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ORIGINAL ARTICLE

Alcohol use and drinking motives across five countries: a post-COVID-19 pandemic update

Joana Rupprecht [a], Bettina Spitzweck [b], Gabriele Oettingen [c,d], and A. Timur Sevincer [e]

[a]Department of Clinical Psychology and Psychotherapy, Philipps-University Marburg, Marburg, Germany; [b]Department of Psychology, University of Hamburg, Hamburg, Germany; [c]Department of Psychology, New York University, New York, NY, USA; [d]Department of Political and Social Sciences, Zeppelin University, Friedrichshafen, Germany; [e]Department of Sustainability Psychology, Leuphana University Lüneburg, Lüneburg, Germany

ABSTRACT

Background: It is necessary to understand drinking motives to inform tailored interventions counteracting high-risk alcohol use and alcohol use disorder. Research suggests that, during the COVID-19 pandemic, drinking to cope with the current situation (i.e. coping motive) increased. This was alarming since the coping motive is a predictor of alcohol use and alcohol-related problems.

Objective: In the current study, we aimed to elucidate whether this COVID-19-induced increase in coping-motivated alcohol use outlasted the COVID-19 pandemic in the USA, Great Britain, Mexico, Spain, and Germany. We provide a 2023 post-COVID-19 update on alcohol use and drinking motives.

Methods: In spring 2023, 1032 participants recruited via Prolific (48% female) across the five countries completed a cross-sectional online survey, including the Alcohol Use Disorder Identification Test (AUDIT) for alcohol use patterns and the Drinking Motives Questionnaire-Revised (DMQ-R) for drinking motives.

Results: Across all five countries, 20–30% of the participants exceeded the AUDIT cutoff score for high-risk alcohol use. The ranking of all four motives for alcohol use was cross-nationally consistent: Social > Enhancement > Conformity > Coping.

Conclusion: Compared to most research before the pandemic, with a Social > Enhancement > Coping > Conformity motive ranking, and research during COVID-19, with an Enhancement > Coping > Social > Conformity motive ranking, our data suggests that post-COVID drinking to socialize and to enhance one's own mood, are again the most important motives to drink alcohol. Furthermore, it seems like the increase in the coping motive found in research during the pandemic, did luckily not persist but conversely, post- compared to pre-COVID, the conformity motive seems more important than coping motive.

ABSTRACTA

Antecedentes: Es necesario comprender los motivos del consumo de alcohol para fundamentar intervenciones a medida que contrarresten el consumo de alcohol de alto riesgo y los trastornos por consumo de alcohol. Las investigaciones sugieren que, durante la pandemia de COVID-19, aumentó el consumo de alcohol para hacer frente a la situación actual (motivo de afrontamiento). Esto fue alarmante, ya que el motivo de afrontamiento es un predictor de los problemas relacionados con el alcohol.

Objetivo: En el presente estudio, nos propusimos dilucidar si este aumento inducido por COVID-19 en el consumo de alcohol motivado por el afrontamiento duró más que la pandemia de COVID-19 en EE.UU., Gran Bretaña, México, España y Alemania. Presentamos una actualización del consumo de alcohol y los motivos para beber en 2023, después de la pandemia COVID-19. Métodos: En 2023, 1032 participantes reclutados a través de Prolific (48% mujeres) en los cinco países completaron una encuesta transversal en línea, incluyendo el Alcohol Use Disorder Identification Test (AUDIT) para el consumo de alcohol y el Drinking Motives Questionnaire-Revised (DMQ-R) para los motivos para beber.

Resultados: En los cinco países, entre el 20% y el 30% de los participantes superaron la puntuación de corte del AUDIT para el consumo de alcohol de alto riesgo. El ranking de los cuatro motivos para consumir alcohol fue coherente en todos los países: Social > Mejora > Conformidad > Afrontamiento.

Conclusiones: En comparación con la mayoría de las investigaciones realizadas antes de la pandemia, con una clasificación de motivos Social > Mejora > Afrontamiento > Conformidad, y con las investigaciones realizadas durante la COVID-19, con una clasificación de motivos Mejora > Afrontamiento > Social

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CONTACT Joana Rupprecht Joana.rupprecht@uni-marburg.de Department of Clinical Psychology and Psychotherapy, Philipps-University Marburg, Gutenbergstrasse 18, Marburg 35032, Germany; Gabriele Oettingen Gabriele.oettingen@nyu.edu Department of Psychology, New York University, New York, NY, USA

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> Conformidad, nuestros datos sugieren que, después de la pandemia, beber para socializar y para mejorar el propio estado de ánimo vuelven a ser los motivos más importantes para beber alcohol. Además, parece que el aumento del motivo de afrontamiento observado en la investigación durante la pandemia no persistió, sino que, por el contrario, en comparación con pre-COVID, el motivo de conformidad parece más importante que el de afrontamiento.

Theoretical background

Celebrating the latest publication can call for popping a bottle of champagne. Usually, this means a sip for everyone when the bottle is shared amongst colleagues. But due to the COVID-19 pandemic many people were stuck in front of the video-conference tool, and a bottle for themselves. Restrictions due to COVID-19 have largely disappeared, and rather harmful behaviors during that period seem to belong to the past. This seeming return to before is currently debated, and views range from returning to pre-COVID-19 *normalcy* (1) to enduring changes in an altered post-COVID-19 era (2, 3). To explore these opposing possibilities in post-COVID-19 times on the topic of alcohol use, we conducted a cross-sectional survey with a single assessment at the end of COVID-19 in March/April 2023, when people were not obliged to socially distance anymore. Because the stress-inducing regulations such as curfews and contact restrictions were no longer in place when our data were collected, we speak of "post-COVID-19" though we concede that the COVID-19 virus still existed.

Alcohol use – high-risk vs. low-risk

Alcohol is a neurotoxin that is generally harmful to health, but people who consume alcohol differ extensively in the amount of alcohol they consume and thus, in the extent of health risks alcohol poses for them. Binge drinking in the last month is reported by 21.7% of people in the US (4). In Great Britain, 15% of women and 28% of men report binge drinking in the last week (5). In Mexico, 18%, in Spain 25.6% and in Germany 34% of the adults report binge drinking in the last month (6).

A study investigating whether stay-at-home orders, and social isolation were associated with changes in high-risk alcohol use, collected data on the Alcohol Use Disorders Identification Test (AUDIT) at six different time points between April and September 2020 in six distinct online samples (7). At each time point, participants that indicated to be under lockdown were compared to participants who indicated not being under lockdown. At the beginning of the pandemic, alcohol consumption did not differ between participants under lockdown (M_{April} = 5.70) vs. those under no lockdown (M_{April} = 5.09) (7). However, in the progression of the pandemic (June-September 2020), alcohol consumption steadily increased for those under lockdown (M_{Sept} = 9.09), while it was stable in the groups that reported not being under lockdown (M_{Sept} = 5.20). A systematic review including literature published between December 2019 and November 2020 shows a mixed trend in alcohol use, with an overall trend of increased consumption (8). Apart from self-reported behavior, sales of alcoholic beverages increased during the COVID-19 pandemic (9–11). However, studies using meta-analytic methods showed that mean alcohol use did not change after the onset of COVID-19, but rather alcohol use increased or decreased for specific groups (12, 13). An overview of key literature on pre- and during COVID-19 alcohol consumption can be found in the Supplementary Material.

Drinking motives

When deciding to drink or not to drink, two key cognitive expectations play a role: Efficacy expectations refer to whether a person believes they can perform the behavior of drinking alcohol depending on availability, ability, and social as well as situational norms. Outcome expectations refer to whether a person believes that drinking alcohol will lead to the desired effect or outcome (14).

Usually, the desired outcome one expects from drinking is that alcohol impacts the affect (15). Alcohol does that in two ways: Directly through its chemical potentially mood-lifting effects and indirectly through the social environment and exuberant atmosphere that can accompany drinking. According to the motivational model of alcohol use (15, 16), the decision to drink or not to drink is based on the affective changes that a person expects as an outcome of drinking vs. not drinking. When someone expects alcohol to reduce negative affect and to enhance positive affect, it is more likely that they will take a drink. When someone expects alcohol to reduce positive affect and enhance negative affect, they will be less likely to take a drink. In sum, the incentive to drink alcohol is to change the valence of one's affect toward being more pleasant. While this model explains the general motivation to drink alcohol, the development of alcohol use disorder and withdrawal symptoms may be better explained based on biochemical sensitization of the brain's reward center which increases longing for alcohol (wanting) but not hedonic pleasure (liking) (see Incentive-Sensitization Theory (17, 18)).

Apart from intrapersonal incentives and addiction, drinking can further be motivated or even compelled by the social environment. The motivational model of alcohol use (15, 16) therefore distinguishes the two dimensions valence (positive vs. negative) and source (internal vs. external) for motives to drink alcohol. When these two dimensions are crossed, four distinct drinking motives emerge (see Figure 1 in the discussion). A person can drink because they like the positive effect that alcohol has on their affect (internal source and positive reinforcement result in the enhancement motive: "because I like the feeling.") or they want to reduce negative affect (internal source and negative reinforcement result in the coping motive: "to forget about your problems."). In addition, a person may drink to have a good time with their friends (external source and positive reinforcement result in the social motive: "to be sociable.") or to avoid exclusion from friends or fitting into one's group (external source and negative reinforcement result in the conformity motive: "to be liked.") (19).

The four drinking motives are the most proximal predictors of alcohol use because they directly elicit the behavior of drinking to obtain a certain outcome (15, 19–21). Knowledge about drinking motives is important, since it has helped to inform interventions to reduce drinking itself, and its costly consequences, by addressing the motivational causes for drinking (22).

The decision to consume alcohol is influenced not only by drinking motives but also by one's drinking history and situational factors (15), that were affected by COVID-19 restrictions. The uncertainty caused by the pandemic likely additionally influenced people's affect and therefore may have impacted the drinking motives.

Drinking alcohol and motives to drink alcohol pre- and during the pandemic

Before the COVID-19 pandemic, when considering the strength of each motive, people reported drinking predominantly for social motives, followed by, enhancement motives, coping motives, and, at last, conformity motives (19, 23–27). During COVID-19, contact restrictions limited the influence of both external motives: the social motive (drinking to socialize) and the conformity motive (drinking to fit in with the group). A study on drinking motives in a large U.S. sample asked their participants on a single assessment to report retrospectively regarding their motives to drink alcohol. They did their survey immediately preceding the start date of the state-mandated lockdown, and assessed the motives to drink during the 30 days immediately following the start of the lockdown (28). Their result, that the negative internal motive, the coping motive (drinking to get rid of negative thoughts and emotions), increased from pre- to post-social distancing while the other motives decreased, was further confirmed by a study with a UK sample (29).

In mediation models, the coping motive was linked to increased alcohol use during COVID-19 (28, 30). Other research on changes in alcohol consumption during the COVID-19 lockdowns states that the coping motive and the enhancement motive were significant predictors of altered alcohol consumption among those who drank during lockdown (31). For an overview of key literature on pre- and throughout COVID-19 literature on drinking motives, see the Supplementary Material.

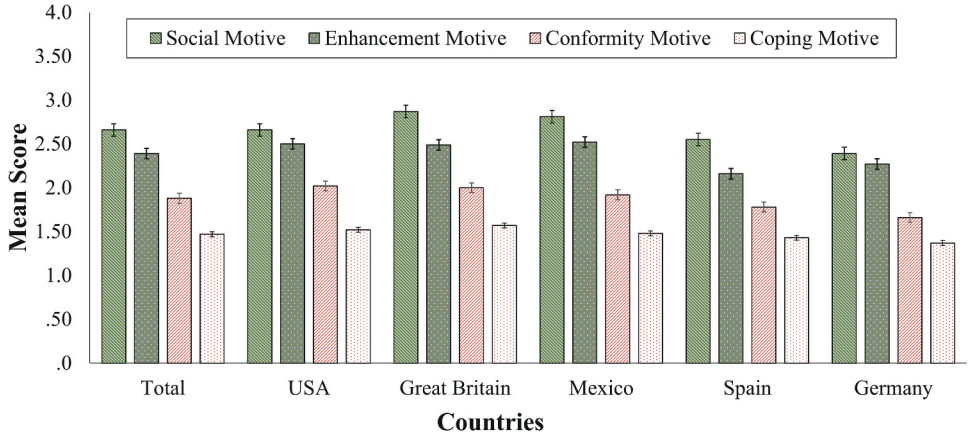

Figure 1. Mean scores of the drinking motives post-COVID-19 (March/April 2023) in each country. Note. Drinking motives were assessed using the Drinking Motive Questionnaire-Revised (DMQ-R) measuring four distinct motives. Social motive = Motive drink alcohol is to enjoy social gatherings. Enhancement motive = Motive to elevate the mood. Conformity motive = Motive to yield social pressure. Coping motive = Motive to cope with negative emotions or the situation. The figure shows that across all five countries, the ranking of the drinking motives accessed in March/April 2023 was the same.

To our knowledge, there has been no comprehensive analysis of both, the pattern of alcohol use and the drinking motives, directly at the end of the COVID-19 pandemic. With this single assessment cross-sectional study in five countries we would like to give an update on alcohol consumption and drinking motives in 2023.

Methods

Participants

In total, 1032 participants completed the online questionnaire. Overall, 499 (48.4%) reported being female, 524 (50.8%) male, and 9 (0.9%) non-binary. Participants were on average 39.83 years old (*SD* = 12.51; Range: 18–90). For demographic information in all countries and a statement regarding the representativeness, see the Supplementary Material.

Design and procedure

This study was part of a bigger cross-cultural project on values and addictive behavior (described in aspredicted_122701). In accordance with ethical guidelines, we received approval from the university's Ethic Commission. Data collection took place at a single assessment in March and April 2023 in the USA, Great Britain, Mexico, Spain, and Germany. These five countries were selected because we were able to access a large enough participant pool from each country on the Prolific recruitment platform and the questionnaires applied were available in validated form in English, Spanish and German. Participants were recruited via Prolific, using the "balanced gender" option in five age groups (18–29; 30–39; 40–49 and 50+) to increase representativeness. For a detailed description and discussion of the recruitment see the Supplementary Material. Participants gave their informed consent and were compensated $2.20, for participating in the 14-minute study. Participants completed the AUDIT for alcohol use (32), the DMQ-R (19) for drinking motives, and provided demographic data.

Measures

Alcohol Use Disorder Identification Test (AUDIT) to assess alcohol use

The AUDIT (32; Spanish version: 33; German version: 34) measures the three variables: Hazardous use (Items 1–3), harmful use (Items 4–6), and dependence symptoms (Items 7–10). The sum of all 10 AUDIT items is the AUDIT total score, and an AUDIT total score of six or higher is considered a cutoff for high-risk alcohol use (33). Items 1 to 8 are measured on a 5-point Likert scale. Items 9 and 10 have three answering options. The labeling of the scale changes within the questionnaire (see Supplementary Material).

The AUDIT has been widely used across countries (34, 35), demonstrating high internal consistency (Cronbach's α = .83), good sensitivity, specificity (36), and excellent negative predictive value (36), with confirmed construct and criterion validity in English, Spanish, and German (33, 34, 37, 38), and recognized effectiveness in cross-cultural research.

Drinking Motives Questionnaire-Revised (DMQ-R) to assess drinking motives

The DMQ-R (19; Spanish version: 26; German version: 16) is a 20-item self-report questionnaire measuring four conceptually and empirically distinct drinking motives with five items each: Enhancement motive ("because I like the feeling"), coping motive ("to forget about your problems"), social motive ("to be sociable") and conformity motive ("to be liked"). For each motive, participants rate how often they drank alcohol in the past 12 months on a 5-point Likert scale ranging from 1 (*almost never/never*) to 5 (*almost always/always*). The mean of the relative frequency ratings for each subscale indicates the extent to which a reason for drinking is attributed to that motive, independent of the drinking frequency (27).

The four-factor structure has been confirmed (16, 19), with good psychometric properties (19, 39, 40), motive's reliability ranging between α = .78–.92 (41, 42), and confirmed validity for diverse samples (43–45) and countries (46), making it the most widely used measure of drinking motives (23).

Data analysis

The data violated assumptions of normal distribution and variance homogeneity (see Supplementary Material). However, simulation studies have shown that ANOVAS are relatively robust against these violations if the groups are of equal size, which was the case here (47). Nevertheless, we calculated Welch-ANOVAs to analyze the country differences in alcohol consumption (AUDIT) and drinking motives (DMQ-R), as they are more robust to assumption violations, and applied Games-Howell post-hoc analysis. Country comparisons and calculated additional non-parametric analysis can be found in the Supplementary Material. Outliers and extreme values in the sense of high characteristic expression were present in all countries and in almost all scores. Since the outliers seemed to be *real outliers* and above-average alcohol use as well as motive accentuation were of particular interest for this study, outliers were kept in the data.

Results

Descriptive analyses

Descriptive analyses of AUDIT and DMQ-R variables are presented in Table 1. Correlations between all main variables and the demographic variables can be found in Table 2.

Alcohol use across countries (AUDIT)

Across countries, 270 participants (26.0% of the sample) achieved an AUDIT total score (sum of items 1–10) of six or higher and therefore exceeded the cutoff for high-risk alcohol use (33). Regarding each country, 65 participants (30.4%) from Great Britain, 60 participants (30.0%) from Mexico, 58 participants (26.7%) from the USA, 46 participants (23.0%) from Germany, and 41 participants (20.5%) from Spain exceeded the cutoff.

The country means of the AUDIT total score (Table 1, upper part) showed an analogous pattern. The total score was highest in Great Britain (M = 4.76, SD = 4.94), followed by Mexico (M = 4.55, SD = 4.52), the U.S. (M = 4.14, SD = 5.07), Germany (M = 3.71, SD = 3.98), and Spain (M = 3.35, SD = 3.84). Welch-ANOVAs and Games-Howell post-hoc tests revealed that the total score significantly differed between countries, Welch`s $F(4, 513.04) = 3.73$, $p = .005$, $\eta^2 = .01$. Additionally, significant country differences were found for hazardous alcohol use (AUDIT items 1–3; Welch`s $F(4, 512.83) = 5.50$, $p < .001$, $\eta^2 = .02$), and harmful alcohol use (AUDIT items 7–10; Welch`s $F(4, 512.44) = 2.70$, $p = .030$, $\eta^2 < .01$). However, when using the non-parametric Kruskal-Wallis-Test, this country difference was not significant ($\chi^2(4) = 8.903$, $p = .064$). This result can be explained by the lower power of non-parametric tests. For dependence symptoms (AUDIT items 4–6), the Welch-ANOVA as well as non-parametric tests, were not significant, Welch`s $F(4, 511.72) = 2.22$, $p = .066$, $\eta^2 < .01$. Games-Howell post-hoc analysis found significant country differences in hazardous- and harmful use, see Table 1, upper part.

Drinking motives across countries (DMQ-R)

In all five countries, the order of the motive strength to drink alcohol was the same: Participants primarily drank for social motives, followed by enhancement motives, conformity motives, and coping motives (Figure 2).

Table 1. Means, standard deviation and significant country comparisons.

	Total	USA	GB	MEX	SPA	GER	Games Howell Post-tests	
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	p	Significant group comparisons
Alcohol use (AUDIT)								
Total score	4.11 (4.53)	4.14 (5.07)	4.76 (4.94)	4.55 (4.52)	3.35 (3.84)	3.71 (3.98)	.011*	GB > SPA (1.41, 95%-CI[0.22, 2.60])
							.037*	MEX > SPA (1.20, 95%-CI[0.05, 2.34])
Hazardous alcohol use	2.71 (2.30)	2.49 (2.33)	3.17 (2.45)	3.05 (2.35)	2.31 (2.14)	2.54 (2.11)	.025*	GB > USA (−0.69, 95%-CI[−1.32, −0.06])
							.001*	GB > SPA (0.87, 95%-CI[0.25, 1.49])
							.038*	GB > GER (0.64, 95%-CI[0.23, 1.25])
							.009*	MEX > SPA (0.74, 95%-CI[0.12, 1.36])
Dependence symptoms	0.45 (1.19)	0.54 (1.43)	0.45 (1.21)	0.55 (1.26)	0.41 (1.06)	0.28 (0.91)	n.s.	
Harmful use	0.95 (1.95)	1.11 (2.24)	1.14 (2.11)	0.95 (1.92)	0.64 (1.52)	0.90 (1.79)	.045*[a]	GB > SPA (0.50, 95%-CI[0.07, 0.99])
Drinking motives (DMQ-R)								
Social	2.66 (1.27)	2.66 (1.36)	2.87 (1.23)	2.81 (1.21)	2.55 (2.25)	2.39 (1.22)	.001**	GB > GER (0.48, 95%-CI[0.15, 0.81])
							.005**	MEX > GER (0.43, 95%-CI[0.91, 0.76])
Enhancement	2.39 (1.14)	2.50 (1.24)	2.49 (1.06)	2.52 (1.12)	2.16 (1.11)	2.27 (1.13)	.023*	US > SPA (0.34, 95%-CI[0.31, 0.66])
							.016*	GB > SPA (0.33, 95%-CI[0.41, 0.63])
							.010*	MEX > SPA (0.37, 95%-CI[0.06, 0.67])
Conformity	1.88 (1.07)	2.02 (1.15)	2.00 (1.13)	1.92 (1.06)	1.78 (0.99)	1.66 (0.96)	.005**	US > GER (0.36, 95%-CI[0.08, 0.64])
							.008**	GB > GER (0.34, 95%-CI[0.06, 0.63])
Coping	1.47 (0.76)	1.52 (0.83)	1.57 (0.78)	1.48 (0.78)	1.43 (0.75)	1.37 (0.61)	.016*	US > GER (0.22, 95%-CI[0.27, 0.42])
							.002**	GB > GER (0.26, 95%-CI[0.72, 0.45])

Note. $n^{USA} = 218$, $n^{GB} = 214$, $n^{MEX} = 200$, $n^{SPA} = 200$, $n^{GER} = 200$. Welch-ANOVAS, to assess country differences, were significant for all variables except for dependence symptoms. Games Howell Post-tests identified significantly different country pairs. Total score = Sum of all AUDIT items, a total score of 6 or higher is interpreted as high risk alcohol use. Hazardous alcohol use = Sum of items 1 (frequency of drinking), 2 (number of drinks) and 3 (frequency of 5 or more drinks). Dependence symptoms = Sum of items 4 (unable to stop drinking), 5 (failed fulfilling expectations) and 6 (need for first drink in the morning). Harmful use = Sum of items 7 (feeling of guilt or remorse), 8 (blackout), 9 (harm others) and 10 (others expressed concern). Social = Motive drink alcohol is to enjoy social gatherings. Enhancement = Motive to elevate the mood. Conformity = Motive to yield social pressure. Coping = Motive to cope with negative emotions or the situation.

[a]Due to no normal distribution and outliers in the data, additionally non-parametric Kruskal-Wallis Tests were applied. For harmful alcohol use, these tests revealed that there is no significant difference between the countries, $\chi2(4) = 8.903$, $p = .064$. Therefore Games-Howell-Post-tests after significant Welch ANOVA should be interpreted with caution.

*$p < .05$.

**$p < .01$ (2-sided).

Table 2. Correlations between all variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1 AUDIT total score	1											
2 AUDIT hazardous alcohol use	.85**	1										
3 AUDIT dependence symptoms	.77**	.46**	1									
4 AUDIT harmful alcohol use	.86**	.52**	.63**	1								
5 DMQ-R social motives	.45**	.54**	.23**	.28**	1							
6 DMQ-R enhancement motives	.60**	.63**	.32**	.41**	.79**	1						
7 DMQ-R conformity motives	.55**	.49**	.40**	.46**	.61**	.70**	1					
8 DMQ-R coping motives	.33**	.25**	.29**	.30**	.51**	.44**	.54**	1				
9 Gender	−.18**	−.20**	−.12**	−.11*	−.03	−.09*	−.07*	−.06*	1			
10 Age	−.05	.03	−.06	−.11**	−.14**	−.10**	−.11**	−.16**	−.02	1		
11 SES	.03	.14**	−.05	−.07*	.12**	.08*	−.05	.00	.03	.05	1	
12 Income	.12**	.18**	.04	.04	.14**	.14**	.04	.05	−.05	.08*	.38**	1

Note. $N = 1032$. Total score = Sum of all AUDIT items, a total score of 6 or higher is interpreted as high risk alcohol use. Hazardous alcohol use = Sum of items 1 (frequency of drinking), 2 (number of drinks) and 3 (frequency of 5 or more drinks). Dependence symptoms = Sum of items 4 (unable to stop drinking), 5 (failed fulfilling expectations) and 6 (need for first drink in the morning). Harmful use = Sum of items 7 (feeling of guilt or remorse), 8 (blackout), 9 (harm others) and 10 (others expressed concern). Social = Motive to drink alcohol is to enjoy social gatherings. Enhancement = Motive to drink alcohol to elevate the mood. Conformity = Motive to drink alcohol to yield social pressure. Coping = Motive to drink alcohol to cope with negative emotions or the situation.
*$p < .05$.
**$p < .01$ (2-sided).

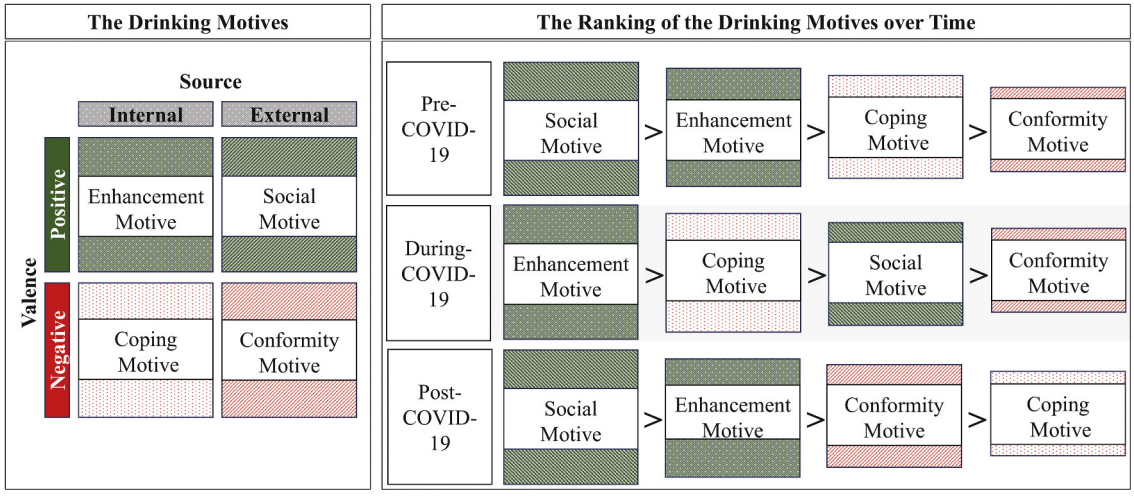

Figure 2. The drinking motives depending on valence and source and the ranking of the drinking motives pre-, during-, and post-COVID-19. Note. Drinking motives were assessed in our data by using the Drinking Motive Questionnaire-Revised (DMQ-R) measuring four distinct motives to drink alcohol. Social motive = Motive drink alcohol is to enjoy social gatherings. Enhancement motive = Motive to elevate the mood. Conformity motive = Motive to yield social pressure. Coping motive = Motive to cope with negative emotions or the situation. For Pre-COVID-19, see the following references (25, 27, 48–50). For During-COVID-19, see (28). On the left side, the figure shows how the four drinking motives emerge when valence and source are crossed. On the right side, the figure gives an overview of the ranking of drinking motives pre-, during-and post-COVID-19.

Welch-ANOVAs and Games-Howell post-hoc tests revealed a statistically significant difference between the five countries for the social motive (Welch`s $F(4, 512.85) = 5.20$, $p < .001$, $\eta^2 = .01$), enhancement motive (Welch`s $F(4, 512.44) = 4.35$, $p = .002$, $\eta^2 = .02$), conformity motive (*Welch`s* $F(4, 513.19) = 4.60$, $p = .001$, $\eta^2 = .02$), and coping motive (Welch`s $F(4, 512.27) = 4.52$, $p = .001$, $\eta^2 = .02$). Games Howell Post-tests are presented in Table 1, lower part.

Discussion

The current study presents a 2023 update on alcohol use and drinking motives across five countries in America and Europe. Across countries, 26.0% of participants exceeded the cutoff for high-risk alcohol use. We found significant but small differences between the five countries in the AUDIT total score, hazardous use, and harmful use but not in dependence symptoms. Regarding motives to drink, in all five countries the overall ranking of the motives was the same: Social motives > Enhancement motives > Conformity motives > Coping motives (see Figure 2).

This study contributes to the discourse on whether behavioral changes during the COVID-19 pandemic outlasted the extraordinary situation so that *nothing will be the same* (2, 3), or life will go *suddenly back to normal* (1). Besides this general discussion about what long-term changes COVID-19 may have caused, there were also

voices concerning the specific topic of alcohol use. Some believed that COVID-19 presented an opportunity to distance oneself from existing drinking habits, for example, due to the absence of drinking cues (51). Others anticipated that COVID-19 would exacerbate alcohol consumption and its health consequences (52). To explore these predictions about possible post-COVID-19 realities and to potentially elucidate the impact of other crises, we examined alcohol use and drinking motives in March/April 2023, post-COVID-19.

The differences in overall alcohol use, hazardous use, and harmful use we found between the countries were small. The literature is diverse and differences between countries have been stated repeatedly prior to the pandemic (e.g (53, 54)) but also challenged (55), or seen as influenced by other factors such as social inequalities (56). Furthermore, self-report assessments like the AUDIT differ from measures of per capita actual alcohol consumption (in liters of pure alcohol) which shows fluctuations across time (57). Research conducted pre-COVID-19 states AUDIT total scores of 5.09 (USA, data from 2010, $N = 401$, university sample (58)), 5.68 (Great Britain, data from 2000, $N = 7849$, representative sample (59)), 5.6 (Spain, data from 2005–2006, $N = 614$, care-seeking sample (60), 4.7 (Germany, data from 1996–2016, $N = 28345$, care-seeking sample (61)). However, these scores highly depend on the sample characteristics, which limits their comparability, and highlights the urge for longitudinal studies and meta-analyses examining findings from across countries and over time. Our cross-national study found that 26% of participants were above the high-risk alcohol use cutoff, highlighting the need to address this issue globally. The small differences between countries in AUDIT scores should not be overinterpreted but rather be seen as a transnational issue, at least in Europe and America.

The ranking of drinking motives (assessed by the DMQ-R) was consistent across all five countries: Social motive > Enhancement motive > Conformity motive > Coping motive. This observed ranking in our data is different from the ranking observed in most findings from pre-COVID-19 time using the DMQ-R that found the following ranking: Social Motive > Enhancement motive > Coping motive > Conformity motive (19, 23–27). It also differs from an observation of retrospective data regarding the time during lockdown that had the following ranking: Enhancement motive > Coping motive > Social motive > Conformity motive (28). The change from pre-COVID-19 to during-COVID-19 may be rooted in the fact that social distancing imposed significantly stronger limitations on external motives (social motive and conformity motive) than on internal motives (enhancement motive and coping motive).

A closer look at the comparison between pre- and post-COVID-19 reveals that compared to pre-COVID-19 literature, in our 2023 post-COVID-19 data, the coping motive was less important than the conformity motive (see Figure 1). Importantly, post-COVID-19, the positive valence motives (social motive and enhancement motive) were stronger than negative valence motives (conformity motive and coping motive). When comparing the two positive valence motives among each other (social motive and enhancement motive), the externally sourced social motive ranked higher than the internally sourced enhancement motive. Similarly, when comparing the two negative valence motives among each other (conformity motive and coping motive), again the externally sourced motive ranked higher than the internally sourced motive, that is, the conformity motive ranked higher than the coping motive. We interpret these results to suggest that, following the COVID-19 pandemic, the valence of the motive has become more influential than the source. In other words, when drinking is motivated by external motives, most people drink to socialize rather than because they are compelled by others. When drinking is motivated by internal motives, most people drink to enhance their affect rather than to cope with negative emotions. This underscores the importance of external factors (source), particularly the company one drinks with. Regardless of whether the influence of drinking companions is positive or negative, they play a crucial role in drinking motivation.

Nevertheless, we should mention that post-COVID normalcy differs in some respects from pre-COVID normalcy. Videoconferencing persists as a convenient way of business communication (62). Even though face-to-face meetings are preferred for complex and creative activities, videoconferencing nowadays substitutes for 20–30% of business travels (63). Nonetheless, this is a matter of time and convenience rather than forced isolation.

With this study, we found a ranking of drinking motives that is different from pre-COVID-19 findings and different from patterns during-COVID-19. Hence, for drinking motives, everything is not reverting to pre-COVID-19 *normalcy*. However, this study had no longitudinal design and cannot give a definite answer to this question. We will now discuss what may have caused the conformity motive to be more important and the coping motive to be less important in our data.

One possible explanation for the higher ranking of the conformity motive may be that the end of social distancing favored the conformity motive. Its increase after social restrictions were abolished, may stem from the urge for in-person celebrations after years of isolation, giving more peer pressure opportunities. Maybe people were more vulnerable for peer pressure,

either because they were less comfortable with rejecting others due to the strong wish to build up new contacts or revive old contacts. Furthermore, social skills necessary to resist peer pressure and to communicate the wish to refrain from drinking alcohol, were less developed or practiced, which may have led to more conformity-motivated drinking. The placement of the coping motive at the bottom of the motive ranking may be explained by less social isolation, less rumination and a more active social life. However, a more nuanced understanding may consider broader behavioral changes after COVID-19, such as heightened social anxiety (for a review, see (64)) and increased depressive symptoms (65).

Strengths and limitations

A strength of the study lies in surveying individuals from five countries. Aiming to achieve a community sample that is close to representative for each country, we were successful, at least concerning age and gender (see Supplementary Material). However, our study also has limitations. First, the recruitment method may have led to a biased sample in terms of participants' internet access, lower income, and higher academic interest (see Supplementary Material). Second, the correlational design allows only for a cross-sectional snapshot update and does not assess changes over time. Therefore, the comparison with before COVID-19 (19, 23–27) and during COVID-19 (28) can only provide possible trends and should not be confused with a longitudinal design. Third, the correlational design only allows us to infer association and not causation.

Future research

The impact of social distancing on alcohol use, drinking motives, and the underlying psychological processes could be investigated in future research using longitudinal designs, during local epidemics, potential future pandemics, and other events that lead to changes in social interactions in individuals like divorce or illness. Relevant psychological processes could be explored in laboratory settings, where environmental conditions, like social company when drinking, could be manipulated (66). Future research should explore how changes in social interactions (e.g. due to moving house) may influence alcohol use and drinking motives, which could also provide relevant information for guidelines on the relocation of people with a history of alcohol use disorder. Furthermore, future research should expand to non-industrialized countries to enhance the generalizability of the results (67). Future research should elucidate the development of the drinking motive ranking over time, to either confirm or refuse the changed ranking of the drinking motives found in our data through a systematic literature review and meta-analysis.

Conclusion

This study provides an update on alcohol use and drinking motives among community samples in the U.S., Great Britain, Mexico, Spain, and Germany at the end of the COVID-19 pandemic. Between 20 and 30% of participants exhibited high-risk alcohol use, underlining that alcohol use disorder is a transnational problem. Furthermore, the ranking of motives to drink alcohol in all five countries was the same: People primarily drank for social motives, followed by enhancement motives, conformity motives, and coping motives. Our assessment of the drinking motives at a single assessment after the pandemic is different from pre-COVID-19 assessments published in the literature, which were: Social motive > Enhancement motive > Coping motive > Conformity motive. Thus, after the pandemic, drinking due to peer pressure is a more likely reason to drink alcohol than to cope with negative emotions. These results are important for clinicians, social workers and addiction counselors who want to create counseling services and interventions for people suffering from alcohol-related problems. To create effective interventions, it is crucial to understand which motives are relevant, as they provide valuable information about underlying needs, which can then be substituted by alternative need satisfaction. For example, if the conformity motive underlies alcohol consumption, interventions may be tailored to impart skills to deal with peer pressure. Since our ranking in drinking motives is different from the findings of other studies conducted before and during COVID-19, concerning drinking alcohol, it may be more accurate that *nothing will be the same* than *everything returns to pre-COVID-19 normality*.

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ORCID

Joana Rupprecht http://orcid.org/0000-0002-2628-4297
Bettina Spitzweck http://orcid.org/0009-0009-8660-1299
Gabriele Oettingen http://orcid.org/0000-0002-6139-1493
A. Timur Sevincer http://orcid.org/0000-0003-2751-0142

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