Short communication

Prior drinking motives predict alcohol consumption during the COVID-19 lockdown: A cross-sectional online survey among Belgian college students

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ABSTRACT

The global outbreak of coronavirus disease 2019 (COVID-19) and the resulting lockdown measures have raised concerns regarding their effect on alcohol consumption. We investigated alcohol use during lockdown in a population of college students, usually characterized by social and heavy drinking. We also tested the predictive role of pre-lockdown drinking motives on alcohol consumption during lockdown. We collected data from 1951 French-speaking Belgian students during the lockdown period (April 1st – May 3rd, 2020) through a cross-sectional online survey. Participants self-reported their daily alcohol consumption (1) during a typical week in normal circumstances (i.e., before lockdown), and (2) since lockdown onset. We also assessed drinking motives and severity of alcohol use before lockdown. Our findings showed that 68.2% of the sample reported a lower alcohol consumption during lockdown compared to before lockdown, 17.2% conversely reporting a higher consumption. Enhancement, social and coping motives were all associated with heavy drinking before lockdown. Enhancement and social motives predicted lower alcohol consumption during lockdown among heavy drinkers. Conversely, coping motives, as well as social motives among low drinkers, predicted higher consumption during lockdown. Conformity motives, as well as enhancement motives among low and moderate drinkers, did not predict alcohol consumption before or during lockdown. Overall, several pre-lockdown drinking motives reliably predicted alcohol consumption during lockdown and could thus be used to identify at-risk populations and to tailor intervention programs on alcohol misuse during sanitary crises.

1. Introduction

Following the coronavirus disease 2019 (COVID-19) outbreak, most national authorities imposed lockdown measures, which generated mental health consequences (Brooks et al., 2020; Clay & Parker, 2020; Rajkumar, 2020). Alcohol abuse is a concern during health crises, as it increases domestic incidents (Nutt, King, & Phillips, 2010), undermines the immune system (Molina, Happel, Zhang, Kolls, & Nelson, 2010; Testino, 2020), and exacerbates psychopathological symptoms (Anker & Kushner, 2019). It is therefore crucial to investigate how lockdown influenced alcohol consumption, to reduce its impact during the current crisis and to develop intervention tools for future ones. Two opposite predictions emerged on the links between lockdown and consumption (Rehm et al., 2020): (1) increased consumption to cope with distress and social isolation; (2) decreased consumption due to reduced alcohol availability. Preliminary results in the general population (i.e., convenience samples without specific selection criteria) support the co-existence of these scenarios, with decreased consumption in youth during lockdown (Callinan et al., 2020; Chodkiewicz, Talarowska, Miniszewska, Nawrocka, & Bilinski, 2020) and increased consumption among individuals with COVID-19-related stress (Callinan et al., 2020; Chodkiewicz et al., 2020; Kim et al., 2020; Koopmann, Georgiadou, Kiefer, & Hillemacher, 2020; Rolland et al., 2020).

These theoretical predictions (Rehm et al., 2020) however neglected inter-group heterogeneity regarding consumption patterns. Indeed, experimental results suggested that pre-pandemic heavy drinking predicts increased consumption during lockdown (Neill et al., 2020; Koopmann et al., 2020), which might constitute a coping strategy to reduce lockdown-related distress (Rodriguez, Litt, & Stewart, 2020; Wardell et al., 2020). College students, especially, might show distinct

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consumption changes during lockdown as they often present heavy drinking (ESPAD Group, 2016), and have particular drinking motivations and contexts. It is therefore important to investigate this key subgroup when exploring consumption during lockdown. A recent study showed higher consumption after COVID-19-related campus closure among students (Lechner et al., 2020). However, this finding relied on recent consumption (i.e., two weeks before and after closure). Furthermore, the aforementioned scenarios (Rehm et al., 2020) did not consider the interaction between COVID-19-related factors and pre-existing individual ones, including key consumption predictors like drinking motives (Cooper, 1994; Cooper, Frone, Russell, & Mudar, 1995; Crutzen, Kuntsche, & Schelleman-Offermans, 2013; Kuntsche et al., 2014). Both pre-lockdown consumption and drinking motives may predict consumption during lockdown.

Two motivational consumption determinants are the source (internal, external) and valence (positive, negative) of expected drinking-related reinforcements (Cox & Klinger, 1988, 1990), these dimensions defining four drinking motives (Cooper, 1994): enhancement (internal-positive; enhancing positive mood), social (external-positive; improving social relationships), coping (internal-negative; reducing negative affects), and conformity (external-negative; avoiding social rejection). Social and enhancement motives are the most frequent in Belgian and European young adults (Kuntsche et al., 2014; Kuntsche, Knibbe, Gmel, & Engels, 2005). Specific associations exist between (1) social motives and moderate consumption, (2) enhancement motives and heavy drinking, (3) coping motives and alcohol-related problems, (4) conformity motives and low consumption (Kuntsche et al., 2014, 2005; Lyvers, Hasking, Hani, Rhodes, & Trew, 2010). These motives also influence drinking contexts: coping motives are related to drinking alone, other motives being associated with social drinking (O'Hara, Armeli, & Tennen, 2015). As distinct drinking motives drive people to seek different contexts, and as these contexts have been differentially impacted by lockdown (i.e., reduced social contexts, increased coping contexts), one may wonder whether and how pre-crises motives predict lockdown-related consumption.

We conducted a cross-sectional study investigating how drinking motives *before* lockdown predicted consumption *before* and *during* lockdown among students. The lockdown-related modification of drinking contexts provides a quasi-experimental design to test the reliability of motives as consumption predictors. We thus used lockdown circumstances to explore the respective impact of each drinking motive on consumption. We hypothesized that: (1) strong pre-lockdown social, enhancement, and conformity motives will predict lower consumption during lockdown, because lockdown reduced social and enhancement drinking contexts; (2) strong pre-lockdown coping motives will predict higher consumption during lockdown, because lockdown increased stressful contexts. We also investigated whether and how pre-lockdown consumption moderates the relationship between motives and consumption during lockdown.

2. Methods

2.1. Study design

Belgium endured a 7-week restrictive lockdown (i.e., obligation to stay home, non-essential moves ban, University campus closure). We recruited French-speaking Belgian adults between April 1st (two weeks after lockdown onset) and May 3rd 2020, through a cross-sectional online survey using Qualtrics (Qualtrics, LLC, Provo, UT). Participants provided their informed consent. This study complied with the Helsinki Declaration (2008) and was part of a larger project exploring consumption during lockdown.

2.2. Participants

A total of 3448 college students participated. We excluded 1497

participants (43.42%) for incomplete (N = 879; 25.49%) or aberrant (N = 26; 0.75%) responses, or because they were living outside Belgium (N = 290; 8.41%) or had not consumed alcohol during the last year (N = 302; 8.76%). The final analyses included 1951 participants.

2.3. Measures

Alcohol consumption. The Timeline Follow-Back procedure (Sobell & Sobell, 1992), measuring daily consumption (i.e., number of alcohol units) during a typical week, assessed consumption *before* and *during* lockdown. We computed a difference score (Fitzmaurice, Laird, & Ware, 2012; Rogosa & Willett, 1983) by subtracting the number of weekly units *before* lockdown from the number of weekly units *during* lockdown. A positive score indicated higher consumption during lockdown compared to pre-lockdown. The Alcohol Use Disorder Identification Test (Babor & Robaina, 2016; Saunders, Aasland, Babor, De la Fuente, & Grant, 1993) (AUDIT, 10 items, score range: 0–40) assessed consumption's severity during the last year before lockdown onset (thus explicitly not including this lockdown period), with good reliability in our sample (Cronbach's α = 0.828).

Drinking motives. The Drinking Motives Questionnaire-Revised (Cooper, 1994) assessed how often individuals drank for enhancement, social, conformity or coping motives during the last year before lockdown onset. The questionnaire comprised 20 items (5 per motive), with a five-point scale (from "almost never" to "almost always") and a sum score (range: 5–25) for each motive. All scales showed good reliability in our sample: Enhancement (α = 0.804), Social (α = 0.819), Conformity (α = 0.741), and Coping (α = 0.710).

2.4. Statistical analyses

We proceeded in four steps, by computing: (1) descriptive statistics on experimental variables, and paired-samples t-tests comparing drinking motives frequency. We explored the relationships between these variables through Pearson's two-tailed correlations and independent t-tests; (2) chi-square tests based on difference scores, comparing the proportion of individuals with lower, higher or unchanged consumption during lockdown. To explore the relation between pre-lockdown variables and consumption during lockdown, we computed Pearson's two-tailed correlations between age, AUDIT, and difference scores, and independent t-tests on difference scores according to gender; (3) multiple linear regression models exploring how pre-lockdown motives predicted AUDIT and difference scores (with age and gender as covariates). Variance Inflation Factors did not exceed 2.5 (low collinearity); (4) hierarchical multiple regression analyses using Model 1 of the PROCESS macro (Hayes, 2018) to test whether AUDIT moderated the relationship between motives and difference scores. We analyzed the interactions between AUDIT and each motive in four models predicting difference scores (with age, gender and other motives as covariates). To reduce multicollinearity, we mean-centered the variables included in the interaction. We plotted slopes for drinking motives predicting difference scores at each AUDIT level (−1, 0, +1SD) to examine the interactive effects.

3. Results

3.1. Sample characteristics and pre-lockdown alcohol-related variables

Descriptive statistics are presented in Table 1. Students reported drinking for social motives more frequently than enhancement [t(1950) = 31.67, p < .001], coping [t(1950) = 67.44, p < .001] and conformity [t(1950) = 78.77, p < .001] ones. Enhancement motives were more frequent than coping [t(1950) = 42.56, p < .001] and conformity [t(1950) = 48.92, p < .001] ones, coping motives were more frequent than conformity [t(1950) = 16.012, p < .001] ones. AUDIT scores negatively correlated with age (r = −0.074, p = .001), and males (11.68 ± 6.64)

Table 1

Sociodemographic characteristics, drinking motives and alcohol-related variables of the sample.

Characteristics	No. of respondents (%) or mean (SD)
Sociodemographic variables	
Female/Male	1347 (69%)/604 (31%)
Age	22.10 (4.24)
University/Higher Education school	1292 (66%)/659 (34%)
Pre-pandemic drinking motives	
Enhancement	11.77 (4.55)
Social order	14.42 (4.66)
Conformity	6.62 (2.31)
Coping	7.79 (2.92)
Alcohol-related variables before lockdown	
AUDIT score	9.19 (6.26)
Number of units per week	11.30 (13.50)
Alcohol-related variables during lockdown	
Number of units per week	3.60 (5.75)
Difference score	−7.70 (12.83)

showed higher AUDIT scores than females (8.07 ± 5.74) [$t(1949)$ = 12;225, $p < .001$].

3.2. Difference in consumption since lockdown

More students reported reduced consumption during lockdown (68.2%) than increased (17.2%) or unchanged (14.6%; χ^2 = 1067.484, $p < .001$) consumption. The mean *units per week before and during lockdown* were respectively 15.09 ± 14.47 and 2.92 ± 4.81 (mean *difference score* = −12.16 ± 13.18) among those reporting lower consumption during lockdown (N = 1330), 4.33 ± 6.28 and 7.76 ± 8.41 (mean *difference score* = 3.43 ± 3.85) among those reporting higher consumption (N = 336), and 1.85 ± 3.12 among those reporting no change (N = 285). The difference score was correlated with age (r = 0.149, $p < .001$) and AUDIT (r = −0.631, $p < .001$). Males showed a stronger difference between alcohol consumption before and during lockdown than females [−12.75 ± 17.58 versus −5.43 ± 9.13, $t(1949)$ = 12.075, $p < .001$].

3.3. Alcohol-related variables predicted by drinking motives

Drinking motives predicted AUDIT scores [$F(6,1944)$ = 239.726, $p < .001$, R^2_{Adj} = 0.423]: higher enhancement (β = 0.417, t = 17.061, $p < .001$), social (β = 0.178, t = 7.077, $p < .001$), and coping (β = 0.096, t = 4.774, $p < .001$) motives were associated with higher AUDIT scores. They also predicted difference scores [$F(6,1944)$ = 94.206, $p < .001$, R^2_{Adj} = 0.223]: higher enhancement (β = −0.353, t = 12.432, $p < .001$)

and social (β = −0.062, t = 2.141, $p = .032$) drinking motives were associated with lower consumption during lockdown, and coping motives (β = 0.066, t = 2.821, $p = .005$) with higher consumption. Conformity motives did not add to the prediction of either AUDIT or difference scores ($p > .05$).

3.4. Moderation analyses (Fig. 1)

3.4.1. Enhancement motives

Enhancement motives [β = −0.25, $t(1942)$ = 3.45, $p < .001$], AUDIT [β = −1.14, $t(1942)$ = 24.70, $p < .001$], and their interaction [β = −0.04, $t(1942)$ = 5.09, $p < .001$] predicted difference scores [$F(8,1942)$ = 192.072, $p < .001$, R^2 = 0.44]. Adding the interaction improved the model fit [$F(8,1942)$ = 25.91, $p < .001$, R^2 change = 0.01]. Enhancement motives negatively predicted difference scores for high AUDIT [β = −0.50, $t(1942)$ = 5.86, $p < .001$] and particularly for scores above 6.64 (−2.55 below the mean) .

3.4.2. Social motives

AUDIT [β = −1.14, $t(1942)$ = 25.16, $p < .001$] and its interaction with social motives [β = −0.05, $t(1942)$ = 6.53, $p < .001$] predicted difference scores [$F(8,1942)$ = 195.77, $p < .001$, R^2 = 0.45]. The interaction improved the model fit [$F(8,1942)$ = 42.66, $p < .001$, R^2 change = 0.01]. Social motives positively predicted difference scores for low AUDIT [scores below 3.84; β = 0.19, $t(1942)$ = 2.48, $p = .01$] but negatively predicted difference scores for high AUDIT [scores above 9.25; β = −0.46, $t(1942)$ = 5.03, $p < .001$].

3.4.3. Conformity motives

AUDIT [β = −1.19, $t(1942)$ = −26.19, $p < .001$] was the only difference scores predictor [$F(8,1942)$ = 186.57, $p < .001$, R^2 = 0.43]. No main effect of conformity or interaction was found (all $p > .05$).

3.4.4. Coping motives

Coping motives [β = 0.59, $t(1942)$ = 6.36, $p < .001$] and AUDIT [β = −1.20, $t(1942)$ = −26.27, $p < .001$] predicted difference scores [$F(8,1942)$ = 186.36, $p < .001$, R^2 = 0.43] but no interaction was found ($p > .05$).

4. Discussion

We examined alcohol consumption during the COVID-19-related lockdown in a student sample. Results mainly showed that the majority (68%) of college students reduced their alcohol consumption substantially during lockdown compared to pre-lockdown (by more than 12 units per week on average). This was particularly true for heavy
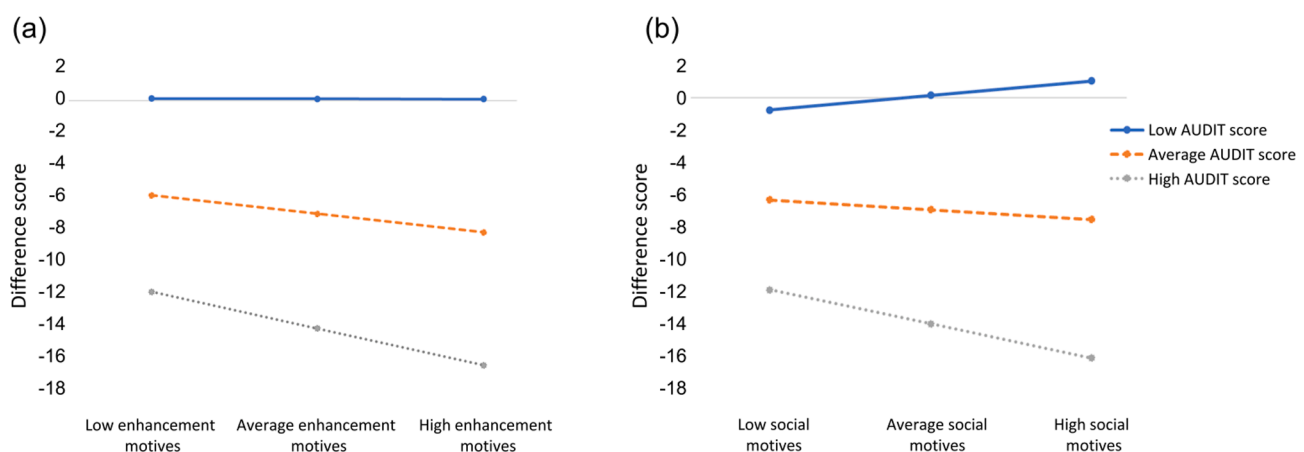
Fig. 1. Simple slopes equations of the regression of difference score on (a) enhancement and (b) social drinking motives at three levels (−1SD, mean, +1SD) of AUDIT score.

drinkers, which extends previous research (Bø, Aker, Billieux, & Landrø, 2016; Lannoy, Maurage, D'Hondt, Billieux, & Dormal, 2018) by showing that heavy drinking is a context-related habit (i.e., during social events), interrupted when such context disappears. Conversely, the weaker proportion of students (17%) who slightly increased their consumption (by around 3 units per week on average) during lockdown were more frequently moderate drinkers, while those reporting no change were often light drinkers. Our results go against most experts' predictions of increased consumption during lockdown, at least among students. Students may react specifically to crises (Masten, 2014), which should be considered when predicting drinking behaviors. We also go beyond the proposal of decreased consumption caused by reduced alcohol accessibility (Rehm et al., 2020), by emphasizing the influence of drinking motives and contexts.

Regarding drinking motives, we replicated the classical hierarchy (enhancement > social > coping > conformity; Kuntsche et al., 2014). We also confirmed the link between motives and consumption: enhancement, social and coping motives were associated with high AUDIT and heavy consumption (Kuntsche et al., 2005; Saunders et al., 1993), while conformity motives did not predict AUDIT or consumption (Kuntsche et al., 2014). Moreover, pre-pandemic enhancement and social motives predicted lower consumption during lockdown, while coping motives predicted higher consumption. These results might be explained by the lockdown-related disappearance of social activities, reducing drinking opportunities for students with enhancement or social motives. Conversely, social isolation during lockdown may provide drinking contexts for those presenting coping motives. We thus specified the populations concerned by both aforementioned scenarios: (1) increased consumption during lockdown (Rehm et al., 2020) occurred among low drinkers with stronger social motives and among individuals with coping motives; (2) decreased consumption, observed in most of our sample, was related to the high frequency of enhancement and social motives among students and to restrictions of drinking contexts. Conformity motives did not predict consumption, which might be explained by its low endorsement in our sample. Heavy drinkers had much lower consumption during lockdown, especially those with high enhancement or social motives. However, heavy drinkers with coping motives were the most at-risk subpopulation, with increased consumption during lockdown. Moderate drinkers endorsing coping and social motives slightly increased consumption, possibly in relation with new drinking contexts (e.g., with friends through video calls), but enhancement motives did not predict consumption in this subgroup.

Our study bares therapeutic implications: since drinking motives predict consumption, their assessment could reduce the impact of future crises on alcohol use, by acting upstream at prevention (e.g., psychoeducation on alternative coping strategies) and clinical (e.g., prophylactic interventions towards individuals endorsing coping motives) levels.

Our measures focused on retrospective self-reported measures, which might have induced biases (Del Boca, Darkes, & McRee, 2016; Ekholm, 2004), and alcohol-related measures only encompassed the number of units per week, neglecting other variables (e.g., frequency of drinking episodes). Moreover, while drinking motives and rates of excessive drinking among Belgian students are representative of European countries (Kuntsche et al., 2014), our results might not generalize to other populations.

5. Conclusions

The COVID-19-related lockdown was associated with reduced alcohol consumption in nearly 70% of our student sample. Pre-pandemic drinking motives constitute reliable predictors of consumption during lockdown, as (1) strong enhancement and social motives among heavy drinkers were associated with lower alcohol use, and (2) coping motives, as well as social motives in low drinkers, were related to higher consumption.

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