in drinking motives and alcohol consumption align with shifts in strictness of closures and adherence to social distancing guidelines. For instance, it may be that students were not accurately reporting on their drinking motives and behavior pre-pandemic, perhaps due to misremembering. However, it is worth noting that the levels of drinking motives reported retrospectively about prior to the pandemic are similar to those reported by a separate sample of college students from the same university in Spring 2017, providing some confidence in these estimates. Further, work focused specifically on self-report of alcohol use compared to ecological momentary assessment methods or transdermal alcohol monitoring has

found that participants are able to provide reliable and valid retrospective reporting of their alcohol consumption.[55] Second, our sample was made up entirely of college students from one northeastern university, and was largely White, non-Hispanic, and female. Therefore, our results may not generalize to other age cohorts, to young adult populations that are not in college, or to more diverse groups of college students. It will be important for future work to replicate the findings reported here in a larger and more diverse samples to understand whether changes in motives and their relation to changes in alcohol use differed across groups.

In conclusion, findings improve our understanding of ways in which college students' reasons for drinking have changed and how those changes in motives have influenced changes in alcohol use in the context of a public health crisis. This work highlights the context-dependent nature of drinking motives and provides support for drinking motives as malleable intervention targets to reduce drinking among college students.

Author's Note

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