Early Impact of the U.S. COVID-19 Pandemic on Drinking Motives and Alcohol Use

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Abstract

The goal of this study was to empirically examine the degree to which alcohol use and drinking motives changed during the first month of the pandemic and to examine individual differences associated with such changes. A U.S. nationwide survey of 500 adults was conducted; data from 201 individuals (Mage=38.98, SD=12.04, 52.2% female, 76.1% White) who endorsed current alcohol use were included in this study. Paired-samples t-tests indicated that there was a significant decrease in drinking quantity [$t(199)=3.74$, $p<.001$], but no change in drinking frequency [$t(198)=0.19$, $p=.849$] overall during the first month of the U.S. pandemic. There were significant decreases in enhancement [$t(201)=4.55$, $p<.001$], social [$t(201)=9.39$, $p<.001$] and conformity [$t(201)=3.58$, $p<.001$] motives, but a significant increase in coping motives [$t(201)=-3.71$, $p<.001$]. Regression analyses showed that increases in enhancement [$\beta=0.46$, $p<.001$] and coping [$\beta=0.27$, $p=.004$] motives were significantly related to increases in drinking frequency, and increases in coping motives [$\beta=0.32$, $p=.002$] were related to increases in drinking quantity. Riskier drinking prior to the pandemic was significantly related to greater increase in drinking quantity in the first month of the U.S. pandemic [$\beta=0.31$, $p<.001$]. Results of this study provide initial support that changes in drinking motives were important predictors for changes in alcohol use during the first month of the U.S. pandemic. Contrary to anecdotal reports, drinking decreased overall during the first month of the U.S. pandemic; however, those with existing risky patterns of drinking prior to the start of the U.S. pandemic were at greatest risk for drinking escalation during this time.

Keywords: Alcohol, COVID-19, drinking motives

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Reports initially suggested that U.S. national alcohol sales increased with the start of the COVID-19 pandemic in early March 2020. According to major distribution companies, alcohol sales increased by around 50% during the week of March 16 (Micallef, 2020; Nielson Report, 2020). Social media suggested an associated increase in alcohol use during the early pandemic, including recipes for "quarantinis" (i.e., quarantine-themed cocktails), virtual drinking games, and Zoom happy hours (Dewey, 2020). Others suggested that overall alcohol sales decreased after mid-March, reflecting the loss of sales from restaurants, bars, and other live events that were closed during the pandemic (Hollan, 2020). There were likely regional disparities in alcohol sales reflecting variations in policies (e.g., stay-at-home orders) in response to the pandemic. Few data have examined the degree to which alcohol use changed early in the pandemic and which individual factors may be associated with such changes.

One possible factor that may have contributed to changes in drinking during this time is change in drinking motives. Drinking motives exist as one of the most proximal determinants of alcohol use (Cox & Klinger, 2004). There are four distinct categories of drinking motives (Cooper, 1994): coping (i.e., drinking to reduce negative affect), enhancement (i.e., drinking to enhance positive affect), social (i.e., drinking to obtain social benefits), and conformity (i.e., drinking to fit in or avoid social rejection). Coping and enhancement motives are particularly associated with increased alcohol use and alcohol-related problems (Kuntsche et al., 2005). An individual's drinking motives are susceptible to change in response to their environment (e.g. increased endorsement of social and enhancement motives in college; Read et al., 2003). Drinking motives also change more for individuals who regularly engage in alcohol use (Crutzen et al., 2013). Thus, it would be logical to assume that when faced with a novel experience like

the COVID-19 pandemic, drinking motives would change quickly, particularly for those already engaged in regular alcohol use, resulting in subsequent changes in alcohol consumption.

The current study seeks to examine the degree to which alcohol use and drinking motives changed overall in response to the first month of the U.S. COVID-19 pandemic and to examine individual risk factors associated with any such increase. We hypothesized that, during the first month of the U.S. pandemic, 1) in the overall sample, there would be an increase in alcohol use and drinking motives, particularly coping motives; 2) individual changes in drinking motives would be associated with individual increases in drinking quantity and frequency since the start of the pandemic; and 3) increases in alcohol use would be greater for individuals with higher pre-pandemic drinking levels, such that those already drinking heavily would increase drinking more during the initial month of the pandemic.

Methods

Sample and Procedure

A U.S. nationwide sample of 500 adults aged 19-78 completed an online survey at the end of March 2020 through Amazon Mechanical Turk (MTurk). Only individuals who endorsed current alcohol use (n=201) were included in the final sample for this study (Mage=38.98, SD=12.04, 52.2% female, 76.1% White). In the survey, participants provided reports of current drinking patterns and motives at the end of March 2020, as well as retrospective reports of these patterns prior to the start of the U.S. COVID-19 pandemic (defined as "early March 2020").

Measures

Demographics. Participants reported on their age, gender, and race.

Alcohol Use. The 10-item Alcohol Use Disorder Identification Test (AUDIT; Babor et al., 1992) assessed alcohol use *prior to* the start of the COVID-19 pandemic. Quantity (i.e.,

number of drinks consumed during an average drinking episode) and frequency (i.e., number of days drinking per week) of alcohol consumption was reported *since the start of the pandemic* (i.e., beginning of March 2020), as well as subjective reports of how the pandemic affected alcohol use (e.g., drinking more, drinking the same, or drinking less).

  Drinking Motives. Drinking motives were assessed using 4 items from the Drinking Motives Questionnaire (DMQ; Cooper, 1994). Only the highest loading item on each of the coping, enhancement, social, and conformity subscales was included to reduce participant burden and to increase response quality across the long survey. Motives were assessed as reasons for drinking both *prior* to and *since the start* of the U.S. pandemic (i.e., beginning of March 2020). Participants responded to each item on a 5-point scale (*1=Almost never/never, 5=Almost always/always*) with how much they endorsed drinking for each reason/motive. In order to determine if the single-item DMQ assessments provided reliable data, we examined the Spearman correlations of the rank orders of the DMQ single-item scales from "prior to the pandemic" and "since the pandemic." We utilized rank orders since we expected the pandemic likely affected one's motives for drinking (especially social motives). These correlations indicated adequate test-retest reliability (rho = 0.63 to 0.71) for enhancement, coping and conformity motives, but very low reliability for social motives (rho = 0.28).

Data Analysis Plan

  All analyses were conducted using IBM SPSS Statistics for Mac, Version 26.0. We used paired samples t-tests to assess changes in drinking frequency, quantity, and motives before and after the start of the COVID-19 pandemic. We conducted hierarchical linear multiple regression analyses to predict how changes in drinking motives predicted changes in drinking frequency and quantity, controlling for age, gender, and race. We conducted separate multiple regression

analyses to predict changes in drinking frequency and quantity from pre-pandemic total AUDIT scores, controlling for gender, age, and race. We also conducted a one-way analysis of variance (ANOVA) to examine differences in AUDIT scores between people who indicated their drinking has increased, stayed the same, or decreased since the start of the pandemic.

Results

Results of paired samples t-tests indicated there was no significant change in drinking frequency during the first month of the pandemic [$t(198)=0.19$, $p=.849$], but there was a significant *decrease* in drinking quantity [$t(199)=3.74$, $p<.001$]. There were significant decreases in enhancement [$t(201)=4.55$, $p<.001$], social [$t(201)= 9.39$, $p<.001$], and conformity motives [$t(201)=3.58$, $p<.001$], but a significant increase in coping motives [$t(201)=-3.71$, $p<.001$].

Increases in coping motives [$\beta=0.27$, $p=.004$] and enhancement motives [$\beta=0.46$, $p<.001$] were significantly related to increases in drinking frequency, after controlling for pre-pandemic drinking frequency and motives (Table 1). Similarly, increases in coping motives were significantly related to increases in drinking quantity [$\beta=0.32$, $p=.002$], after controlling for pre-pandemic drinking quantity and motives (Table 1). Age, sex, and race were not significantly related to drinking frequency, but age [$\beta=-0.138$, $p=.044$] and sex [$\beta=-0.165$, $p=.014$] were significantly related to drinking quantity, such that men and younger participants showed increases in drinking quantity during the first month of the pandemic.

Pre-pandemic AUDIT scores were significantly related to changes in drinking quantity [$\beta=0.31$, $p<.001$], but not changes in drinking frequency [$\beta=0.08$, $p=.117$] (Table 2). Results of a one-way ANOVA indicated that AUDIT scores significantly differed across people based on how their alcohol consumption has changed since the start of the pandemic (e.g. increased, stayed the same, decreased) [$F(2,199)=15.70$, $p<.001$]. These follow-up contrasts indicate that

participants with a higher pre-pandemic AUDIT score showed greater increases in drinking quantity during the first month of the pandemic.

Discussion

This study provides some of the first preliminary data on how the earliest stages of the U.S. COVID-19 pandemic affected alcohol use. Results show that, contrary to initial reports, overall drinking did not increase, but in fact decreased, during the first month of the U.S. pandemic, consistent with more recent findings (Hollan, 2020). Drinking motives did change, with an increase in coping motives, but decreases in the others. This is important because coping and enhancement motives are associated with problematic patterns of alcohol use, such as binge drinking (Merrill & Read, 2010). Increases in enhancement motives were uniquely related to increases in drinking frequency, but not quantity, during the first month of the U.S. pandemic, while increases in coping motives were associated with increased quantity and frequency. Other work has supported the role of changes in motives leading to changes in drinking (Canale et al., 2015; Wurdak et al., 2015); this study supports that such patterns generalize to the COVID-19 pandemic. Importantly, higher pre-pandemic AUDIT scores were associated with increased drinking quantity during the first month of the pandemic. This is concerning because these individuals already endorsed riskier alcohol use, so increases secondary to the pandemic likely place these higher-drinking individuals at an increased risk for negative alcohol-related health outcomes. These escalations are occurring simultaneously with pandemic-related barriers in accessing substance use treatment (Priester et al., 2016).

The current study, with its inherent strengths and limitations, reports on drinking trends and motives during the start of the U.S. COVID-19 pandemic in March 2020. This study utilized a cross-sectional, self-report, online survey design, which can limit generalizability and

replication. Relying on retrospective reports can lead to recall bias and limit the validity of the conclusion drawn. However, the study assessed changes in drinking behaviors and motives *at the very beginning of the pandemic*, minimizing the effect of recall bias and the evolving information, anxiety, concerns, and societal impact of the COVID-19 pandemic – data that cannot be replicated in the absence of another novel pandemic. The use of single-item DMQ subscales might have reduced the reliability of the findings, especially in the case of the social motives subscale. It is also likely that drinking behavior has continued to evolve with our societal response to the pandemic; thus, although these data are informative, trends and patterns should continue to be studied. Therefore, this study serves as a first look at initial changes in drinking in the earliest stages of the U.S. COVID-19 pandemic. This study provides preliminary support for the idea that changes in drinking motives during the COVID-19 pandemic are an important mechanism for changes in alcohol use during this time. These findings provide key preliminary support for the collection of longitudinal data to examine the effects of the pandemic on drinking behavior.

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Table 1. Regression of changes in coping and enhancement motives as related to drinking frequency and quantity

	B	SE	Beta	p-level	R^2	R^2 change	p
Dependent Variable: Drinking Frequency Time 2							
Step One					.092	.092	.016*
Drinking Frequency Time 1	-.085	.098	-.056	.384			
Age	.011	.007	.100	.110			
Gender	-.009	.170	-.003	.956			
Race	.078	.079	.061	.327			
Coping Motives Time 1	-.005	.102	-.005	.958			
Enhancement Motives Time 1	-.133	.105	-.103	.206			
Social Motives Time 1	-.085	.073	-.082	.241			
Conformity Motives Time 1	-.004	.121	-.002	.976			
Step Two					.330	.238	.000*
Coping Motives Time 2	.264	.090	.271	.004*			
Enhancement Motives Time 2	.465	.082	.464	.000*			
Social Motives Time 2	.068	.081	.062	.404			
Conformity Motives Time 2	-.186	.139	-.117	.182			
Dependent Variable: Drinking Quantity Time 2							
Step One					.144	.144	.000*
Drinking Quantity Time 1	.188	.072	.189	.010*			
Age	-.012	.006	-.138	.044*			
Gender	-.327	.131	-.165	.014*			
Race	.036	.064	.038	.569			
Coping Motives Time 1	.003	.080	.003	.975			
Enhancement Motives Time 1	.002	.082	.002	.981			
Social Motives Time 1	-.107	.057	-.141	.063			
Conformity Motives Time 1	-.022	.096	-.020	.819			

Step Two					.223	.079	.001*
Coping Motives Time 2	.225	.070	.317	.002*			
Enhancement Motives Time 2	.036	.068	.049	.593			
Social Motives Time 2	.122	.063	.156	.053			
Conformity Motives Time 2	-.050	.110	-.043	.649			

Note. All values reported are from Step 2 regression analyses

Table 2. Regression of changes in drinking frequency and quantity as related to AUDIT scores

	B	SE	Beta	*p*-level	R^2	R^2 change	*p*
Dependent Variable: Drinking Frequency Time 2							
Step One					.543	.543	.000*
Age	-.001	.006	-.010	.851			
Gender	.035	.133	.013	.791			
Race	-.012	.062	-.009	.851			
Drinking Frequency Time 1	.973	.072	.715	.000*			
Step Two					.549	.006	.117
AUDIT Total	.019	012	.082	.117			
Dependent Variable: Drinking Quantity Time 2							
Step One					.492	.492	.000*
Age	.001	.004	.009	.850			
Gender	-.011	.096	-.006	.907			
Race	-.013	.045	-.014	.777			
Drinking Quantity Time 1	.560	.062	.520	.000*			
Step Two					.568	.077	.000*
AUDIT Total	.057	.010	.333	.000*			

Note. The drinking frequency and quantity items were removed from the AUDIT Total variable respectfully to avoid criterion contamination