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An exploration of undergraduate university students' motivations for engagement in pre-drinking and drinking games in Singapore and Europe

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Abstract

Pre-drinking or drinking alcohol prior to attending an event, party or going out is normalised behaviour for undergraduate (UG) university students. This is often accompanied by drinking games, and resulting heavy episodic drinking is frequently reported. This paper provides an exploration of UG university students' motivations for and participation in pre-drinking and drinking games in Europe and Singapore. This study used a mixed methods approach involving quantitative and qualitative methodology. Opportunistic sampling was employed, and an anonymous online questionnaire was sent in the autumn of 2021 to UG students in the United Kingdom (UK), mainland Europe and Singapore. There were 344 student participants with a mean age 22.58 years. The data set was analysed using IBM SPSS Version 27. Results highlighted that 94% of students participated in pre-drinking and that the trends of pre-drinking and drinking game playing are interlinked. Participants identified 'before going out' as a situation for playing drinking games, indicating pre-drinking taking place. Findings corroborate that pre-drinking by university students is normalised behaviour, supporting determined drunkenness, and provide insights into the relationship between pre-drinking and associated positives and pleasures. Students state motives for pre-drinking are ostensibly for fun/pleasure, sociability, and cost reasons. Of participants, 73% identified 'to pre-party' as an important reason for playing drinking games. Pre-drinking is prevalent and regarded as inexpensive, and fun. However, engaging in pre-drinking and drinking games often results in detrimental effects on health and wellbeing which should not be underestimated. Potential recommendations for harm reduction interventions and policies targeting pre-drinking among university students are discussed.

Introduction

Engagement in pre-drinking by undergraduate university students

Pre-drinking, also referred to as pre-partying, pre-gaming, and pre-loading (Foster and Ferguson, 2014), entails the consumption of alcohol in a domestic setting prior to going out or attending a specific event where more alcohol may be

consumed (Hummer et al; 2013). Pre-drinking, is distinct from another risky drinking context, playing drinking games (Borsari, 2004). It can occur without playing drinking games, with students simply preferring to drink alcohol prior to going to their planned event (Hummer et al; 2013). However, they are not mutually exclusive, and drinking games are frequently played for the purpose of pre-drinking, (DeJong and DeRicco, 2007). Pre-drinking, together with drinking games, often facilitates increased levels of alcohol consumption (George and Zamboanga, 2018) and is associated with a range of negative consequences (Zamboanga and Olthuis, 2016). For example, health and social consequences including memory loss, accidents, and falls (Zamboanga et al. 2014), dangers to physical and mental health (Dumbili and Williams, 2017; Alcohol Change UK, 2020) and increased aggression (Kuntsche, 2023).

Despite the risks, undergraduate (UG) students are engaged in socially acceptable pre-drinking as part of the drinking culture pervasive in university environments (Conroy et al; 2021; McInnes and Blackwell, 2021). Notwithstanding the recent reported decline of alcohol consumption in young people from the global north (Holmes et al; 2022), UG students remain a population of concern and report higher rates of heavy alcohol use than their non-university attending contemporaries (Moagi and van der Wath, 2023). Aiello et al; (2022) report that Spanish female students especially on Saturday nights, pre-drink or 'botellon'.

Situations of engagement in pre-drinking and drinking games

Pre-drinking by its very definition involves the consumption of alcohol in domestic situations, thus taking place by students in university dorms (Hummer et al; 2013). There is a global variance in participating in pre-drinking, as well as differing perceptions around alcohol use and age of consumption (Mackinnon et al; 2017, Dumbili, 2022a; George et al; 2023). The legal age for consuming alcohol is 18 years old in the UK and in Singapore, but in Austria it is 16 or 18 years old, depending on the region and percentage of alcohol consumed. An understanding of differing motivations, cultural conventions, rituals, situations and contexts of drinking (Lowe et al; 2023), is integral to an understanding of students' engagement in practices related to their pre-drinking.

Motivations for pre-drinking

Motivations for pre-drinking include, for fun and pleasure (Dumbili, 2022b), sharing an experience (Hennell et al; 2022), being sociable (De Visser et al; 2013) and achieving a state of 'determined drunkenness', i.e., drinking with the intent of becoming inebriated (Measham, 2006). Students' motives for pre-drinking are complex and shaped by sociocultural and economic conditions (Dumbili, 2022b) including fun/intoxication', 'conviviality', and 'facilitation' motives identified by Labhart and Kuntsche, (2017). Furthermore, the extensive marketing of alcohol targeting young adults in the global north, contributes to the cultural normalisation of young peoples' drinking (Finan et al. 2020). Parker et al's (1998) normalisation theory is useful in explaining the behavioural and attitudinal change of young people engaged in pre-drinking. It also considers sociocultural and economic factors and is useful in analysing how pre-drinking and drinking games have become socially and culturally accepted along with the role of commercial interests in facilitating these normalised activities (Pennay and Measham, 2016).

A contributory factor to high-risk drinking practices is the availability of cheap strong alcohol purchased from supermarkets and off-licences (off-trade), where consumption takes place later. The reduced costs from drinking alcohol purchased off-trade result in an increased chance of consuming six or more alcoholic drinks in a typical session and daily drinking (Casswell et al. 2014). Further compounding the risks, adverse consequences have been noted when drinking is concealed from public view (IAS, 2020). Several countries including Scotland and Wales in the UK, have therefore introduced a minimum unit price of alcohol (Sharma et al; 2014), with the aim of reducing overall consumption (Yeomans, 2019) and alcohol related harm (World Health Organization, 2022a).

Expansion of our previous research

This paper differs from, and expands upon, our previous research (McInnes and Blackwell, 2021) which evaluated drinking games participation, types played, playing situations and motivation, by social work students in universities in the US, the UK and mainland Europe. The previous study provided an insight into pre-drinking, participation in drinking games, noting that they are played by a high proportion of students. Our findings identified a culture of pre-drinking, before going out, fuelled by a motivation to get intoxicated, to socialise and have fun. Our previous research highlighted several promising avenues for further research.

Research in the US has identified the prevalence, motives, and consequences of students pre-drinking (Zamboanga and Olthuis, 2016). However, much less is known about pre-drinking elsewhere (Foster and Ferguson, 2014) for example in Europe and Southeast Asia. Moreover, there is an absence of studies concerning the associated positive motives and the resulting pleasures for young people and the contexts in which pre-drinking takes place (Kuntsche, 2023). In addition to understanding how to reduce risks effectively, it is critical to consider context specific spaces in which younger students engage in pre-drinking, (Graupensperger et al; 2023). Our current research expands the previous study by scoping a more diverse student population. An exploration of UG students in Singapore, the UK and mainland Europe students' motivations for engagement in pre-drinking and drinking games is undertaken. The specific country sites studied are those with traditional heavy episodic drinking cultures amongst students, or busy city centre night-time economies like Singapore.

Aims of the research

The aims of the research include:

1. To ascertain the level of engagement in pre-drinking and drinking game participation by UG university students.
2. To explore the situations where engagement in pre-drinking, and drinking games takes place.
3. To investigate students' motivations for engagement in participating in pre-drinking and drinking games and to compare these across different countries.
4. To establish if the cost of drinking alcohol at home is pertinent to pre-drinking.
5. To determine if there is a relationship between pre-drinking and drinking games.

Materials and methods

The study is based on the results of an anonymous online questionnaire sent to UG students in Austria, Belgium, Denmark, Germany, Singapore, and the UK. The motives measure was adapted from Johnson and Sheets (2004) and Zamboanga et al. (2017). Opportunistic sampling was employed, in universities where the UK home university has franchise, Erasmus and staff/student mobility links. The study was advertised via the universities' online portals and was restricted to UG students, and no incentives were offered although this may have resulted in an increased sample size. Students were recruited from the home and a partner university in the UK, a franchise partner in Singapore, and Erasmus partner universities in Austria, Belgium, Denmark, and Germany. The sample included students from Business, Childhood Studies, Guidance and Counselling, Nursing, Psychology, and Social Work Degree programmes. Students were accessed over three months in the Autumn semester of 2021, during the time in which countries were slowly emerging from the restrictions of Covid 19. The online questionnaire was previously approved by the Ethics Committee at the home UK university, where it was also piloted.

Covid 19 restrictions in each country during the study period

Covid 19 measures enabled young people to change their relationships with alcohol, leading to new norms around pre-drinking (Nicholls and Conroy, 2021), influencing routines, times of use and drinking practices (Caluzzi et al; 2021). Online survey data suggest higher consumption of alcohol during the pandemic (EMCDDA, 2021), especially in the UK (Kilian et al; 2021) with drinking-to-cope motivations (Mohr et al; 2021). Therefore, during the survey period any Covid 19 related restrictions which may have affected student pre-drinking behaviours across the different countries were considered, as lives were not fully back to normal.

In the UK during the survey period, no lockdown restrictions were in place and universities had a hybrid of face to face, synchronous (live and interactive online teaching sessions), and asynchronous (self-directed and pre-recorded) teaching methods in place. Denmark had no Covid restrictions in place and had 100% face to face teaching. In Belgium, there were no lockdown restrictions with teaching sessions delivered in a hybrid form, with some face-to-face teaching and online sessions. In Germany and Austria, only those who had recovered from an infection or were vaccinated against Covid, were allowed face-to-face teaching. Restrictions existed in Singapore (i.e., masks, social distancing), and only online teaching sessions were in place.

Measures

The survey was administered using Jisc Online surveys software. Invitations to participate were emailed using a secure link. A briefing sheet was provided, and informed consent obtained before commencement. The questionnaire was in English and, before being administered, was approved by the UK home University Ethical Research Committee. The survey consisted of 12 questions, divided into three main sections. The first section comprised demographic questions including age, gender, and country of domicile. The second section included questions concerning participation in pre-

drinking and drinking games, and situations where drinking games are played. The final section included questions on the motivations for engagement in drinking games and pre-drinking.

The questionnaire was structured, to permit only participants who stated that they consumed alcohol, to answer the questions related to pre-drinking. Checks were also carried out on the data base to ensure that this was the case. The question, 'Do you drink alcohol?' required a dichotomous, yes or no answer. Participants were asked to rate the importance of eleven different reasons for playing drinking games including pre-drinking. For each reason five alternatives were provided from an ordinal ranking scale ranging from '1. not at all important' to '5. very important'. Finally, participants were asked to rate their reasons for pre-drinking.

Data analysis

The data set was analysed using IBM SPSS Version 27. Descriptive statistical information including frequency distribution along with range, means etc was determined. Comparative analysis, to determine similarities and differences, between the various groups, i.e., all subjects, gender, and country, was carried out. Crosstabulations were performed. The data derived from the ratings questions was non-linear non-scalar data and therefore, was presented in the form of frequency distributions. Weighted Averages (WAs), which considered the relative importance and distribution of values, were calculated for trend comparisons. Non-parametric statistical analysis was carried out, using Mann-Whitney U Test and Kruskal-Wallis Tests, to determine inter-group differences. Since group sizes from some countries were relatively small, and statistical reliability may have been affected, they were not disaggregated by gender for statistical analysis. Non-parametric tests, which do not assume the normal distribution, were used because of the relatively small groups sizes.

Results

A total of 383 completed questionnaires were received, of which 367 (95.8%) stated that they drank alcohol. Since drinking game participation involves the consumption of alcohol, non-alcohol drinkers were excluded. The study had a target group of UG students below the age of 30, and therefore, respondents aged ≥ 30 were excluded. This resulted in a sample of 344 participants with a mean age of 22.58 ± 3.51 years. The sample was predominantly female (79.4%) with participants being residents of six different countries (see Table 1).

Drinking games participation

A high rate of drinking game participation was found across all countries with a great proportion of participants (93.7%) stating that, within the previous year, they had participated in drinking games (see Table 1). The rate for males (97.2%) was higher than for females (92.9%). In all country groups drinking game participation rates were over 85%, with 100% in Germany, Austria, and Denmark. Belgium showed the lowest rate of drinking game participation (75%).

Table 1. Country of domicile, gender and drinking games participation

Groups	n	Drinking game participation Yes Responses	
		n	%
All	344	322	93.7%
Females	273	254	92.9%
Males	71	69	97.2%
UK	97	95	97.9%
Singapore	80	71	88.8%
Austria	58	58	100.0%
Belgium	32	24	75.0%
Denmark	26	26	100.0%
Germany	29	29	100.0%

Situations where drinking games were played

The most frequently identified situation where drinking games were played was at 'birthday parties' cited by 85% of participants. A highly significant greater number of females (83.1%) compared with males 71% ($p < 0.05$) selected this option (see Table 2). High numbers (>90%) of the German and Austrian groups reported 'birthday parties' as a drinking game playing situation, with all other country groups recording over 75%, except Singapore, which was the lowest at 65%. 'Before going out' was reported as a situation for drinking game playing by 73% of participants. The results of Mann-Whitney U test analysis show a significantly higher percentage of females (77.7%) compared with males (56.5%) identifying this situation. The highest proportions of participants identifying this situation were in Denmark and the UK ($\geq 90\%$). All other groups showed responses of $\geq 80\%$. Singapore participants (31%) reported a statistically lower ($p < 0.01$) response than all other groups for this situation. A high proportion of participants from Singapore (91%) identified 'social get togethers' as the main situation where drinking game playing might occur. All other groups showed positive response rates at over 65% for this situation, except for participants from Belgium (43.1%). Males (78.3%) showed a significantly higher response rate ($p < 0.01$) compared with females (64.6%).

The situation for drinking game playing that recorded the lowest frequency of responses was 'Freshers' Week' with only a quarter of all participants identifying this. Males (28%) gave a slightly higher response rates than females (25%). Other positive response rates varied from 16% to 28%. No participants from Belgium selected 'Freshers Week'. Mann-Whitney U test results showed that a significantly higher number ($p < 0.01$) of UK participants (46.3%), compared with other groups, stated that Freshers' Week was a situation where drinking games were played. Participants from Austria (43.1%) recorded a significantly lower response ($p < 0.01$) for 'Social get-togethers' as a situation for drinking game playing in comparison to all other groups.

Table 2. Situations where drinking games were played

Groups	% Responses for situations where drinking games were played							
	Before Going Out		Birthday Parties		Freshers' Week		Social Get-Togethers	
	n	%	n	%	n	%	n	%
All	238	71.2%	261	79.0%	83	25.2%	224	67.5%
Females	199	76.2%	212	81.7%	64	24.6%	170	64.6%
Males	39	68.5%	49	71.0%	19	27.5%	54	78.3%
UK	86	90.5%	72	75.8%	44	46.3%	66	69.5%
Singapore	22	31.0%	46	64.8%	11	15.5%	65	91.5%
Austria	51	87.9%	53	91.4%	11	19.0%	25	43.1%
Belgium	19	79.8%	20	83.3%	0	0.0%	17	73.9%
Denmark	25	96.2%	22	84.6%	6	23.1%	17	65.4%
Germany	24	82.8%	28	96.6%	8	27.6%	22	75.9%

Importance ratings of motives for playing drinking games

Participants rated reasons for playing drinking games using a Likert scale, (see Table 3). The motives rated overall to be most important were 'to have fun' (74.3% rated 4 and 5, WA 4.1), 'to be sociable' (54.8% rated 4 and 5, WA 3.22) and 'to meet people' (41.7% rated 4 and 5, WA 3.22). 'Peer pressure' was identified as the least important (79.9% rated 1 and 2, WA 1.65). Participants from Singapore and Germany rated 'peer pressure' as a very important reason, which was highly significantly different from all other groups ($p < 0.01$). UK participants rated the motive 'to pre-party' the highest of all country groups with 22.9% of participants rating it 'very important' (category 5). Fifty one percent of UK participants, and 48.3% from Germany, rated 'to pre-party' as 'important' or 'very important' (Likert scale 4 and 5 ratings), compared with only 12% from Singapore. Indeed 65.1% of Singapore participants rated this reason as 'not important' or 'not at all important' (ratings 1 and 2). The results of non-parametric tests showed that the UK 'to pre-party' distribution of responses was statistically highly significantly different ($p < 0.01$) compared with Singapore, Austria, and Belgium responses. Conversely, Singapore rated the same motive as 'not important' and this was significantly different in comparison to all other country groups ($p < 0.01$).

Importance ratings of motives for participating in pre-drinking

A series of motives for pre-drinking were assessed using a five-point Likert rating scale (see Table 4). Motives rated most important were 'it's cheaper to drink at home' (58.3% rated 4 and 5, WA 3.45), 'it's a fun thing to do' (51.4% rated 4 and 5, WA 3.37), 'to be sociable' (44.3% rated 4 and 5, WA 3.19), and 'to get the evening started' (48.9% rated 4 and 5, WA 3.18). Those rated least important were 'to make you more attractive' (84.7% rated 1 and 2, WA 1.57), and 'to make you liked' (80.1% rated 1 and 2 WA 1.63). Non-parametric analysis showed that the distribution of the UK responses was statistically highly significantly ($p < 0.001$) different from Austria and Germany for eight out of the ten reasons for pre-drinking (see Table 4). The exceptions were 'to make more attractive' and 'to make you liked'. The UK had higher

rankings of importance for all these variables. Conversely, Singapore showed highly significantly lower values of importance for all reasons except 'to make you liked' when compared to the UK, Austria, Denmark, and Germany.

The reason 'for pleasure/leisure' was rated by Singapore participants as 'very important' with 55% rating it in the 4 and 5 categories. Belgium and UK participants also scored this highly with 48% and 41% respectively rating it 4 and 5. Austria and Denmark participants rated this as least important with 50% and 48% respectively rating it in categories 1 and 2. Highly significant differences in distribution were found for the UK when compared with each of Singapore, Austria, Germany, and Denmark.

UK participants showed the highest ratings of importance for 'it's a fun thing', with 70% rating it in categories 4 and 5. Denmark and Belgium also rated this highly with 65% and 60% respectively, rating in the 4 and 5 categories. Singapore participants showed the lowest ratings of importance for this variable with 39% rating it in the 1 and 2 categories. Highly significant differences were found for Singapore compared with UK, Austria, Denmark, and Belgium for this reason. The group of Females rated 'it's a fun thing' (53%), significantly more important than Males (41%) in categories 4 and 5. The reason 'to be sociable' was rated with the highest importance by UK and Denmark participants, with 57% and 54% respectively rating it 4 and 5. Conversely 41% of Austria and 44% of Belgium participants rated this as unimportant (categories 1 and 2). Highly significant differences were found between the UK, Austria, Belgium, Germany, and Singapore for the distribution of responses to this variable.

Seventy four percent of UK, 64% Belgium and 62% of Denmark participants showed the highest importance ratings (4 and 5) for the variable 'to get the evening started'. Forty eight percent of Singapore participants rated this as unimportant (ratings 1 and 2). Comparisons between the UK and each of Singapore, Austria, and Germany were found to show highly significantly different distributions of ratings. For the two variables 'to fit in with the group' and 'I won't feel the pressure for not drinking,' Austria and Belgium showed over 90% ratings in categories 1 and 2, and Singapore showed the highest values categories of 4 and 5 ratings with 18% and 24% respectively for both. The ratings from Singapore participants were found to be statistically different from all countries, apart from Germany, where a proportion relatively higher than other countries (17%) rated 'to fit in' as 'very important' (categories 4 and 5). UK participants rated 'it's cheaper to drink at home' highly significantly more important than those from Singapore, Belgium, and Germany. Seventy four percent of UK participants, and over 60% of participants in Austria, Germany, and Denmark, rated this in categories 4 and 5 compared with 34% of Singapore participants.

Table 3. Importance ratings of motives for playing drinking games

Groups	n	% Responses for Rating of Importance						% Responses for Rating of Importance						% Responses for Rating of Importance					
		1	2	3	4	5	WA	1	2	3	4	5	WA	1	2	3	4	5	WA
		To pre-party						To get drunk						To have fun					
All	343	29.2	15.2	25.9	17.5	12.2	2.52	29.2	17.5	20.7	23.6	9.0	2.66	7.3	4.7	13.7	24.2	50.1	4.10
Females	272	26.5	16.5	25.7	18.4	12.9	2.75	28.7	17.6	21.7	22.4	9.6	2.49	7.4	5.2	13.2	23.2	51.1	3.83
Males	71	39.4	9.9	26.7	14.1	9.9	2.45	31.0	17.0	17.0	31.0	7.0	2.75	7.0	2.8	15.5	28.2	46.5	4.04
UK	96	12.5	8.3	28.1	28.1	22.9	3.40	14.6	15.6	21.9	32.3	16.6	3.24	4.2	3.1	13.5	21.9	57.3	4.25
Singapore	80	51.3	13.8	22.5	7.5	5.0	2.01	50.0	8.8	15.0	20.0	6.3	2.24	11.3	8.8	11.3	20.0	48.8	3.86
Austria	58	24.1	13.8	4.1	15.5	5.2	1.52	31.0	17.2	31.0	17.2	3.4	2.44	8.6	3.4	12.1	29.3	46.6	4.02
Germany	29	23.1	23.1	10.3	34.5	13.8	3.07	13.8	37.9	20.7	20.7	3.4	2.52	3.4	3.4	13.8	31.0	48.3	3.08
Denmark	24	20.8	29.2	25.0	12.5	20.8	3.08	20.8	20.8	12.5	37.5	16.7	3.33	4.2	8.3	25.0	16.7	54.2	4.34
Belgium	27	29.6	18.5	22.2	7.4	14.8	2.27	29.6	22.2	18.5	14.8	7.4	2.26	11.1	3.7	3.7	29.6	44.4	3.70
		To meet people						To be sociable						Peer pressure					
All	343	18.7	13.4	25.4	24.8	16.9	3.09	12.5	10.5	21.9	31.8	23.3	3.22	64.4	15.7	12.2	5.2	2.3	1.65
Females	272	19.1	13.6	25.0	25.4	16.9	3.07	12.5	10.3	22.4	33.1	21.7	3.41	64.7	16.9	11.4	4.8	2.2	1.62
Males	71	16.9	12.3	26.8	22.5	16.9	2.96	12.7	11.3	19.7	26.8	29.6	3.50	63.4	11.3	15.5	7.0	2.8	1.54
UK	96	14.6	9.4	31.3	24.0	20.8	3.28	5.2	7.3	19.8	36.5	31.3	3.82	74.0	10.4	5.2	2.1	2.1	1.29
Singapore	80	29.7	15.0	15.0	26.3	20.0	3.10	17.5	8.8	15.0	27.5	31.3	3.47	48.0	18.8	20.0	10.0	3.8	2.05
Austria	58	22.4	21.1	24.1	29.3	12.1	3.15	17.2	13.8	24.1	36.2	8.6	3.05	58.6	20.7	15.5	3.4	1.7	1.69
Germany	29	6.9	13.8	37.9	34.5	6.9	3.11	6.9	13.8	34.5	31.0	13.8	3.31	41.4	24.1	17.2	13.8	3.4	2.13
Denmark	24	12.0	25.0	29.2	20.8	20.8	3.37	4.2	12.5	33.3	37.5	20.8	3.82	70.8	20.8	12.5	4.2	0.0	1.67
Belgium	27	33.3	22.2	14.8	14.8	7.4	2.28	25.9	14.8	7.4	29.6	14.8	2.70	81.5	3.7	3.7	3.7	0.0	1.15

Likert Scale 1-5 where 1 = not important to 5 = very important

WA = Weighted Average

Table 4. Importance ratings of motives for participating in pre-drinking

Groups	% Responses for Ratings of Importance						% Responses for Ratings of Importance						% Responses for Ratings of Importance					
	1	2	3	4	5	WA	1	2	3	4	5	WA	1	2	3	4	5	WA
	For pleasure/leisure						To be sociable						To get the evening started					
All	20.6	12.8	28.8	19.2	18.6	3.02	22.2	13.1	28.9	28.0	14.3	3.19	18.1	11.7	21.3	31.7	17.2	3.18
Females	22.1	13.2	28.3	19.1	17.3	2.97	13.6	12.9	29.8	30.5	13.2	3.17	14.7	12.9	21.7	32.4	18.4	3.27
Males	15.3	11.1	30.6	19.4	23.6	3.15	23.9	14.1	25.8	18.3	18.3	2.93	31.0	7.0	19.7	29.6	12.8	2.87
UK	13.5	13.5	32.3	24.0	16.7	2.87	6.3	5.2	28.1	31.3	26.0	3.56	4.2	5.2	17.7	40.0	33.3	3.94
Singapore	17.5	5.0	22.5	18.8	36.3	3.52	25.0	8.8	23.8	26.3	16.3	3.14	33.8	13.8	22.5	22.5	7.5	2.56
Austria	34.5	15.5	25.9	15.5	8.6	2.48	22.4	19.0	41.4	13.7	3.4	2.56	17.2	15.5	25.9	34.5	6.9	2.95
Germany	24.0	24.0	37.9	31.0	0.0	3.10	3.4	24.1	44.8	27.6	0.0	2.96	18.3	6.9	37.9	31.0	6.9	3.04

Denmark	34.6	15.4	30.8	3.8	15.4	2.50	3.8	23.1	19.2	42.3	11.5	3.34	0.0	19.2	19.2	30.8	30.8	3.73		
Belgium	12.0	12.0	28.0	20.0	28.0	3.40	28.0	16.0	12.0	32.0	12.0	2.84	24.0	4.0	8.0	44.0	20.0	3.32		
	It gives you a pleasant feeling							It helps you enjoy party							It's a fun thing to do					
All	19.0	21.0	24.0	26.2	9.0	2.64	22.4	16.6	20.7	26.2	13.7	2.91	13.4	10.5	24.8	29.2	22.2	3.37		
Females	15.8	22.1	23.2	29.0	9.9	3.24	19.9	17.7	21.8	26.2	14.4	2.98	10.3	11.4	24.3	30.0	23.4	3.42		
Males	31.0	16.9	26.8	19.7	5.6	2.52	32.4	12.7	17.0	26.8	11.3	2.73	25.4	7.0	26.8	25.4	15.5	2.99		
UK	6.3	21.0	24.0	34.4	14.6	3.88	9.4	11.5	20.8	34.4	20.8	3.36	5.2	6.3	18.8	37.5	32.3	3.86		
Singapore	30.0	17.5	20.0	25.0	7.5	2.63	28.8	10.0	20.0	23.8	17.5	2.92	30.0	8.8	28.8	22.5	10.0	2.74		
Austria	24.1	31.0	24.1	20.7	0.0	2.41	27.6	20.7	24.1	22.4	5.2	2.57	10.3	10.3	37.9	19.0	22.4	3.33		
Germany	27.6	20.7	24.1	24.1	3.4	2.55	34.5	20.7	13.8	23.1	6.9	2.21	3.4	24.1	24.1	20.7	27.6	3.45		
Denmark	11.5	15.4	26.9	30.8	15.4	3.23	23.1	26.9	14.3	19.2	14.3	2.68	3.8	11.5	19.2	42.3	23.0	3.68		
Belgium	20.0	16.0	24.0	24.0	16.0	3.00	28.0	28.0	16.0	20.0	8.0	2.52	16.0	16.0	8.0	32.0	28.0	3.04		
	To talk to people more easily							No pressure for not drinking							To fit in with group and not feel left out					
All	25.1	17.2	25.1	21.3	11.4	2.52	62.1	16.3	12.0	5.5	4.1	1.79	58.6	17.2	12.0	8.2	4.1	1.90		
Females	22.8	18.4	25.4	21.7	11.8	2.62	60.7	17.6	12.9	5.1	3.7	1.74	57.4	17.6	13.2	7.7	4.0	1.75		
Males	33.8	12.7	23.9	19.7	10.0	2.60	67.6	11.3	8.5	7.0	5.6	1.72	63.3	15.5	7.0	9.9	4.2	1.76		
UK	17.7	12.5	25.0	26.0	18.8	3.02	57.3	19.8	10.4	7.3	5.2	1.83	61.5	12.5	10.4	12.5	3.1	2.18		
Singapore	33.8	8.8	22.5	20.0	15.0	2.34	45.0	17.5	20.0	8.8	8.8	2.19	43.8	16.3	17.5	12.5	10.0	2.20		
Austria	27.6	29.3	25.8	15.5	1.7	2.46	77.6	13.8	5.2	1.7	1.7	1.36	75.8	15.5	6.9	0.0	1.7	1.36		
Germany	17.2	24.1	24.1	20.7	13.8	2.83	55.2	20.7	17.2	6.9	0.0	1.76	37.9	27.6	10.3	17.2	0.0	1.93		
Denmark	23.1	30.8	23.1	23.1	0.0	2.61	80.8	7.7	11.5	0.0	0.0	1.31	60.7	23.1	11.5	3.8	0.0	1.57		
Belgium	32.0	20.0	24.0	16.0	8.0	2.48	84.0	12.0	4.0	8.0	0.0	1.20	84.0	12.0	4.0	0.0	0.0	1.20		
	To make you liked							To make you more attractive							It's cheaper to drink at home					
All	64.1	16.0	12.8	3.8	2.6	1.63	66.8	17.9	9.0	4.1	2.3	1.57	19.0	6.7	14.6	22.4	35.9	3.45		
Females	62.9	18.0	12.9	3.3	2.9	1.65	65.1	20.2	8.5	3.7	2.6	1.59	16.5	5.9	17.3	23.9	36.4	3.58		
Males	71.8	8.5	12.7	5.4	1.3	1.55	73.2	8.5	11.3	5.6	1.4	1.56	28.2	10.0	11.3	17.0	33.8	3.20		
UK	62.5	13.5	14.6	6.3	9.4	2.06	65.6	16.7	10.4	6.3	1.0	1.60	9.4	1.0	15.6	24.0	50.0	4.04		
Singapore	56.3	17.5	16.3	6.3	7.9	2.05	52.5	18.8	18.8	3.8	6.3	1.93	30.0	8.8	22.5	16.3	22.5	2.70		
Austria	74.0	12.1	10.3	0.0	3.4	1.46	75.9	17.2	3.4	1.7	1.7	1.36	15.5	8.6	8.6	24.1	43.1	3.70		
Germany	55.2	20.7	17.2	6.8	0.0	1.75	69.0	20.7	3.4	6.9	0.0	1.48	20.7	3.4	13.8	34.5	27.5	3.44		
Denmark	73.0	15.4	11.5	0.0	0.0	1.38	80.8	15.4	3.8	0.0	0.0	1.23	19.2	7.7	7.7	23.1	42.3	3.67		
Belgium	92.0	8.0	0.0	0.0	0.0	1.24	84.0	12.0	0.0	4.0	0.0	1.24	24.0	12.0	20.0	20.0	24.0	3.12		

Likert Scale 1-5 where 1 = not important to 5 = very important.

WA=Weighted Average

Discussion

The major strength of this study is that it synthesises data from multiple locations to analyse the intersectional relationships between pre-drinking and drinking games. This provides a wider perspective than has previously been

studied and includes a country from Southeast Asia. The study focuses specifically on an exploration of UG university students' motivations for engagement in pre-drinking and drinking games. To our knowledge, this is the first study to evaluate the motives for engagement in pre-drinking and drinking games, amongst UG students at universities in Singapore, the UK and in mainland Europe. It highlights widespread participation across all the countries in these activities. Overall, 97% of participants stated that they had been involved in pre-drinking. Drinking games were played by over 90% of participants, and indeed, all subjects from Germany and Denmark stated that they had played, supporting Conroy et al. (2021) and Holmes et al. (2022).

The most frequent situation/event where drinking games were played was at 'birthday parties' cited by 80.5% of participants. 'Social get-togethers' (69.3%) were also identified. This indicates that drinking game playing is regarded as a component to promote and establish social interaction. Overall, 73.3% of participants stated that they played drinking games 'before going out'. This indicates a link to pre-drinking. Pre-drinking 'before going out' was identified by 81%, corroborating Aiello et al. (2022).

Our findings support Dumbili, (2022b) and Hennell et al. (2022), in that students pre-drink and play drinking games for specific motives/reasons (including 'fun', 'to get drunk', 'to be sociable' 'to meet people' and for 'pleasure/leisure') purposes. These are consistent with and corroborate the findings of our previous paper. Overall, the motives rated most important were 'it's cheaper to drink at home', (supporting Finan et al. 2020; and Lowe et al. 2023), 'it's a fun thing to do', 'to get the evening started', 'to be sociable' and 'for pleasure/leisure' purposes. These matched with the fun/intoxication', 'conviviality', and 'facilitation' motives identified by Labhart and Kuntsche, (2017).

Findings support determined drunkenness (Measham, 2006), with over half the sample stating 'to get drunk' as a motive for drinking game playing and a similar response was found for pre-drinking. Our findings corroborate a culture of intoxication (Dumbili, 2022b), with approximately 75% stating motives for pre-drinking, which mapped onto this concept. While other findings develop culturally specific new insights into the relationship between pre-drinking and positives and pleasures, with 'for pleasure/leisure', 'it's a fun thing to do' and 'it gives you a pleasant feeling' being universally accepted in our sample. This complements the findings of De Visser et al. (2013) and Dumbili, (2022b). With regards to cultural conventions, students in Singapore appear more conservative using pre-drinking to conform or fit in, unlike their European counterparts. Furthermore, although the UK group corresponded to the general trends outlined above, giving the highest ratings overall for 'it's cheaper to drink at home', UK ratings were significantly different from other country groups.

Alcohol purchased off-trade is available in all the countries studied and relatively inexpensive, apart from in Singapore, encouraging pre-drinking to take place in domestic settings. This is supported by our findings of 72.9% stating that it is 'cheaper to drink at home' and 70.2% saying that they pre-drink 'to get the evening started' supporting Casswell et al. (2014). There was a clear linkage established with high proportions of participants saying that the situation where they drank was 'to preparty' at home, 'before going out', 'to get drunk' and 'to get the evening started' associated with the commercialisation of off-trade drinking (Pennay and Measham, 2016).

Pre-drinking has been identified as a risky drinking practice (Alcohol Change, 2020). However, the normative nature of this activity among UG students (Calhoun and Maggs, 2022) as evidenced in our study, has contributed to difficulties in

developing effective activities to reduce harm (Pedersen et al. 2022; Kuntsche, 2023). Students may aspire to achieve a state of 'determined drunkenness' through pre-drinking with the inclusion of drinking games to reach this altered state (Fairlie et al. 2015). The findings of our study corroborate the motivation for this.

In contrast with professional perceptions, UG students may not perceive their behaviour to be risky, further compounding the issue of providing effective harm reduction strategies (Smit, 2021). Moreover, it has been posited that implementing universal interventions such as targeting specific events, i.e., fresher's week and limiting drinks promotions in public places (Pedersen, 2016), may drive students to increase their use of inexpensive alcohol in domestic settings (Wells, 2009).

Santos et al. (2023) highlight the complexities of implementing universal policies and prevention strategies to address pre-drinking practices, due to the cultural variations and acceptability of interventions by students. Recognising the issues associated with providing universal prevention efforts, Cauldwell et al. (2023) have suggested interventions could be focused on those students who wish to change their alcohol related behaviour. Measures such as the Brief Young Adult Alcohol Consequences Questionnaire (Kahler et al; 2008, Zamboanga et al; 2021) could, therefore, be piloted in universities.

Montes et al. (2016) found promising results from students' use of three main types of protective behavioural strategies (PBS), limiting/stopping drinking, changing the manner of drinking, and harm reduction such as being aware of where your drink is located. Montes et al. (2016) argue protective strategies should be associated with consumption of fewer drinks i.e., not drinking shots, or mixing drinks. Pre-drinking will likely be a difficult behaviour to target intervention and prevention programmes, given its pervasive practice in young people (Pedersen, 2016).

Consideration of both the macro and micro influences of pre-drinking is needed when considering policies and interventions to reduce harm (Ferris et al. 2019). In general tackling alcohol related harm internationally has been challenging, with the WHO (2022b) committing to measures to reduce alcohol related harm, whilst also acknowledging the challenges regarding the globalisation, marketing, and aggressive promotion of alcohol specifically targeted at segmented populations.

Limitations of the study

We recognise several limitations, although the overall sample size is relatively large, some of the groups are small and, therefore it is difficult to make inferences to the wider international student population. It was disappointing that opportunistic sampling resulted in some smaller cohorts and a gender imbalance. The sample of students (apart from the Business students) were from predominantly female dominated degree programmes. Furthermore, the effects of Covid 19 restrictions may have affected pre-drinking engagement. During the restrictions some students returned home, and hence left the student-related drinking culture environment. Going out for drinks or gatherings in domestic settings may have been prohibited or restricted, thus affecting the 'normal' student life. For example, Freshers Weeks may not have taken place in some countries. Finally, the use of a monolingual survey, may have precluded those participants not competent

in English as a first language.

Conclusions

The trends of pre-drinking and drinking game playing, reported in our previous study, are corroborated, and this study confirms that they are interlinked. Students state that both activities act as strategies to imbibe large quantities of relatively inexpensive alcohol in a short period of time. This takes place in domestic settings before going out and is viewed as a fun and sociable situation. The availability of inexpensive alcohol off-trade, to consume in these settings, facilitates pre-drinking. The study highlights the fact that pre-drinking and drinking game playing are common activities in all countries studied but vary in nature and motivation. In the study, students identify that consuming alcohol is an appealing and pleasurable activity, which is promoted by the availability of inexpensive alcohol. This comes with consequent risks to health and therefore harm reduction strategies including minimum unit pricing, setting a baseline price at which a unit of alcohol can be sold, needs to be established.

Our findings presented may be useful in developing targeted harm reduction interventions for UG students. Having established trends, it would be useful to target younger adolescents, more males, students from other continents, greater numbers and facilitating more longitudinal studies and qualitative methods i.e., a narrative approach to study life stories of pre-drinking and drinking games and the use of focus groups to further understand motives, behaviours, contexts, concepts, opinions, and lived experiences to gather in-depth insights. Further studies need to be cognisant of the pleasures associated with pre-drinking and playing drinking games. Overall, interventions, policies, and regulations required to meet the needs of the specific populations, students in different countries, and settings, with differing cultural norms need to be considered.

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