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Do emotions related to alcohol consumption differ by alcohol type? An international cross-sectional survey of emotions associated with alcohol consumption and influence on drink choice in different settings.

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Title: Do emotions related to alcohol consumption differ by alcohol type? An international cross-sectional survey of emotions associated with alcohol consumption and influence on drink choice in different settings.

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ABSTRACT

Objectives

To examine the emotions associated with drinking different types of alcohol, explore whether these emotions differ by socio-demographics and alcohol dependency and whether the emotions associated with different drink types influence people's choice of drinks in different settings.

Design

International cross-sectional opportunistic survey (Global Drug Survey) using an online anonymous questionnaire in 11 languages promoted through newspapers, magazines and social media from November 2015-January 2016.

Study Population

Individuals aged 18-34 years who reported consumption of beer, spirits, red and white wine in the previous 12 months and were resident in countries with more than 250 respondents (n= 21 countries; 29,836 respondents).

Main outcome measures

Positive and negative emotions associated with consumption of different alcoholic beverages (energised, relaxed, sexy and confident, tired, aggressive, ill, restless and tearful) over the past 12 months in different settings.

Results

Alcoholic beverages vary in the types of emotions they elicit, with spirits more frequently eliciting emotional changes of all types. Overall 29.8% of respondents reported feeling aggressive when drinking spirits, compared to only 7.14% when drinking red wine ($p<0.001$). Women more frequently reported feeling all emotions when drinking alcohol, apart from feelings of aggression. Respondent's level of alcohol dependency alcohol was strongly associated with feeling all emotions, with the likelihood of aggression being significantly higher in possible dependent versus low risk drinkers (AOR 6.4; 95%CI 5.79-7.09; $p<0.001$). The odds of feeling the majority of positive and negative emotions also remained highest amongst dependent drinkers irrespective of setting.

Conclusion

Understanding emotions associated with alcohol consumption is imperative to addressing alcohol misuse, providing insight into what emotions influence drink choice between different groups in the population. The differences identified between socio-demographic groups and influences on drink choice within different settings will aid future public health practice to further comprehend individual's drinking patterns and influence behaviour change.

ARTICLE SUMMARY

Strengths and limitations of this study

- The Global Drug Survey is a well-established international survey that allows analysis of both drug and alcohol use.
- Using on-line methods in multiple languages, the Global Drug Survey 2016 included unique questions on alcohol consumption and emotions related to consuming different types of alcohol.
- All respondents within the sample used for this study drank all types of alcohol included in the analysis.
- Although the sample size for the study is large, the sample is opportunistic and non-probability samples cannot be considered representative of more general population groups.
- Analysis makes the assumption that alcohol consumption behaviours are based on rational choice, which may not always be the case due to confounding factors such as the influence of alcohol on recollection.

Funding statement

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors. The GDS is a independent self-funded survey.

No competing interests

We have read and understood BMJ policy on declaration of interests and declare that we have no competing interests.

Ethics

Ethical approval for the GDS 2016 was obtained from the Psychiatry, Nursing and Midwives Ethics Subcommittee at Kings College London.

INTRODUCTION

Alcohol use is of international public health concern with approximately 3.3 million deaths and 5.1% of the global burden of disease and injury attributable to alcohol consumption.[1] In addition, there is a growing body of evidence illustrating the harms caused by those who drink alcohol to individuals around them and to wider communities (e.g. through alcohol related violence and anti-social behaviour).[2-4] Understanding why people choose particular drink types and whether different drinks elicit different emotions may help inform more effective public health interventions.

Alcohol consumption has a long-standing association with mood, with evidence showing that people consume alcohol to help regulate emotional experiences, reduce negative emotions and enhance positive emotions.[5-6] A substantial body of research exists which outlines drinking motives, defined as the gateway to the decision to consume alcohol, and makes the assumption that people drink in order to achieve a particular goal.[7-9] Social motives have been associated with moderate alcohol use; enhancement motives (for example, increasing levels of confidence) with heavy drinking; and coping motives with alcohol-related problems.[7] Evidence also outlines how expectancies about the perceived consequences of drinking alcohol affects whether people start to drink, become regular drinkers or become dependent on alcohol.[10]

Historically, alcohol's perceived capacity to temporarily reduce negative emotions (and consequently increase pleasure and relaxation) has been regarded as the primary reason for consumption.[11] Individuals across the United States, Canada and Sweden have previously reported associating generally positive emotions with alcohol consumption, emphasising feelings of relaxation, and reporting alcohol as an antidote to fatigue and contributing to increasing the values of sociability.[12] Social mood enhancement has also been found to be the most highly endorsed reason for drinking, with alcohol consumption being strongly associated with short term increases in self-reported positive mood, decreases in negative mood and increases in levels of social bonding.[13] However, although alcohol may initially induce stimulation, consumption has also been associated with triggering negative emotions, such as aggression and depression[14-16] and can lead to out-of-character actions being undertaken by the drinker and exacerbate premorbid personality traits.[17]

Outside cultural myth and folklore, little attention has been paid to the immediate emotions associated with drinking different types of alcohol. Potential differences in the emotional consequences (both positive and negative) of drinking different types of alcohol (e.g. spirits vs. beer) and how emotional expectations from past experiences of different alcohol types influence drink choice remain relatively unexplored areas. However, measures that look to change drinking behaviour and consequently reduce alcohol related harms could benefit from a better understanding of how different drink types are associated with diverse social and emotional outcomes and how such relationships vary with demographics and drinking situation (for example, whether drinking at home or when out). In this study, we used the internationally established Global Drug Survey (GDS) to identify which drink types are associated with different emotional outcomes in alcohol consumers from 21 countries and how both demographic factors and levels of dependency on alcohol affect such relationships. Finally, we explored whether emotions that

respondents associate with different drink types influence their choices of drinks in different settings.

METHODS

Data source

The GDS is the world's biggest drug survey. Using encrypted on-line survey methods, the GDS is run as an annual, opportunistic, self-reported, cross sectional survey of alcohol and drug use amongst adults over the age of 16 years.[18] The GDS 2016 was launched online in November 2015 in 11 languages (English, German, Greek, Polish, French, Italian, Spanish, Portuguese, Flemish, Hungarian and Danish) and promoted internationally through national media (newspapers, magazines and social media networks). While the GDS non-probability methodology is not useful to support the assessment of general population prevalence, the GDS sample allows analysis of specific populations, including segmentation by age groups, gender, sexual preferences, place of residence, or mental health status. GDS can efficiently add nuance and add depth to the findings of more representative surveys, which are often less detailed and based on smaller samples. The GDS has previously been used to examine both alcohol and drug use, for example exploring the risk of emergency admission after drug use, trends in self-reported drug use such as nitrous oxide and examining harm to others from alcohol consumption.[4, 19-20] Whilst it was not designed to create supra-national or nationally representative population estimates it does provides access to a large sample of self-selected individuals. Other publications provide full details of other aspects of the utility, design and limitations of the GDS.[4, 19]

Variables

Socio-demographic data were collected on age, sex, country of residence and educational attainment (here categorised into either not attended high school, or attended high school) as a proxy for socio-economic status. The GDS also collects data on the consumption of both legal and illegal drug use and alcohol use.[18] Analyses within this study focus on individual alcohol use and utilise a range of questions that asked respondents to self-report what type of alcoholic drink(s) they consume and which different emotions they associated with each alcohol type. Emotions included were both positive (energised, relaxed, sexy and confident) and negative (tired, aggressive, ill, restless and tearful). Data were also collected on what types of alcohol were most likely to be drunk at home or when out and levels of consumption for each participant using the Alcohol Use Disorders Test (AUDIT) were also calculated.[21]

Study population

In total, 87,925 respondents completed the survey and had reported drinking alcohol in the last 12 months. However, in order to use a more defined dataset for analyses, the data used was restricted to respondents who had reported their sex, were resident in a country which contributed at least 250 responses to the overall survey and were aged 18-34 years old. In total, 4,271 cases were excluded due to low country response and 23,076 were excluded as they were out of the desired age range leaving a sample of 60,578. All respondents to the survey reported their gender. For the purposes of examining emotional relationships with different alcohol types only individuals who had

consumed all alcohol types of interest (i.e. spirits, red wine, white wine and beer) at some point in the last 12 months and had indicated one of these as their main drink when at home and when outside of the home were included. Although some respondents reported drinking other beverages, for example cider, the numbers were too small for inclusion in the analysis. This resulted in a final sample size of 29,836. Full details of sample demographics used in the analysis are outlined in Supplementary Table A.

Statistical methods

To identify and quantify the strength of association between variables used in the analysis, chi squared, Cochran's Q, McNemar's test and logistic regression modelling were undertaken in SPSS (V.23). Demographics included in analyses were age (categorised as 18-24, 25-29 and 30-34 years), sex, country of residence, basic educational attainment (whether respondents had attended at least a high school or secondary school education) and levels of dependency on alcohol. Based on the AUDIT questionnaire, for the purposes of analyses respondents were classified into the following dependency categories: 0-7, low risk; 8-15, increasing risk; 16-19, higher risk; 20+, possible dependence.[21] The emotions associated with drinking individual types of alcohol were analysed and the emotions individuals experience regardless of the drink they associated the emotion with were combined to create a set of variables which describe the emotions associated with drinking any of the different types of alcohol (spirits, white wine, red wine or spirits). In addition, to analyse how emotions related to drink choice in different settings, the responses to what drinks were reported to be mostly consumed in different settings and the emotions which people reported with those particular drink types were linked.

RESULTS

Results indicated that drinking different types of alcohol elicited different emotions (Table 1). Over half of all respondents associated drinking spirits with emotions of energy and confidence and 42.4% reported that drinking spirits made them feel sexy. Respondents were most likely to report feeling relaxed (52.8%) when drinking red wine; although almost half of respondents also reported feeling relaxed when drinking beer (Table 1). Drinking spirits was more likely to draw out feelings of aggression, illness, restlessness and tearfulness than all other drink types (Table 1). However, red wine was the most likely to make individuals feel tired (60.1%, Table 1).

Table 1: Overall reported emotions by individual type of alcoholic drink (%)

			Drink type									
		n	Spirits	95%CI	Red wine	95%CI	White wine	95%CI	Beer	95%CI	Cochran's Q	P
Positive emotions	Energised	29836	58.36	57.80-58.92	7.14	6.84-7.43	15.07	14.66-15.47	24.76	24.27-25.24	23610.470	<0.001
	Confident	29836	59.08	58.52-59.63	27.88	27.37-28.39	28.27	27.76-28.78	44.54	43.97-45.10	11885.08	<0.001
	Relaxed	29836	20.15	19.70-20.61	52.80	52.23-53.37	32.67	32.14-33.20	49.87	49.30-50.43	9578.230	<0.001
	Sexy	29836	42.42	41.85-42.98	25.20	24.71-25.70	23.73	23.24-24.21	18.86	18.41-19.31	6261.860	<0.001
Negative emotions	Tired	29836	15.33	14.92-15.74	60.08	59.52-60.63	18.44	18.00-18.88	38.92	38.36-39.47	17024.29	<0.001
	Aggressive	29836	29.83	29.31-30.35	2.57	2.39-2.75	2.74	2.55-2.92	6.73	6.44-7.01	17467.32	<0.001
	Ill	29836	47.82	47.26-48.39	19.29	18.84-19.74	14.50	14.10-14.90	16.71	16.28-17.13	13032.62	<0.001
	Restless	29836	27.81	27.30-28.32	5.18	4.93-5.43	6.43	6.15-6.71	9.34	9.01-9.67	11329.91	<0.001
	Tearful	29836	22.24	21.77-22.71	17.10	16.67-17.52	9.96	9.62-10.30	9.88	9.54-10.22	3551.28	<0.001

Emotional associations with drinking any type of alcohol (spirits, white wine, red wine and beer)

Overall, differences in emotions elicited by drinking any type of alcohol (here inclusive of spirits, white wine, red wine and beer) were examined for socio-demographic groups. With the exception of feeling aggressive, females were significantly more likely than males to report each emotion as a result of drinking any type of alcohol (Table 2). Younger age groups (18-24 years) most frequently reported the most emotion types when drinking alcohol. Exceptions were aggression and tiredness where there was no significant association with age (Table 2). Respondents' alcohol consumption (AUDIT score) was strongly associated with both positive and negative emotions, with heavier drinkers more likely to report all emotional changes as a result of drinking. This relationship was especially strong for the emotions of aggression (Table 2). A greater proportion of those with lower educational attainment reported both positive (energised, sexy or confident) and negative (aggressive, ill or tearful) emotions when drinking alcohol compared with those who had attended high school (Table 2). Bivariate associations between emotions and both alcohol dependence level and demographics remained significant after using logistic regression modelling to control for confounding relationships between variables (Table 3; online supplementary table B for country of residence). Thus, females had higher odds of feeling all emotions compared to males apart from aggression where males had significantly higher odds. Younger age groups had higher odds of feeling all emotions apart from tiredness and aggression. Odds of reporting all emotions increased with AUDIT score category, in particular feelings of aggression (Table 3). Differences in emotions were also reported by country with the highest association with the positive emotions of feeling energised, relaxed and sexy being the South American countries of Colombia and Brazil. For negative emotions, the country with the strongest association with aggression when drinking alcohol was Norway and feeling restless was France (online supplementary table B). However, caution must be taken when interpreting these results due to the limitations of the sample for each country, which is addressed in the limitations section of the discussion.

Table 2: Bivariate relationship between emotions associated with drinking any type of alcohol[¶] and AUDIT score and socio-demographics (%)

			Emotions associated with drinking any type of alcohol[¶]								
			Positive emotions				Negative emotions				
		n	Energised	Relaxed	Sexy	Confident	Tired	Aggressive	Ill	Restless	Tearful
AUDIT	Lower risk (0-7)	10577	61.11	83.32	51.74	65.78	85.07	20.28	62.33	29.25	26.78
	Increasing risk (8-15)	14205	79.25	90.55	65.91	80.76	87.83	38.24	72.22	39.63	39.87
	Higher risk (16-19)	2895	86.60	93.16	73.92	87.63	89.50	52.71	79.24	48.70	50.78
	Dependence (20+)	2159	90.13	93.61	73.83	89.95	88.42	63.08	80.64	55.16	59.70
	x^2		1659.410	452.744	868.464	1244.958	63.389	2218.420	563.548	770.746	1220.481
	p		***	***	***	***	***	***	***	***	***
Sex	Male	19934	73.01	88.06	57.17	75.88	85.45	36.97	67.45	36.98	32.27
	Female	9902	76.96	89.28	72.43	78.61	90.29	31.27	75.16	39.92	48.71
	x^2		54.179	9.635	655.165	27.760	137.980	94.407	187.240	24.269	761.188
	p		***	**	***	***	***	***	***	***	***
Age (years)	18-24	16333	79.30	89.19	67.03	81.36	86.97	35.39	72.32	40.06	40.38
	25-29	8744	70.53	87.98	59.00	73.28	87.64	35.16	68.57	36.76	35.94
	30-34	4759	64.22	86.85	51.73	67.49	86.28	33.83	64.70	32.95	31.88
	x^2		532.72	22.585	422.007	482.601	5.278	3.993	114.045	86.724	130.036
	p		***	***	***	***	NS	NS	***	***	***
Attended high school	Yes	29365	74.17	88.42	62.13	76.64	87.05	34.95	69.85	37.91	37.61
	No	471	84.08	91.08	68.79	85.99	87.26	43.10	79.62	41.19	45.01
	x^2		23.855	3.224	8.743	22.742	0.0180	13.5330	21.0560	2.1220	10.8190
	p		***	NS	**	***	NS	***	***	NS	***

AUDIT, alcohol use disorders identification test; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with drinking spirits, white wine, red wine and beer.

Table 3: Logistic regression model[¶] for AUDIT score and socio-demographic relationships with emotions associated with drinking any type of alcohol[†]

			Emotions associated with drinking any type of alcohol[†]							
			Positive emotions							
			Energised		Relaxed		Sexy		Confident	
		n	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
AUDIT	Lower risk (0-7)[‡]	10577								
	Increasing risk (8-15)	14205	2.28 (2.15-2.42)	***	1.864 (1.73-2.02)	***	1.830 (1.73-1.93)	***	2.034 (1.92-2.16)	***
	Higher risk (16-19)	2895	3.508 (3.12-3.94)	***	2.552 (2.19-2.98)	***	2.640 (2.40-2.90)	***	3.180 (2.82-3.59)	***
	Dependence (20+)	2159	4.733 (4.07-5.50)	***	2.657 (2.21-3.19)	***	2.581 (2.32-2.87)	***	3.860 (3.33-4.48)	***
Sex	Female[‡]	9902								
	Male	19934	0.731 (0.69-0.78)	***	0.861 (0.80-0.93)	***	0.475 (0.45-0.50)	***	0.816 (0.77-0.87)	***
	18-24[‡]	16333								
Age (years)	25-29	8744	0.696 (0.65-0.74)	***	0.961 (0.88-1.04)	NS	0.774 (0.73-0.82)	***	0.692 (0.65-0.74)	***
	30-34	4759	0.522 (0.48-0.56)	***	0.900 (0.81-1.00)	*	0.611 (0.57-0.65)	***	0.529 (0.49-0.57)	***
Attended high school	No[‡]	471								
	Yes	29365	0.856 (0.66-1.11)	NS	1.080 (0.78-1.50)	NS	0.972 (0.79-1.20)	NS	0.783 (0.60-1.03)	NS

			Negative emotions									
			Tired		Aggressive		Ill		Restless		Tearful	
		n	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
AUDIT	Lower risk (0-7)‡	10577	1.347 (1.25-1.45)	***	2.403 (2.27-2.55)	***	1.403 (1.33-1.49)	***	1.549 (1.47-1.64)	***	1.897 (1.79-2.01)	***
	Increasing risk (8-15)	14205	1.636 (1.43-1.87)	***	4.262 (3.90-4.66)	***	1.827 (1.65-2.03)	***	2.18 (2.00-2.38)	***	2.955 (2.71-3.23)	***
	Higher risk (16-19)	2895	1.486 (1.28-1.72)	***	6.407 (5.79-7.09)	***	1.823 (1.35-2.03)	***	2.811 (2.55-3.10)	***	4.249 (3.84-4.70)	***
	Dependence (20+)	2159										
Sex	Female‡	9902	0.626 (0.58-0.68)	***	1.178 (1.12-1.24)	***	0.659 (0.62-0.70)	***	0.839 (0.80-0.88)	***	0.451 (0.43-0.48)	***
	Male	19934										
Age (years)	18-24‡	16333	1.095 (1.01-1.19)	*	1.106 (1.04-1.17)	***	0.962 (0.91-1.02)	***	0.920 (0.87-0.97)	**	0.9 (0.85-0.95)	***
	25-29	8744	1.037 (0.94-1.14)	NS	1.089 (1.01-1.17)	***	0.795 (0.74-0.86)	***	0.793 (0.74-0.85)	***	0.816 (0.76-0.88)	***
	30-34	4759										
Attended high school	No‡	471	1.119 (0.85-1.48)	NS	0.906 (0.74-1.10)	NS	0.861 (0.68-1.10)	NS	1.054 (0.87-1.28)	NS	0.829 (0.68-1.01)	NS
	Yes	29365										

AUDIT, alcohol use disorders identification test; AOR, adjusted odds ratio; CI, confidence interval; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

¶Country of residence was also included in the logistic regression model. See online Supplementary Table B.

†Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with drinking spirits, white wine, red wine and beer.

‡reference category.

Emotional associations by individual drink type

For each individual drink type, positive emotions were more frequently reported by those with higher alcohol dependency scores. This was also true of negative emotions, with the exception of feeling tired when drinking spirits or red wine. Females were more likely to report each emotion when drinking spirits, red wine and white wine, with the exceptions of feeling relaxed, tired or aggressive with spirits, and energised with red wine. Males were more likely to report each emotion when drinking beer, apart from feeling tearful (Table 4).

Emotions reported with each alcohol type varied by age group. For example, feeling tired or relaxed when drinking spirits and red wine were more frequently reported by the youngest age group, whereas for white wine and beer these emotions were more frequently reported by the oldest age group. In addition, emotions associated with each drink type were more frequently reported by respondents who had not attended high school or higher education, with the exception of feeling sexy, ill or restless when drinking spirits, relaxed or tired when drinking red wine and energised or relaxed when drinking beer. Italian residents more frequently reported feeling energised whilst drinking red wine and those from Colombia were more likely to report feeling energised when drinking spirits (Online supplementary tables C and D).

Table 4: Logistic regression models[¶] for AUDIT score and socio-demographic relationships with emotions associated with drinking an individual type of alcohol

		Positive emotions								Negative emotions									
		Energised		Relaxed		Sexy		Confident		Tired		Aggressive		Ill		Restless		Tearful	
		AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
Spirits																			
AUDIT[†]	Increasing risk (8-15)	1.879 (1.78-.198)	***	0.916 (0.86-0.98)	**	1.601 (1.52-1.69)	***	1.633 (1.55-1.72)	***	0.762 (0.71-0.82)	***	2.419 (2.27-2.58)	***	1.197 (1.14-1.26)	***	1.552 (1.46-1.65)	***	1.674 (1.56-1.79)	***
	Higher risk (16-19)	2.467 (2.25-2.71)	***	0.952 (0.86-1.06)	NS	2.102 (1.93-2.29)	***	2.281 (2.08-2.50)	***	0.798 (0.71-0.90)	***	4.171 (3.81-4.57)	***	1.347 (1.24-1.47)	***	1.961 (1.79-2.15)	***	2.402 (2.18-2.65)	***
	Dependence (20+)	3.022 (2.71-3.37)	***	1.043 (0.93-1.06)	NS	2.211 (2.01-2.44)	***	2.507 (2.25-2.79)	***	0.707 (0.62-0.81)	***	6.018 (5.44-6.66)	***	1.293 (1.18-1.42)	***	2.652 (2.40-2.93)	***	3.279 (2.95-3.65)	***
Sex[‡]	Male	0.771 (0.73-0.81)	***	1.185 (1.11-1.26)	***	0.638 (0.61-0.67)	***	0.888 (0.84-0.94)	***	1.416 (1.32-1.52)	***	1.159 (1.10-1.23)	***	0.845 (0.80-0.89)	***	0.823 (0.78-0.87)	***	0.531 (0.50-0.56)	***
Red wine																			
AUDIT[†]	Increasing risk (8-15)	1.230 (1.11-1.37)	***	1.185 (1.13-1.25)	***	1.305 (1.23-1.39)	***	1.280 (1.21-1.36)	***	1.186 (1.12-1.25)	***	1.568 (1.29-1.90)	***	1.312 (1.22-1.41)	***	1.181 (1.04-1.34)	**	1.815 (1.68-1.96)	***
	Higher risk (16-19)	1.405 (1.20-1.65)	***	1.202 (1.13-1.25)	***	1.526 (1.39-1.68)	***	1.446 (1.32-1.59)	***	1.312 (1.20-1.43)	***	2.682 (2.11-3.42)	***	1.722 (1.56-1.91)	***	1.740 (1.46-2.07)	***	2.636 (2.37-2.94)	***
	Dependence (20+)	1.818 (1.55-2.14)	***	1.194 (1.09-1.32)	***	1.456 (1.31-1.62)	***	1.618 (1.46-1.79)	***	1.257 (1.14-1.39)	***	3.701 (2.91-4.71)	***	1.804 (1.61-2.02)	***	2.075 (1.73-2.49)	***	3.288 (2.93-3.69)	***
Sex[‡]	Male	1.157	**	0.762	***	0.604	***	0.770	***	0.543	***	0.805	**	0.776	***	0.895	*	0.453	***

		(1.05-1.28)		(0.72-0.80)		(0.57-0.86)		(0.73-0.81)		(0.52-0.57)		(0.69-0.94)		(0.73-0.83)		(0.80-0.10)		(0.43-0.48)		
White wine																				
AUDIT[†]	Increasing risk (8-15)	1.566 (1.45-1.69)	***	1.438 (1.35-1.53)	***	1.038 (0.98-1.10)	NS	1.465 (1.38-1.56)	***	0.857 (0.80-0.92)	***	2.175 (1.79-2.64)	***	1.381 (1.27-1.50)	***	1.377 (1.23-1.54)	***	1.681 (1.52-1.85)	***	
	Higher risk (16-19)	1.922 (1.71-2.16)	***	1.754 (1.59-1.94)	***	1.100 (1.01-1.20)	*	1.690 (1.54-1.85)	***	0.937 (0.84-1.04)	NS	3.53 (2.76-4.52)	***	1.710 (1.52-1.92)	***	2.127 (0.82-2.49)	***	2.543 (2.22-2.91)	***	
	Dependence (20+)	2.224 (1.96-2.52)	***	1.78 (1.60-1.99)	***	1.066 (0.96-1.18)	NS	1.801 (1.63-2.00)	***	0.854 (0.76-0.97)	*	5.469 (4.28-6.99)	***	1.990 (1.76-2.25)	***	2.551 (2.16-3.01)	***	3.391 (2.95-3.90)	***	
Sex[‡]	Male	0.561 (0.53-1.60)	***	0.411 (0.39-0.44)	***	0.568 (0.54-0.60)	***	0.528 (0.50-0.56)	***	0.714 (0.67-0.76)	***	0.756 (0.65-0.88)	***	0.734 (0.69-0.79)	***	0.786 (0.71-0.87)	***	0.356 (0.33-0.39)	***	
Beer																				
AUDIT[†]	Increasing risk (8-15)	1.575 (0.15-1.68)	***	1.360 (1.29-1.43)	***	1.551 (1.45-1.66)	***	1.577 (1.50-1.66)	***	1.024 (0.97-1.08)	NS	1.697 (1.51-1.91)	***	1.060 (0.97-1.12)	NS	1.372 (1.25-1.51)	***	1.625 (1.48-1.79)	***	
	Higher risk (16-19)	1.943 (1.77-2.14)	***	1.496 (1.37-1.63)	***	1.981 (1.79-2.20)	***	1.975 (1.81-2.15)	***	1.092 (1.00-1.19)	*	2.563 (2.19-3.00)	***	1.092 (0.98-1.22)	NS	1.772 (1.55-2.03)	***	2.321 (1.03-2.65)	***	
	Dependence (20+)	2.139 (1.93-2.38)	***	1.627 (1.48-1.79)	***	1.937 (1.72-2.18)	***	1.964 (1.78-2.16)	***	1.105 (1.00-1.22)	*	3.281 (2.79-3.86)	***	1.078 (0.95-1.22)	NS	2.409 (2.09-2.77)	***	3.002 (1.61-3.45)	***	
Sex[‡]	Male	1.246 (1.18-1.32)	***	1.773 (1.69-1.86)	***	1.410 (1.32-1.51)	***	1.552 (1.48-1.63)	***	1.461 (1.39-1.54)	***	1.592 (1.43-1.77)	***	0.671 (0.63-0.72)	***	1.013 (0.93-1.10)	NS	0.988 (0.91-1.07)	NS	

AUDIT, alcohol use disorders identification test; AOR, adjusted odds ratio; CI, confidence interval; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Country of residence, age and educational attainment was also included in the logistic regression model. See online Supplementary Table D.

[†]Reference category is lower risk (0-7).

‡Reference category is female.

Emotional associations with any type of alcohol by choice of drink in different settings

Finally, how the different emotions associated with drink type influence people's choices of alcoholic beverages in different settings was examined, taking into account confounding demographic factors (Table 5a and 5b; online supplementary table E). For each type of emotion, significant differences were reported between emotions elicited by the types of drinks which were mostly drunk at home compared to on a night out (Table 5a). Reporting a dependency on alcohol showed a strong association with drinking any type of alcohol which made them feel energised, sexy and confident whether drinking at home or when out. In addition, respondents dependent on alcohol reported a greater tendency to select any type of drink that elicited emotions of aggression and tearfulness when drinking at home or when out. The association between emotions of aggression and dependency was noticeably strongest, independent of setting. Females more frequently reported drinking types of alcohol at home and when out which elicit the emotion of feeling sexy compared to men (Table 5b).

The youngest age group indicated a very strong relationship with choosing any type of alcohol that made them feel energised, sexy and confident when drinking outside of the home. However, these relationships were not as strong when drinking at home. The oldest age group more frequently chose to drink alcohol that made them feel tired and relaxed when out and the youngest age groups selecting drinks that made them feel tired when drinking at home (online supplementary table E).

Table 5a: Bivariate association[¶] for emotions associated with drinking any type of alcohol[‡] by setting, AUDIT score and socio-demographic relationships

				n[¥]	%[¥]	x^2 (p)
Positive emotions	**Mostly drank a drink which made you feel**	**Energised**	**At home**	8008	26.84	
			When out	13259	44.44	3683.349 (***)
		Relaxed	**At home**	19271	64.59	
			When out	13929	46.69	3428.640 (***)
		Sexy	**At home**	9244	30.98	
			When out	10458	35.05	257.954 (***)
		Confident	**At home**	14613	48.98	
			When out	17673	59.23	1642.240 (***)
Negative emotions	**Mostly drank a drink which made you feel**	**Tired**	**At home**	12535	42.01	
			When out	8394	28.13	2204.450 (***)
		Aggressive	**At home**	1888	6.33	
			When out	4087	13.7	1646.066 (***)
		Ill	**At home**	3653	12.24	
			When out	6077	20.37	135.873 (***)
		Restless	**At home**	2589	8.68	
			When out	4583	15.36	1336.490 (***)
		Tearful	**At home**	4367	14.64	
			When out	4573	15.33	13.636 (***)

AUDIT, alcohol use disorders identification test; AOR, adjusted odds ratios; CI, confidence intervals; NS, non significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]McNemar test (x2)

[‡]Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with drinking spirits, white wine, red wine and beer.

[¥]Refers to the number and percentage of respondents out of the whole sample (n=29836) who stated that they mostly drank a type of drink which makes them feel particular emotions in different settings.

Table 5b: Logistic regression model† for emotions associated with drinking any type of alcohol‡ by setting¥, AUDIT score and socio-demographic relationships

		At home AOR (95%CI)	p	When out AOR (95%CI)	p	At home AOR (95%CI)	p	When out AOR (95%CI)	p	At home AOR (95%CI)	p	When out AOR (95%CI)	p	At home AOR (95%CI)	p	When out AOR (95%CI)	p
Positive emotions		**Energised**				**Relaxed**				**Sexy**				**Confident**			
AUDIT	Lower risk (0-7)€																
	Increasing risk (18-15)	1.563 (1.47-1.66)	***	1.654 (1.57-1.75)	***	1.202 (1.14-1.27)	***	1.136 (1.08-1.20)	***	1.454 (1.37-1.54)	***	1.515 (1.43-1.60)	***	1.563 (1.48-1.65)	***	1.662 (1.58-1.75)	***
	Higher risk (16-19)	2.081 (1.90-2.28)	***	2.253 (2.07-2.46)	***	1.344 (1.23-1.47)	***	1.172 (1.08-1.28)	***	1.817 (1.66-1.99)	***	1.983 (1.82-2.17)	***	2.057 (1.89-2.24)	***	2.342 (2.14-2.57)	***
	Dependence (20+)	2.607 (2.36-2.88)	***	2.594 (2.35-2.86)	***	1.320 (1.19-1.46)	***	1.178 (1.07-1.30)	***	1.956 (1.77-2.16)	***	2.075 (1.88-2.29)	***	2.148 (1.95-2.37)	***	2.305 (2.08-2.56)	***
Sex	Female€																
	Male	1.091 (1.03-1.15)	**	0.760 (0.72-0.80)	***	0.906 (0.86-0.95)	***	1.338 (1.27-1.41)	***	0.542 (0.51-0.57)	***	0.644 (0.61-0.68)	***	0.992 (0.94-1.04)	NS	0.932 (0.86-0.98)	**
Negative emotions		**Tired**				**Aggressive**				**Ill**				**Tearful**			
AUDIT	Lower risk (0-7)€																
	Increasing risk (18-15)	0.990 (0.94-1.04)	NS	0.899 (0.85-0.95)	***	1.957(1.91-2.23)	***	2.139 (1.96-2.34)	***	1.198 (1.10-1.30)	***	1.184 (1.11-1.27)	***	1.696 (1.56-1.84)	***	1.708 (1.58-1.85)	***
	Higher risk (16-19)	0.993 (0.91-1.08)	NS	0.984 (0.81-0.98)	*	3.622 (3.08-4.26)	***	3.608 (3.21-4.06)	***	1.422 (1.26-1.61)	***	1.353 (1.22-1.50)	***	2.489 (2.22-2.79)	***	2.525 (2.26-2.82)	***
	Dependence (20+)	0.902 (0.82-0.99)	*	0.846 (0.76-0.94)	**	5.128 (4.35-6.05)	***	5.096 (4.51-5.76)	***	1.612 (1.41-1.84)	***	1.434 (1.29-1.61)	***	3.618 (3.21-4.08)	***	3.572 (8.18-4.02)	***
Sex	Female€																
	Male	1.054 (1.00-1.11)	*	1.655 (1.56-1.75)	***	1.542 (1.38-1.72)	***	1.107 (0.94-1.10)	NS	0.863 (0.80-0.93)	***	0.761 (0.72-0.81)	***	0.521 (0.49-0.56)	***	0.587 (0.55-0.93)	***

AUDIT, alcohol use disorders identification test; AOR, adjusted odds ratios; CI, confidence intervals; NS, non significant.

*p<0.05, **p<0.01, ***p<0.001.

†Country of residence, age and educational attainment was also included in the logistic regression model. See online Supplementary Table E.

‡Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with drinking spirits, white wine, red wine and beer.

¥Respondents reported which drink type they mostly drank when at home and when out

€reference category

DISCUSSION

Using an international sample, our study found that different types of alcohol make people feel differently, eliciting both positive and negative emotions (Table 1), and highlights the complex relationships between drink choice, emotions and the settings in which alcohol is consumed. Emotions were found to differ substantially between different groups of the population and these relationships were maintained after accounting for confounding socio-demographics and level of alcohol dependency (Table 3). The association between drinking spirits and the emotion of aggression was a key finding with 29.8% of respondents reporting this relationship, significantly higher than other types of alcohol ($p<0.001$; Table 1). Dependent drinkers (AUDIT >20) were found to rely on alcohol to obtain the positive emotions they associated with drinking, being five times more likely to feel energised compared to low risk drinkers (Adjusted Odds Ratio (AOR) 4.7; 95%CI 4.07-5.50; Table 3). However, heavier drinkers also reported negative emotions more frequently with respondents being just over six times more likely to report feelings of aggression (AOR 6.4; 95%CI 5.79-7.09; $p<0.001$; Table 3), which may in part be a result of drinking greater quantities of alcohol in a session so increasing the impact on emotions. These results are consistent with existing evidence on alcohol dependence.[22] Females more frequently reported all emotions apart from feelings of aggression and younger age groups more frequently reported all emotions with the exception of aggression and tiredness (Table 3). Our findings support previous research which highlights that male beer drinkers show less aggression than males who drink spirits (Table 4).[23] Spirits are a popular choice of drink in a number of countries, with substantial proportions of the population consuming spirits on a regular basis.[24] Within our sample, spirits were more likely than beer, red wine and white wine to elicit the majority of positive emotions when consumed. However, they were also more likely to be associated with negative emotions (Table 4). These findings suggest that individuals make the assumption that positive emotions associated with drinking particular types of alcohol such as spirits will outweigh the negative emotions. Finally, our results show that individuals dependent on alcohol more frequently associated emotions with alcohol whether they were drinking at home or when out (Table 5).

Existing literature illustrates that previous experiences with alcohol are related to intentions to drink alcohol in the future.[25] Our analyses demonstrate how individuals are, to some extent, consuming beverages in different settings based on the emotions they perceive to be associated with particular types of alcohol (Table 5). These findings suggest that individuals inadvertently select drinks which are known to elicit negative emotions because they crave the positive emotions that go with them, and link with existing evidence that those dependent on alcohol drink alcohol as a coping mechanism, rather than drinking for pleasure.[7] This was evident particularly amongst heavier drinkers. This highlights a potential emotional gap which individuals may be looking to fill by drinking alcohol. This gap can be a concern, particularly with exploitation by the alcohol industry with advertising focused on pushing the positive emotions associated with alcohol use without outlining the negatives which go alongside them.

Understanding the relationship between different types of alcohol and the emotions and associated behaviours they may elicit may help improve public health messages and health promotion, and may help to prevent escalation to dependent drinking.[6-7, 10] The results from this study can be used to influence behaviour change policy and contribute significantly to the limited evidence base on alcohol use and emotions. Previous studies have tended to focus on the effect of alcohol as a whole.[5-6] These results suggest that the different types of alcohol are not necessarily perceived or used in the same way and therefore harm prevention policy may benefit from treating types of drinks differently; especially when addressing spirits and, for instance their significant association with aggression (Table 4).

The large sample used for analyses within this study includes a high proportion of younger age respondents who can be difficult to capture via telephone or face-to-face interviews. This age group corresponds with age groups often studied within this field of research, for example students and adolescents.[5, 15, 25] Using a unique range of questions which asked about alcohol use and emotions associated with individual types of alcohol, the survey data

allowed for novel analysis on how groups within the survey population associate emotions with different types of alcohol in different settings.

However, this research has a number of important limitations. Although the sample size for the study is large, the opportunistic nature of the survey means it should not be considered representative of any country or region. As the sample was self-selected, there may be an over-representation of individuals who are more likely to participate in drug and alcohol use. The sample will be biased towards those with access to the internet, and is not representative of national populations. However, confounders of socio-demographics and alcohol dependency were accounted for in the analysis to illustrate the associations between emotions and drink types in different groups of the population. This study uses data which has been self-reported by respondents and the emotions associated with alcohol consumption may have been affected by confounding factors such as mood prior to drinking and mixing of alcohol drink type in individual drinking sessions which were unable to be controlled for. Additionally, without knowledge about the amount of alcohol consumed and the rate at which it was drunk, such inferences remain speculative. Respondents may have also undertaken other activities while consuming specific drinks such as dancing, socialising and drug use, which may have affected emotions reported to be associated with each drink type. We also cannot rule out the impact of recall bias and the deliberate misreporting of results.

Further research is required into why people choose to consume specific drink types in different settings, their mood prior to drinking and drinking patterns including combination of drinks consumed on individual occasions. This arena of evidence may also benefit from additional qualitative research to further understand how alcohol makes people feel and how this affects drink choice in different settings. Research using an experimental approach is also an area for future research to examine the immediate effects on individual emotions when consuming alcohol.

CONCLUSION

This research adds international evidence to the limited number of studies undertaken on the feelings associated with drinking different types of alcohol and how this influences what alcohol is being drunk in different settings. Commonly, the evidence around alcohol and its relationship with emotions has been based on scientific effects on the brain or directly on drinking motives and alcohol expectancies. This research outlines the differences between self-reported emotions perceived by the individual as related to the consumption of different types of alcohol amongst different groups of individuals. Results from these analyses can be used by public health bodies to understand alcohol consumption behaviour and to inform strategies and interventions to promote behaviour change with regards to alcohol consumption, particularly amongst heavier drinkers.

Contributorship statement

Adam Winstock developed and directed the survey. Mark A Bellis conceived and designed the survey questions on alcohol. Adam Winstock coordinated data collection and Kathryn Ashton carried out data cleaning on the alcohol data. Kathryn Ashton performed the statistical analyses and drafted the manuscript. Kathryn Ashton, Mark A Bellis, Alisha Davies, Karen Hughes and Adam Winstock edited and approved the final manuscript.

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Supplementary Table A: Sample demographics

		%	n
Sex	Male	66.81	19934
	Female	33.19	9902
Age (years)	18-24	54.74	16333
	25-29	29.31	8744
	30-34	15.95	4759
Attended high school	No	1.58	471
	Yes	98.42	29365
AUDIT	Lower risk (0-7)	35.45	10577
	Increasing risk (8-15)	47.61	14205
	Higher risk (16-19)	9.70	2895
	Dependence (20+)	7.24	2159
Country of residence	Australia	4.56	1360
	Austria	2.95	880
	Belgium	1.27	378
	Brazil	0.71	213
	Canada	1.57	468
	Colombia	1.25	372
	France	4.95	1478
	Germany	34.50	10294
	Hungary	3.54	1055
	Ireland	0.77	230
	Italy	4.25	1268
	Mexico	0.70	210
	Netherlands	5.75	1715
	New Zealand	4.56	1360
	Norway	2.62	782
	Portugal	0.79	237
	Spain	2.32	692
	Sweden	1.05	312
	Switzerland	7.47	2230
	United Kingdom	8.73	2604
	United States	5.69	1698

AUDIT, alcohol use disorders identification test

Supplementary Table B: Logistic regression model[¶] for country of residence and relationships with emotions associated with drinking any type of alcohol[€]

			Emotions associated with drinking any type of alcohol**																	
			Energised		Relaxed		Sexy		Confident		Tired		Aggressive		Ill		Restless		Tearful	
		n	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
Country	United Kingdom[¥]	2604																		
	Germany	1029	0.392 (0.35-4.41)	** *	0.716 (0.62-0.83)	** *	0.799 (0.73-0.88)	** *	0.480 (0.42-0.54)	** *	0.797 (0.69-0.93)	**	0.691 (0.63-0.76)	** *	0.219 (0.19-0.25)	** *	0.788 (0.72-0.86)	** *	0.811 (0.74-0.89)	** *
	Switzerland	2230	0.713 (0.62-0.83)	** *	0.715 (0.60-0.86)	** *	0.981 (0.87-1.11)	NS	0.564 (0.49-0.66)	** *	1.130 (0.92-1.39)	NS	0.871 (0.77-0.99)	** *	0.178 (0.15-0.21)	** *	1.081 (0.96-1.22)	NS	0.579 (0.51-0.66)	** *
	Netherlands	1715	0.785 (0.66-0.93)	**	0.905 (0.73-1.12)	NS	1.353 (1.18-156)	** *	0.739 (0.62-0.88)	**	0.651 (0.53-0.80)	** *	0.646 (0.57-0.74)	** *	0.783 (0.66-0.94)	**	0.748 (0.66-0.85)	** *	0.644 (0.57-0.73)	** *
	US	1698	1.008 (0.85-1.20)	NS	1.524 (1.20-1.93)	**	1.574 (1.37-1.81)	** *	1.068 (0.89-1.28)	NS	0.823 (0.67-1.01)	NS	1.352 (1.19-1.54)	** *	0.747 (0.63-0.89)	**	1.002 (0.88-1.14)	NS	1.114 (0.98-1.27)	NS
	New Zealand	1360	0.904 (0.76-1.08)	NS	1.337 (1.04-1.71)	*	1.016 (0.88-1.17)	NS	1.064 (0.88-1.28)	NS	0.550 (0.45-0.68)	** *	0.896 (0.78-1.03)	NS	0.874 (0.72-1.06)	NS	1.089 (0.95-1.25)	NS	0.916 (0.80-1.05)	NS
	France	1478	0.958 (0.80-1.14)	NS	0.934 (0.75-1.17)	NS	0.881 (0.77-1.01)	NS	0.617 (0.52-0.73)	** *	0.360 (0.30-0.43)	** *	0.936 (0.82-1.07)	NS	0.777 (0.65-0.93)	**	2.292 (2.01-2.62)	** *	0.826 (0.72-0.95)	**
	Australia	1360	0.715 (0.60-0.85)	** *	1.616 (1.24-2.11)	** *	0.918 (0.80-1.06)	NS	0.850 (0.71-1.02)	NS	0.728 (0.59-0.90)	** *	0.628 (0.54-0.73)	** *	0.792 (0.66-0.95)	** *	0.891 (0.78-1.02)	NS	0.904 (0.79-1.04)	NS
	Hungary	1055	0.886 (0.73-1.07)	NS	0.346 (0.28-0.42)	** *	1.198 (1.03-1.40)	*	0.682 (0.57-0.82)	** *	0.438 (0.36-0.54)	** *	0.882 (0.76-1.03)	NS	0.756 (0.62-0.92)	**	0.576 (0.49-0.68)	** *	0.728 (0.62-0.85)	** *
	Italy	1268	0.885 (0.74-1.06)	NS	0.551 (0.45-0.68)	** *	0.898 (0.78-1.04)	NS	0.393 (0.33-0.46)	** *	0.319 (0.26-0.39)	** *	1.089 (0.94-1.26)	NS	0.294 (0.25-0.35)	** *	0.622 (0.54-0.72)	** *	0.455 (0.39-0.53)	** *
	Spain	692	1.018 (0.81-1.28)	NS	0.453 (0.36-0.57)	** *	0.861 (0.72-1.03)	NS	0.886 (0.70-1.11)	NS	0.432 (0.34-0.55)	** *	0.813 (0.68-0.98)	*	0.180 (0.15-0.22)	** *	0.977 (0.82-1.16)	NS	0.670 (0.56-0.81)	** *
	Colombia	372	2.404 (1.63-3.55)	** *	1.481 (0.96-2.30)	NS	2.339 (1.79-3.06)	** *	1.044 (0.76-1.43)	NS	0.558 (0.41-0.76)	** *	0.937 (0.74-1.18)	NS	0.335 (0.26-0.43)	** *	1.946 (1.56-2.43)	** *	1.284 (1.02-1.61)	*
	Austria	880	0.493 (0.41-0.59)	** *	0.849 (0.66-1.09)	NS	0.939 (0.80-1.11)	NS	0.549 (0.45-0.67)	** *	0.826 (0.64-1.06)	NS	0.877 (0.74-1.03)	NS	0.213 (0.18-0.26)	** *	0.900 (0.77-1.06)	NS	0.785 (0.67-0.93)	**
	Norway	782	1.919 (1.47-2.50)	** *	2.106 (1.46-3.04)	** *	1.470 (1.23-1.76)	** *	1.100 (0.87-1.40)	NS	0.850 (0.65-1.11)	NS	1.358 (1.15-1.60)	** *	1.169 (0.91-0.50)	NS	1.889 (1.60-2.23)	** *	1.222 (1.03-1.44)	*
	Canada	468	1.043 (0.79-1.37)	NS	1.781 (1.17-2.71)	**	1.256 (1.01-1.57)	*	0.806 (0.62-1.05)	NS	0.529 (0.40-0.71)	** *	1.105 (0.90-1.36)	NS	0.641 (0.49-0.83)	**	1.003 (0.82-1.23)	NS	0.951 (0.77-1.17)	NS
	Mexico	210	1.134 (0.76-1.69)	NS	1.647 (0.90-3.01)	NS	1.423 (1.03-1.96)	*	0.901 (0.61-1.33)	NS	0.390 (0.27-0.56)	** *	1.150 (0.86-1.55)	NS	0.230 (0.17-0.31)	** *	1.283 (0.96-1.71)	NS	1.060 (0.79-1.42)	NS
	Belgium	378	0.613 (0.47-0.80)	** *	0.935 (0.64-1.36)	NS	1.043 (0.83-1.32)	NS	0.685 (0.51-0.91)	**	0.538 (0.39-0.74)	** *	0.776 (0.62-0.98)	*	0.905 (0.66-1.24)	NS	0.731 (0.58-0.92)	**	0.700 (0.56-0.88)	**
	Brazil	213	0.995 (0.68-1.45)	NS	2.375 (1.20-4.71)	*	3.943 (2.61-5.96)	** *	1.189 (0.79-1.80)	NS	0.702 (0.46-1.08)	NS	1.173 (0.87-1.58)	NS	0.751 (0.51-1.10)	NS	1.985 (1.49-2.64)	** *	1.241 (0.93-1.66)	NS
	Portugal	237	0.848 (0.60-1.19)	NS	0.659 (0.44-0.98)	*	1.079 (0.81-1.44)	NS	0.514 (0.37-0.71)	** *	0.395 (0.28-0.56)	** *	0.608 (0.45-0.83)	**	0.253 (0.19-0.34)	** *	1.264 (0.96-1.66)	NS	0.603 (0.45-0.81)	**
	Sweden	312	1.481 (1.04-2.10)	*	2.078 (1.21-3.56)	**	1.127 (0.88-1.45)	NS	0.886 (0.64-1.22)	NS	1.041 (0.69-1.57)	NS	0.851 (0.66-1.09)	NS	1.068 (0.75-1.51)	NS	1.409 (1.11-1.79)	**	1.049 (0.82-1.34)	NS
	Ireland	230	1.411 (0.91-2.19)	NS	0.795 (0.50-1.25)	NS	0.809 (0.61-1.08)	NS	0.547 (0.39-0.77)	**	0.711 (0.69-0.93)	NS	1.038 (0.78-1.37)	NS	0.761 (0.52-1.11)	NS	1.212 (0.92-1.60)	NS	1.164 (0.88-1.54)	NS

AOR, adjusted odds ratio; CI, confidence interval: NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Country variable was included in the logistic regression model for Table 3 and has been included in seperate supplementary table due to space restrictions.

[€]Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with spirits, white wine, red wine and beer.

[¥]reference category.

Supplementary Table C: Bivariate relationship between emotions associated with drinking individual types of alcohol and AUDIT and socio-demographics (%)

			Positive emotions				Negative emotions				
		n	Energised	Relaxed	Sexy	Confident	Tired	Aggressive	Ill	Restless	Tearful
Spirits											
AUDIT	Lower risk (0-7)	10577	45.49	19.72	33.69	48.54	17.37	16.70	43.53	20.65	15.26
	Increasing risk (8-15)	14205	62.73	19.64	45.05	62.22	14.24	32.64	49.28	29.45	23.20
	Higher risk (16-19)	2895	70.92	21.49	52.54	71.16	14.68	45.35	52.82	35.13	30.95
	Dependence (20+)	2159	75.82	23.85	54.24	73.83	13.34	54.93	52.62	42.33	38.40
	x^2		1290.803	25.102	615.502	912.888	54.348	1908.209	139.037	593.266	758.589
	p		***	***	***	***	***	***	***	***	***
Sex	Male	19934	56.89	20.77	39.10	58.32	16.67	31.52	46.60	26.81	18.89
	Female	9902	61.37	18.91	49.09	60.59	12.62	26.43	50.29	29.82	28.97
	x^2		55.222	14.350	270.432	14.118	83.462	82.042	36.181	29.830	388.839
	p value		***	***	***	***	***	***	***	***	***
Age (years)	18-24	16333	64.02	19.06	46.44	63.77	14.73	29.82	48.82	29.95	23.66
	25-29	8744	54.07	20.17	39.30	55.38	15.37	30.23	47.47	26.81	21.25
	30-34	4759	46.84	23.87	34.33	49.78	17.29	29.14	45.07	22.34	19.16
	x^2		541.325	53.009	270.366	368.307	18.666	1.724	21.304	112.493	50.157
	p		***	***	***	***	***	NS	***	***	***
Attended high school	Yes	29365	58.20	20.03	42.33	58.89	15.27	29.70	47.73	27.80	22.07
	No	471	68.79	27.81	47.56	70.91	18.68	38.43	54.14	28.45	32.91
	x^2		21.412	17.448	5.183	27.733	4.1540	16.8920	7.6490	0.0970	31.5090
	p		***	***	*	***	*	***	**	NS	***
Red wine											
AUDIT	Lower risk (0-7)	10577	5.56	50.23	20.85	23.22	58.70	1.47	14.67	3.97	11.62
	Increasing risk (8-15)	14205	7.32	54.04	26.45	29.06	60.63	2.44	19.91	5.00	18.16
	Higher risk (16-19)	2895	8.74	54.51	30.78	32.88	61.97	4.46	26.39	7.53	23.77
	Dependence (20+)	2159	11.49	54.93	30.85	36.27	60.63	6.25	28.30	9.17	28.02
	x^2		113.324	44.051	202.364	235.632	14.711	209.963	354.627	134.965	507.751

	p		***	***	***	***	**	***	***	***	***
Sex	Male	19934	7.62	50.61	22.12	26.29	55.52	2.47	18.15	5.07	13.62
	Female	9902	6.16	57.20	31.40	31.08	69.25	2.77	21.57	5.40	24.10
	x^2		21.275	115.233	301.899	75.578	520.004	2.364	49.602	1.477	512.269
	p		***	***	***	***	***	NS	***	NS	***
Age (years)	18-24	16333	7.67	49.68	27.03	28.86	58.46	2.65	20.55	5.41	17.81
	25-29	8744	6.62	55.90	24.10	27.52	62.42	2.36	18.00	5.24	16.94
	30-34	4759	6.24	57.79	20.95	25.22	61.29	2.67	17.34	4.31	14.94
	x^2		16.32	144.807	80.309	25.113	40.660	2.216	37.596	9.132	21.645
	p		***	***	***	***	***	NS	***	*	***
Attended high school	Yes	29365	7.11	52.79	25.07	27.79	60.17	2.56	19.23	5.14	17.03
	No	471	8.70	53.50	33.12	33.55	54.35	2.97	23.14	7.86	21.23
	x^2		1.778	0.095	15.924	7.633	6.534	0.314	4.565	6.964	5.772
	p		NS	NS	***	**	*	NS	*	**	*
White wine											
AUDIT	Lower risk (0-7)	10577	11.55	31.70	19.38	22.72	19.08	1.43	10.28	4.76	6.44
	Increasing risk (8-15)	14205	16.11	32.81	25.11	30.14	17.67	2.77	15.19	6.33	10.22
	Higher risk (16-19)	2895	18.58	34.44	28.77	33.85	19.69	4.49	20.00	9.50	14.89
	Dependence (20+)	2159	20.70	34.14	29.13	35.62	16.67	6.62	23.25	11.21	18.94
	x^2		195.650	10.862	201.011	287.306	11.553	223.999	361.664	176.759	419.873
	p		***	*	***	***	**	***	***	***	***
Sex	Male	19934	12.82	28.21	18.29	24.04	16.51	2.60	13.21	6.06	6.85
	Female	9902	19.58	41.65	34.67	36.78	22.32	3.01	17.09	7.18	16.23
	x^2		236.235	543.290	980.770	529.645	148.465	4.093	80.084	13.799	648.311
	p		***	***	***	***	***	*	***	***	***
Age (years)	18-24	16333	15.67	34.68	25.98	29.76	20.98	2.45	15.49	6.23	11.62
	25-29	8744	14.67	31.08	22.42	27.57	15.95	2.80	13.53	6.62	8.46
	30-34	4759	13.72	28.68	18.39	24.44	14.29	3.61	12.88	6.77	7.04
	x^2		12.40	74.345	129.206	54.339	160.325	18.973	29.626	2.483	117.299
	p		**	***	***	***	***	***	***	NS	***

Attended high school	Yes	29365	15.04	32.60	23.66	28.19	18.37	2.72	14.44	6.38	9.90
	No	471	16.56	37.15	27.60	32.91	22.72	3.61	18.47	9.77	14.01
	x^2		0.836	4.379	3.970	5.083	5.830	1.363	6.090	8.842	8.742
	p		NS	*	*	*	*	NS	*	**	**
Beer											
AUDIT	Lower risk (0-7)	10577	18.17	43.18	14.19	34.93	37.21	3.91	15.27	6.66	6.60
	Increasing risk (8-15)	14205	26.93	52.42	20.56	47.98	39.10	6.98	17.04	9.57	10.35
	Higher risk (16-19)	2895	31.47	55.54	24.21	54.75	41.52	10.67	18.55	12.54	13.96
	Dependence (20+)	2159	33.67	58.22	23.44	55.21	42.57	13.52	19.08	16.67	17.46
	x^2		444.546	323.844	261.117	684.950	33.464	365.745	32.689	263.021	324.623
	p		***	***	***	***	***	***	***	***	***
Sex	Male	19934	26.16	54.67	20.58	47.94	41.74	7.60	14.55	9.43	9.99
	Female	9902	21.93	40.19	15.40	37.69	33.23	4.97	21.05	9.16	9.67
	x^2		63.290	554.585	116.075	281.321	201.887	73.010	200.433	0.575	0.728
	p		***	***	***	***	***	***	***	NS	NS
Age (years)	18-24	16333	26.77	52.09	20.36	47.88	39.58	7.41	17.41	10.08	10.39
	25-29	8744	23.25	47.93	17.91	42.22	38.85	5.92	16.55	8.81	9.71
	30-34	4759	20.61	45.79	15.49	37.30	36.75	5.86	14.58	7.77	8.47
	x^2		89.98	77.123	64.484	194.018	12.448	26.736	21.430	27.385	15.704
	p		***	***	***	***	**	***	***	***	***
Attended high school	Yes	29365	24.66	49.83	18.83	44.38	38.79	6.69	16.63	9.30	9.83
	No	471	30.57	52.02	21.23	54.56	46.92	9.13	21.66	11.89	13.16
	x^2		8.696	0.886	1.754	19.482	12.901	4.403	8.4190	3.6700	5.7780
	p		**	NS	NS	***	***	*	**	NS	*

AUDIT, alcohol use disorders identification test; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

Supplementary Table D: Logistic regression model[¶] for age, educational attainment and country of residence and relationships with emotions associated with each individual drink type

				Emotions associated with individual drink type																	
				Energised		Relaxed		Sexy		Confident		Tired		Aggressive		Ill		Restless		Tearful	
			n	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
Spirits																					
	Age (years)[€]	25-29	8744	0.722 (0.68-0.76)	***	1.167 (1.09-1.25)	***	0.804 (0.76-0.85)	***	0.765 (0.72-0.81)	***	1.043 (0.97-1.12)	NS	1.119 (1.05-1.19)	***	1.02 (0.97-1.08)	NS	0.909 (0.86-0.97)	**	0.96 (0.90-1.02)	NS
		30-34	4759	0.533 (0.50-0.57)	***	1.355 (1.25-1.47)	***	0.668 (0.62-0.72)	***	0.607 (0.57-0.65)	***	1.166 (1.07-1.27)	**	1.125 (1.04-1.21)	**	0.947 (0.89-1.01)	NS	0.735 (0.68-0.80)	***	0.883 (0.81-0.96)	**
	Attended high school[¥]	Yes	29365	0.909 (0.74-1.12)	NS	0.822 (0.67-1.02)	NS	1.03 (0.85-1.25)	NS	0.817 (0.66-1.01)	NS	0.849 (0.67-1.08)	NS	0.87 (0.71-1.06)	NS	1.004 (0.83-1.22)	NS	1.126 (0.91-1.39)	NS	0.676 (0.55-0.83)	***
	Country[†]	Germany	10294	0.330 (0.30-0.37)	***	0.544 (0.49-0.61)	***	0.727 (0.67-0.80)	NS	0.482 (0.44-0.53)	***	1.456 (1.27-1.67)	***	0.989 (0.90-1.09)	NS	0.871 (0.80-0.95)	**	0.824 (0.75-0.91)	***	0.667 (0.60-0.74)	***
		Switzerland	2230	0.488 (0.43-0.55)	***	0.760 (0.66-0.88)	***	0.921 (0.82-1.04)	***	0.538 (0.48-0.61)	***	1.046 (0.87-1.26)	NS	0.918 (0.80-1.05)	NS	0.614 (0.55-0.69)	***	0.898 (0.79-1.02)	NS	0.500 (0.47-0.64)	***
		Netherlands	1715	0.443 (0.39-0.51)	***	1.631 (1.42-1.88)	***	0.917 (0.81-1.04)	NS	0.625 (0.55-0.71)	***	2.050 (1.72-2.45)	***	0.761 (0.66-0.88)	***	1.719 (0.52-0.95)	***	0.728 (0.63-0.84)	***	0.724 (0.63-0.84)	***
		US	1698	0.984 (0.85-0.14)	NS	1.791 (1.56-2.06)	***	1.600 (1.41-1.82)	*	1.263 (1.10-1.46)	**	1.798 (1.51-2.15)	***	1.917 (1.68-2.19)	***	1.778 (1.57-2.01)	***	0.980 (0.86-1.12)	NS	1.232 (1.07-1.41)	**
		New Zealand	1360	0.690 (0.60-0.80)	***	1.624 (1.40-1.89)	***	0.975 (0.85-1.12)	NS	0.940 (0.81-1.09)	NS	1.531 (1.26-1.86)	***	1.104 (0.95-1.28)	NS	1.200 (1.05-1.67)	**	0.932 (0.80-1.08)	NS	1.229 (1.06-1.43)	**
		France	1478	0.711 (0.62-0.82)	***	1.550 (1.34-1.79)	***	0.876 (0.77-1.00)	NS	0.626 (0.55-0.72)	***	2.510 (2.11-2.99)	***	1.200 (1.04-1.38)	*	1.814 (1.59-2.07)	***	2.502 (2.19-2.86)	***	1.094 (0.95-1.26)	NS
		Australia	1360	0.648 (0.56-0.75)	***	1.619 (1.40-1.88)	***	0.945 (0.83-1.08)	***	0.798 (0.69-0.92)	**	1.324 (1.08-1.62)	**	0.793 (0.68-0.92)	**	0.974 (0.85-1.11)	NS	0.742 (0.64-0.86)	***	0.912 (0.78-1.06)	NS
		Hungary	1055	0.622 (0.53-0.73)	***	0.485 (0.39-0.60)	***	0.996 (0.86-1.15)	NS	0.622 (0.53-0.72)	***	1.789 (1.46-2.19)	***	1.198 (1.02-1.41)	*	2.029 (1.75-2.35)	***	0.533 (0.45-0.64)	***	0.603 (0.50-0.73)	***
		Italy	1268	0.627 (0.54-0.73)	***	0.623 (0.52-0.75)	***	0.730 (0.63-0.84)	***	0.359 (0.31-0.41)	***	1.557 (1.28-1.90)	***	1.335 (1.15-1.55)	***	1.223 (1.07-1.40)	**	0.661 (0.56-0.78)	***	0.500 (0.42-0.60)	***
		Spain	692	0.851 (0.70-1.03)	NS	0.825 (0.67-1.02)	NS	1.069 (0.90-1.27)	**	1.040 (0.86-1.26)	NS	1.663 (1.31-2.10)	***	1.136 (0.94-1.37)	NS	0.714 (0.60-0.85)	***	1.133 (0.94-1.36)	NS	0.848 (0.69-1.04)	NS
		Colombia	372	1.556 (1.18-2.05)	**	1.035 (0.80-1.34)	NS	1.823 (1.46-2.28)	*	1.050 (0.82-1.34)	NS	1.236 (0.89-1.71)	NS	1.285 (1.02-1.63)	*	1.014 (0.82-1.26)	NS	1.921 (1.54-2.40)	***	1.487 (1.78-1.88)	**
		Austria	880	0.340 (0.29-0.40)	***	0.412 (0.32-0.52)	***	0.764 (0.65-0.90)	NS	0.467 (0.40-0.55)	***	0.904 (0.70-1.17)	NS	1.238 (1.04-1.47)	*	0.773 (0.66-0.90)	**	0.820 (0.69-0.98)	*	0.585 (0.48-0.71)	***
		Norway	782	0.843 (0.70-1.01)	NS	0.712 (0.58-0.88)	**	0.843 (0.72-0.99)	NS	0.746 (0.63-0.89)	**	1.748 (1.40-2.19)	***	2.086 (1.76-2.47)	***	2.227 (1.88-2.63)	***	1.865 (1.58-2.20)	***	1.243 (1.04-1.48)	*
		Canada	468	0.952 (0.76-1.20)	NS	1.676 (1.35-2.08)	***	1.096 (0.90-1.34)	NS	0.863 (0.70-1.07)	NS	1.718 (1.31-2.26)	***	1.506 (1.22-1.86)	***	1.360 (1.12-1.66)	**	0.998 (0.80-1.24)	NS	0.951 (0.76-1.19)	NS
		Mexico	210	0.768 (0.56-1.05)	NS	2.073 (1.54-2.79)	***	1.279 (0.96-1.70)	***	0.743 (0.55-1.00)	NS	1.721 (1.18-2.52)	***	1.415 (1.05-1.91)	*	0.651 (0.49-0.87)	**	1.118 (0.83-1.51)	NS	1.134 (0.83-1.56)	NS
		Belgium	378	0.506 (0.40-0.64)	***	1.458 (1.14-1.86)	**	0.841 (0.67-1.05)	NS	0.596 (0.48-0.75)	***	1.602 (1.18-2.17)	**	1.025 (0.81-1.30)	NS	1.664 (1.34-2.07)	***	0.848 (0.67-1.08)	NS	0.728 (0.56-0.95)	*
		Brazil	213	0.955 (0.70-1.31)	NS	1.445 (1.06-1.98)	*	1.880 (1.41-2.51)	NS	1.049 (0.77-1.43)	NS	1.419 (0.95-2.12)	NS	1.742 (1.29-2.35)	***	1.674 (1.26-2.23)	***	2.168 (1.63-2.88)	***	1.196 (0.88-1.63)	NS
		Portugal	237	0.647 (0.49-0.86)	**	1.359 (1.01-1.84)	*	1.311 (1.00-1.72)	**	0.609 (0.46-0.80)	***	1.104 (0.73-1.67)	NS	0.832 (0.61-1.14)	NS	0.736 (0.56-0.97)	*	1.145 (0.86-1.53)	NS	0.586 (0.41-0.83)	**
		Sweden	312	0.992 (0.76-1.30)	NS	0.904 (0.68-1.21)	NS	1.066 (0.84-1.36)	***	0.845 (0.65-1.09)	NS	1.823 (1.34-2.49)	***	1.221 (0.95-1.58)	NS	2.023 (1.59-2.58)	***	1.099 (0.85-1.42)	NS	1.019 (0.77-1.34)	NS
		Ireland	230	1.254 (0.89-1.77)	NS	0.693 (0.48-1.00)	*	0.690 (0.52-0.91)	NS	0.671 (0.50-0.90)	**	0.347 (0.78-0.69)	**	1.382 (1.04-1.84)	*	0.875 (0.67-1.15)	NS	1.133 (0.85-1.51)	NS	1.171 (0.87-1.57)	NS
Red wine																					
	Age (years)[€]	25-29	8744	0.870 (0.78-0.97)	*	1.368 (1.30-1.44)	***	0.931 (0.88-0.99)	*	0.998 (0.94-1.06)	NS	1.220 (1.15-1.29)	***	0.969 (0.82-1.15)	NS	0.910 (0.85-0.98)	**	1.028 (0.91-1.16)	*	1.012 (0.94-1.09)	NS
		30-34	4759	0.799 (0.70-0.92)	**	1.532 (1.43-1.64)	***	0.793 (0.73-0.86)	***	0.876 (0.81-0.95)	**	1.223 (1.14-1.31)	***	1.09 (0.89-1.34)	NS	0.845 (0.77-0.92)	***	0.824 (0.70-0.97)	NS	0.970 (0.88-1.06)	NS
	Attended high school[¥]	Yes	29365	0.963 (0.69-1.35)	NS	1.196 (0.99-1.45)	NS	0.859 (0.70-1.05)	NS	0.906 (0.74-1.11)	NS	1.469 (1.21-1.78)	***	0.809 (0.47-1.41)	NS	0.979 (0.78-1.23)	***	0.748 (0.53-1.06)	NS	0.846 (0.67-1.07)	NS

Country[†]	Germany	10294	0.712 (0.89-0.87)	*	0.702 (0.64-0.77)	***	0.539 (0.49-0.60)	***	0.526 (0.48-0.58)	***	0.834 (0.76-0.92)	***	0.329 (0.25-0.43)	***	0.362 (0.33-0.40)	***	0.737 (0.60-0.91)	**	1.005 (0.90-1.12)	NS
	Switzerland	2230	0.496 (0.36-0.68)	***	0.887 (0.79-1.00)	*	0.458 (0.40-0.53)	***	0.514 (0.45-0.59)	***	2.186 (1.91-2.50)	***	0.369 (0.24-0.57)	***	0.272 (0.23-0.32)	***	0.740 (0.55-1.00)	NS	0.697 (0.59-0.82)	***
	Netherlands	1715	0.809 (0.61-1.07)	NS	1.074 (0.95-1.22)	NS	0.907 (0.79-1.04)	NS	0.824 (0.72-0.94)	**	0.796 (0.70-0.91)	**	0.348 (0.22-0.54)	***	0.521 (0.45-0.60)	***	0.965 (0.72-1.29)	NS	0.591 (0.50-0.70)	***
	US	1698	1.598 (1.26-2.03)	***	1.282 (1.13-1.46)	***	1.498 (0.32-1.71)	***	0.967 (0.85-1.10)	NS	1.074 (0.94-1.23)	NS	0.728 (0.51-1.03)	NS	0.741 (0.64-0.85)	***	1.605 (1.24-2.08)	***	1.418 (1.22-1.65)	***
	New Zealand	1360	1.753 (1.36-2.25)	***	0.662 (0.58-0.76)	***	1.042 (0.90-1.21)	NS	1.295 (1.13-1.49)	***	0.476 (0.42-0.55)	***	1.183 (0.86-1.64)	NS	1.277 (1.11-1.47)	***	1.403 (1.05-1.87)	*	0.612 (0.51-0.74)	***
	France	1478	2.634 (2.11-3.29)	***	0.652 (0.57-0.74)	***	0.741 (0.64-0.86)	***	1.022 (0.89-1.17)	NS	0.444 (0.39-0.51)	***	1.235 (0.91-1.68)	NS	0.959 (0.83-1.10)	NS	2.953 (2.33-3.74)	***	0.818 (0.69-0.97)	*
	Australia	1360	1.049 (0.79-1.39)	NS	1.035 (0.91-1.19)	NS	0.929 (0.80-1.08)	NS	1.012 (0.88-1.16)	NS	1.010 (0.88-1.16)	NS	0.858 (0.61-1.22)	NS	1.033 (0.89-1.19)	NS	1.561 (1.18-2.06)	**	0.998 (0.84-1.18)	NS
	Hungary	1055	2.641 (2.07-3.37)	***	0.339 (0.29-0.40)	***	1.135 (0.97-1.33)	NS	0.748 (0.64-0.88)	***	0.355 (0.31-0.41)	***	1.371 (0.97-1.93)	NS	0.748 (0.63-0.89)	**	1.570 (1.16-2.12)	**	0.785 (0.64-0.96)	*
	Italy	1268	4.045 (3.25-5.03)	***	0.613 (0.54-0.70)	***	0.945 (0.81-1.10)	NS	1.075 (0.93-1.24)	NS	0.514 (0.45-0.59)	***	1.838 (1.36-2.48)	***	0.628 (0.53-0.74)	***	1.542 (1.16-2.06)	**	0.740 (0.61-0.90)	**
	Spain	692	2.951 (2.26-3.86)	***	0.582 (0.49-0.69)	***	0.743 (0.61-0.90)	**	1.277 (1.07-1.52)	**	0.572 (0.48-0.68)	***	0.941 (0.60-1.48)	NS	0.372 (0.29-0.47)	***	1.645 (1.17-2.32)	**	0.667 (0.52-0.85)	**
	Colombia	372	2.062 (1.43-2.97)	***	1.114 (0.89-1.39)	NS	1.101 (0.87-1.40)	NS	0.688 (0.54-0.88)	**	0.732 (0.89-0.92)	**	0.263 (0.10-0.72)	**	0.454 (0.34-0.61)	***	1.671 (1.09-2.56)	*	0.824 (0.61-1.11)	NS
	Austria	880	0.796 (0.55-1.15)	NS	0.793 (0.68-0.93)	**	0.623 (0.52-0.75)	***	0.685 (0.58-0.81)	***	0.597 (0.51-0.70)	***	0.380 (0.21-0.69)	**	0.287 (0.23-0.36)	***	0.612 (0.39-0.94)	*	0.819 (0.66-1.01)	NS
	Norway	782	3.063 (2.37-3.95)	***	1.823 (0.53-2.17)	***	1.433 (1.21-1.70)	***	1.351 (1.15-1.59)	***	0.952 (0.80-1.13)	NS	0.600 (0.37-0.98)	*	1.098 (0.92-1.31)	NS	1.821 (1.33-2.49)	***	1.409 (1.16-1.71)	***
	Canada	468	2.717 (1.99-3.71)	***	1.154 (0.94-1.41)	NS	1.641 (1.34-2.01)	***	1.253 (1.02-1.54)	*	0.674 (0.55-0.83)	***	0.940 (0.56-1.59)	NS	0.747 (0.59-0.94)	*	1.999 (1.38-2.89)	***	1.250 (0.98-1.59)	NS
	Mexico	210	3.000 (1.99-4.53)	***	1.147 (0.86-1.53)	NS	1.685 (1.26-2.25)	***	0.848 (0.62-1.15)	NS	0.501 (0.38-0.67)	***	1.289 (0.68-2.45)	NS	0.502 (0.35-0.72)	***	1.527 (0.88-2.66)	NS	1.028 (0.72-1.47)	NS
	Belgium	378	1.190 (0.77-1.83)	NS	1.001 (0.80-1.25)	NS	0.773 (0.60-0.99)	*	0.698 (0.55-0.89)	**	0.889 (0.71-1.11)	NS	0.694 (0.37-1.31)	NS	0.650 (0.50-0.84)	**	1.114 (0.69-1.81)	NS	0.748 (0.56-1.01)	NS
	Brazil	213	2.112 (1.33-3.36)	**	2.018 (1.47-2.77)	***	2.751 (2.07-3.66)	***	0.924 (0.68-1.25)	NS	0.773 (0.58-1.03)	NS	0.853 (0.39-1.86)	NS	0.439- (0.30-0.64)	***	1.372 (0.76-2.48)	NS	1.024 (0.72-1.47)	NS
	Portugal	237	2.885 (1.93-4.32)	***	0.879 (0.67-1.15)	NS	0.679 (0.49-0.93)	*	1.095 (0.83-1.45)	NS	0.870 (0.66-1.15)	NS	1.390 (0.75-2.57)	NS	0.636 (0.46-0.88)	**	1.864 (1.13-3.08)	*	0.784 (0.54-1.14)	NS
	Sweden	312	1.785 (1.18-2.70)	**	1.353 (1.06-1.73)	*	0.950 (0.73-1.24)	NS	1.178 (0.92-1.51)	NS	1.279 (0.99-1.65)	NS	0.428 (0.17-1.06)	NS	1.396 (1.09-1.79)	**	1.548 (0.96-2..50)	NS	1.314 (0.98-1.77)	NS
	Ireland	230	1.563 (0.97-2.52)	NS	0.810 (0.62-1.06)	NS	0.818 (0.60-1.11)	NS	0.700 (0.52-0.95)	*	0.674 (0.51-0.89)	**	1.052 (0.56-1.99)	NS	0.816 (0.60-1.11)	NS	1.299 (0.75-2.26)	NS	0.891 (0.63-1.26)	NS
White wine																				
Age (years)[€]	25-29	8744	0.944 (0.88-1.02)	NS	0.891 (0.84-0.95)	***	0.898 (0.85-0.95)	***	0.967 (0.91-1.03)	NS	0.748 (0.70-0.80)	***	1.263 (1.07-1.49)	**	0.970 (0.90-1.05)	NS	1.132 (1.02-1.26)	*	0.791 (0.72-0.87)	***
	30-34	4759	0.918 (0.93-1.01)	NS	0.751 (0.69-0.82)	***	0.833 (0.77-0.90)	***	0.842 (0.78-0.91)	***	0.652 (0.60-0.72)	***	1.550 (1.28-1.87)	***	0.859 (0.78-0.95)	**	1.128 (0.99-1.29)	NS	0.710 (0.63-0.80)	***
Attended high school[¥]	Yes	29365	0.946 (0.73-1.22)	NS	0.925 (0.75-1.15)	NS	0.932 (0.77-1.14)	NS	0.865 (0.71-1.06)	NS	0.925 (0.74-1.16)	NS	0.764 (0.46-1.27)	NS	0.917 (0.72-1.17)	NS	0.765 (0.56-1.05)	NS	0.765 (0.58-1.01)	NS
Country[†]	Germany	10294	1.156 (1.02-1.32)	*	0.942 (0.86-1.03)	NS	0.948 (0.86-1.05)	NS	0.628 (0.57-0.69)	***	0.711 (0.64-0.79)	***	0.320 (0.24-0.42)	***	0.219 (0.19-0.25)	***	0.671 (0.55-0.82)	***	0.656 (0.58-0.75)	***
	Switzerland	2230	1.780 (1.52-2.09)	***	0.487 (0.43-0.56)	***	0.749 (0.65-0.87)	***	0.601 (0.53-0.69)	***	0.700 (0.60-0.82)	***	2.883 (2.23-3.74)	***	0.391 (0.33-0.46)	***	2.716 (2.20-3.36)	***	0.400 (0.32-0.50)	***
	Netherlands	1715	1.047 (0.88-1.25)	NS	1.452 (1.28-1.65)	***	1.420 (1.24-0.63)	***	0.953 (0.84-1.09)	NS	1.093 (0.94-1.27)	NS	0.538 (0.36-0.80)	**	0.695 (0.60-0.81)	***	1.111 (0.86-1.44)	NS	0.662 (0.55-0.80)	***
	US	1698	0.893 (0.74-1.08)	NS	1.813 (1.60-2.06)	***	1.264 (1.10-1.46)	**	0.793 (0.69-0.91)	**	1.734 (1.51-1.20)	***	0.448 (0.29-0.69)	***	0.585 (0.50-0.68)	***	1.231 (0.96-1.59)	NS	1.099 (0.92-1.31)	NS
	New Zealand	1360	1.753 (0.47-2.09)	***	1.078 (0.94-1.24)	NS	1.148 (0.98-1.34)	NS	1.376 (1.20-1.58)	***	0.899 (0.76-1.07)	NS	1.323 (0.96-1.83)	NS	1.130 (0.97-1.31)	NS	1.765 (1.38-2.26)	***	0.768 (0.62-0.95)	*
	France	1478	1.427 (1.19-1.71)	***	0.984 (0.86-1.13)	NS	0.889 (0.76-1.04)	NS	0.793 (0.69-0.91)	**	1.260 (1.08-1.47)	**	1.184 (0.86-1.64)	NS	1.159 (1.00-1.34)	*	2.811 (2.25-3.51)	***	0.762 (0.62-0.93)	**
	Australia	1360	1.326 (1.10-	**	1.080 (0.94-	NS	0.877 (0.75-	NS	1.015 (0.88-	NS	0.982 (0.83-	NS	1.136 (0.82-	NS	1.170 (1.01-	*	1.534 (1.19-	**	0.850 (0.70-	NS

				1.60)		1.24)		1.03)		1.17)		1.16)		1.58)		1.36)		1.98)		1.04)	
		Hungary	1055	1.812 (1.49-2.20)	***	0.850 (0.73-1.00)	*	1.297 (1.10-1.53)	**	0.824 (0.70-0.97)	*	1.016 (0.85-1.22)	NS	0.996 (0.67-1.58)	NS	0.428 (0.35-0.53)	***	1.118 (0.82-1.52)	NS	0.883 (0.70-1.11)	NS
		Italy	1268	1.292 (1.06-1.57)	*	0.758 (0.65-0.88)	***	0.963 (0.82-1.14)	NS	0.825 (0.71-0.96)	*	0.709 (0.59-0.85)	***	0.841 (0.57-1.25)	NS	0.385 (0.32-0.47)	***	1.075 (0.80-1.44)	NS	0.489 (0.38-0.63)	***
		Spain	692	1.048 (0.81-1.35)	NS	0.779 (0.65-0.94)	**	0.902 (0.73-1.11)	NS	0.887 (0.74-1.07)	NS	1.092 (0.89-1.34)	NS	0.614 (0.35-1.07)	NS	0.284 (0.21-0.38)	***	0.976 (0.67-1.42)	NS	0.516 (0.38-0.71)	***
		Colombia	372	0.364 (0.22-0.59)	***	1.045 (0.83-1.32)	NS	0.751 (0.57-1.00)	*	0.430 (0.33-0.57)	***	1.350 (1.05-1.74)	*	0.069 (0.01-0.50)	**	0.229 (0.15-0.34)	***	0.912(0.56-1.49)	NS	0.573 (0.39-0.85)	**
		Austria	880	2.643 (2.18-3.20)	***	0.812 (0.69-0.96)	*	1.152 (0.96-1.38)	NS	0.971 (0.82-1.15)	NS	0.430 (0.34-0.55)	***	0.563 (0.33-0.96)	*	0.254 (0.20-0.33)	***	1.423 (1.05-1.93)	*	0.616 (0.47-0.80)	***
		Norway	782	2.803 (2.31-3.41)	***	0.820 (0.69-0.98)	*	1.548 (1.29-1.85)	***	1.061 (0.90-1.26)	NS	0.523 (0.41-0.67)	***	0.666 (0.41-1.09)	NS	0.680 (0.56-0.83)	***	2.303 (1.75-3.03)	***	0.626 (0.48-0.82)	**
		Canada	468	1.697 (1.31-2.20)	***	1.550 (1.27-1.90)	***	1.321 (1.06-1.65)	*	1.075 (0.87-1.33)	NS	1.069 (0.84-1.36)	NS	0.714 (0.39-1.31)	NS	0.569 (0.44-0.74)	***	1.660 (1.16-2.38)	**	1.140 (0.87-1.50)	NS
		Mexico	210	0.681 (0.42-1.11)	NS	1.123 (0.83-1.51)	NS	0.605 (0.41-0.89)	*	0.491 (0.35-0.70)	**	1.058 (0.75-1.50)	NS	0.233 (0.56-0.95)	*	0.234 (0.14-0.39)	***	0.640 (0.31-1.33)	NS	0.422 (0.24-0.74)	**
		Belgium	378	0.899 (0.64-1.26)	NS	1.206 (0.96-1.51)	NS	1.012 (0.78-1.31)	NS	0.664 (0.52-0.85)	**	1.001 (0.77-1.31)	NS	1.177 (0.69-2.00)	NS	0.688 (0.53-0.90)	**	0.823 (0.50-1.36)	NS	0.828 (0.59-1.16)	NS
		Brazil	213	0.519 (0.30-0.89)	*	1.978 (1.49-2.63)	***	1.626 (1.20-2.21)	**	0.632 (0.46-0.88)	**	1.416 (1.03-1.95)	*	0.501 (0.18-1.38)	NS	0.354 (0.23-0.55)	***	0.579 (0.27-1.25)	NS	0.558 (0.34-0.92)	*
		Portugal	237	1.103 (0.75-0.63)	NS	0.873 (0.65-1.17)	NS	0.902 (0.65-1.25)	NS	0.782 (0.58-1.05)	NS	0.899 (0.64-1.26)	NS	1.098 (0.55-2.12)	NS	0.587 (0.41-0.84)	**	1.436 (0.86-2.39)	NS	0.633 (0.40-1.00)	NS
		Sweden	312	1.525 (1.10-2.11)	NS	1.082 (0.84-1.39)	NS	1.305 (0.99-1.72)	NS	1.068 (0.83-1.38)	NS	0.897 (0.66-1.22)	NS	0.457 (0.18-1.13)	NS	0.977 (0.74-1.29)	NS	1.369 (0.86-2.18)	NS	1.187 (0.83-1.70)	NS
		Ireland	230	1.552 (1.09-2.21)	NS	0.981 (0.73-1.31)	NS	0.955 (0.69-1.32)	NS	0.807 (0.60-1.09)	NS	0.638 (0.43-0.94)	*	1.341 (0.74-2.44)	NS	0.601 (0.43-0.85)	**	1.138 (0.67-1.95)	NS	0.895 (0.60-1.33)	NS
Beer																					
	Age (years)[€]	25-29	8744	0.890 (0.84-0.95)	***	0.833 (0.79-0.88)	***	0.877 (0.82-0.94)	***	0.838 (0.79-0.89)	***	0.961 (0.91-1.02)	NS	0.890 (0.80-0.99)	**	1.037 (0.97-1.11)	NS	0.927 (0.85-1.02)	NS	0.987 (0.90-1.08)	NS
		30-34	4759	0.772 (0.71-0.84)	***	0.735 (0.69-0.79)	***	0.761 (0.70-0.83)	***	0.669 (0.62-0.72)	***	0.865 (0.81-0.93)	***	0.888 (0.77-1.02)	NS	0.885 (0.81-0.97)	**	0.814 (0.72-0.92)	**	0.906 (0.81-1.02)	NS
	Attended high school[¥]	Yes	29365	1.001 (0.82-1.23)	NS	1.153 (0.95-1.40)	NS	1.036 (0.82-1.30)	NS	0.889 (0.74-1.08)	NS	0.782 (0.65-0.95)	*	0.936 (0.68-1.30)	NS	0.901 (0.72-1.13)	NS	1.107 (0.83-1.48)	NS	0.902 (0.68-1.19)	NS
	Country[†]	Germany	10294	1.233 (1.11-1.38)	***	1.092 (1.00-1.19)	NS	1.959 (1.73-2.22)	***	0.829 (0.76-0.91)	***	0.797 (0.73-0.87)	***	0.553 (0.48-0.64)	***	0.458 (0.41-0.51)	***	0.797 (0.68-0.93)	**	1.297 (1.12-1.50)	**
		Switzerland	2230	1.951 (1.70-2.24)	***	0.940 (0.94-1.06)	NS	2.043 (1.75-2.39)	***	0.820 (0.73-0.92)	**	0.281 (0.25-0.32)	***	0.521 (0.42-0.65)	***	0.379 (0.32-0.45)	***	0.883 (0.71-1.09)	NS	0.825 (0.66-1.02)	NS
		Netherlands	1715	2.619 (2.28-3.01)	***	0.733 (0.65-0.83)	***	2.466 (2.11-2.89)	***	1.336 (1.18-1.51)	***	0.529 (0.47-0.60)	***	0.938 (0.77-1.15)	NS	1.035 (0.90-1.19)	NS	1.230 (1.01-1.50)	*	1.231 (1.01-1.51)	*
		US	1698	1.564 (1.35-1.81)	***	1.596 (1.41-1.81)	***	1.496 (1.26-1.78)	***	1.076 (0.95-1.22)	NS	0.956 (0.84-1.08)	NS	0.991 (0.81-1.21)	NS	1.252 (1.09-1.44)	**	1.619 (1.34-1.97)	***	1.551 (1.28-1.89)	***
		New Zealand	1360	1.055 (0.89-1.25)	NS	1.626 (1.42-1.86)	***	1.292 (1.07-1.56)	**	1.187 (1.04-1.36)	*	1.166 (1.02-1.33)	*	0.574 (0.45-0.74)	***	0.973 (0.83-1.14)	NS	1.289 (1.04-1.61)	*	0.718 (0.56-0.93)	*
		France	1478	2.220 (1.92-2.57)	***	1.674 (1.47-1.91)	***	1.265 (1.06-1.52)	*	0.806 (0.71-0.92)	**	0.427 (0.37-0.49)	***	0.328 (0.25-0.44)	***	0.649 (0.55-0.77)	***	2.392 (1.99-2.88)	***	1.021 (0.82-1.27)	NS
		Australia	1360	1.374 (1.17-1.61)	***	1.807 (1.58-2.07)	***	1.119 (0.92-1.36)	NS	1.365 (1.19-1.56)	***	0.928 (0.81-1.06)	NS	0.675 (0.53-0.86)	**	1.054 (0.90-1.23)	NS	1.148 (0.92-1.43)	NS	1.037 (0.83-1.30)	NS
		Hungary	1055	1.648 (1.39-1.95)	***	0.813 (0.70-0.94)	**	1.631 (1.34-1.98)	***	0.626 (0.54-0.73)	***	0.858 (0.74-0.99)	*	0.373 (0.27-0.51)	***	0.546 (0.45-0.67)	***	0.760 (0.58-1.00)	NS	1.197 (0.94-1.52)	NS
		Italy	1268	1.389 (1.18-1.64)	***	0.914 (0.80-1.05)	NS	1.171 (0.96-1.43)	NS	0.622 (0.54-0.72)	***	0.372 (0.32-0.43)	***	0.508 (0.39-0.67)	***	0.239 (0.19-0.30)	***	0.521 (0.39-0.70)	***	0.485 (0.36-0.66)	***
		Spain	692	1.756 (1.45-2.13)	***	1.246 (1.05-1.48)	*	1.569 (1.25-1.97)	***	1.064 (0.90-1.26)	NS	0.800 (0.67-0.95)	*	0.517 (0.37-0.73)	***	0.349 (0.27-0.46)	***	1.292 (0.98-1.70)	NS	1.382 (1.06-1.81)	*
		Colombia	372	2.287 (1.81-2.90)	***	1.515 (1.21-1.89)	***	1.949 (1.49-2.56)	***	0.838 (0.67-1.05)	NS	0.557 (0.44-0.70)	***	0.322 (0.19-0.55)	***	0.557 (0.41-0.76)	***	1.685 (1.22-2.32)	**	1.274 (0.90-1.81)	NS
		Austria	880	0.979 (0.80-1.20)	NS	1.241 (1.06-1.45)	**	1.692 (1.38-2.08)	***	0.798 (0.68-0.93)	**	1.331 (1.14-1.55)	***	0.360 (0.25-0.52)	***	0.475 (0.38-0.59)	***	0.643 (0.47-0.88)	**	1.368 (1.06-1.76)	*
		Norway	782	2.408 (2.02-2.87)	***	1.875 (1.59-2.22)	***	2.129 (1.74-2.60)	***	1.471 (0.25-1.73)	***	0.962 (0.82-1.13)	NS	0.442 (0.32-0.62)	***	0.712 (0.58-0.87)	**	2.245 (1.79-2.81)	***	1.825 (1.44-2.31)	***

Canada	468	1.825 (1.46-2.28)	***	1.476 (1.21-1.81)	***	1.644 (1.27-2.13)	***	1.362 (1.12-1.67)	**	1.232 (1.01-1.50)	*	0.981 (0.71-1.36)	NS	1.264 (1.01-1.58)	*	1.646 (1.22-2.21)	**	1.511 (1.11-2.05)	**
Mexico	210	2.337 (1.73-3.16)	***	1.518 (1.34-2.03)	**	1.499 (1.03-2.17)	*	1.408 (1.06-1.88)	*	0.764 (0.57-1.02)	NS	0.912 (0.58-1.45)	NS	0.794 (0.56-1.13)	NS	2.355 (1.63-3.42)	***	1.571 (1.04-2.38)	*
Belgium	378	1.964 (1.55-2.49)	***	1.059 (0.85-1.32)	NS	2.297 (1.77-2.98)	***	0.963 (0.77-1.20)	NS	0.513 (0.41-0.65)	***	0.733 (0.50-1.07)	NS	1.488 (1.17-1.89)	**	1.053 (0.73-1.52)	NS	1.501 (1.09-2.08)	*
Brazil	213	2.153 (1.58-2.93)	***	1.653 (1.24-2.20)	**	2.623 (1.89-3.65)	***	1.275 (0.96-1.70)	NS	1.040 (0.79-1.38)	NS	0.992 (0.62-1.58)	NS	0.960 (0.69-1.34)	NS	2.089 (1.42-3.08)	***	2.294 (1.57-3.35)	***
Portugal	237	2.359 (1.77-3.15)	***	0.766 (0.58-1.01)	NS	1.467 (1.02-2.11)	*	0.821 (0.62-1.08)	NS	0.311 (0.23-0.43)	***	0.391 (0.20-0.75)	**	0.479 (0.32-0.71)	***	1.573 (1.05-2.36)	*	0.832 (0.50-1.39)	NS
Sweden	312	2.462 (1.91-3.17)	***	1.796 (1.41-2.30)	***	2.027 (1.52-2.70)	***	1.471 (1.16-1.87)	**	1.093 (0.86-1.39)	NS	0.386 (0.23-0.66)	***	0.675 (0.49-0.93)	*	2.556 (1.87-3.49)	***	1.841 (1.31-2.58)	***
Ireland	230	1.100 (0.79-1.53)	NS	1.239 (0.94-1.63)	NS	1.179 (0.81-1.71)	NS	1.108 (0.84-1.46)	NS	1.046 (0.80-1.37)	NS	0.542 (0.33-0.90)	*	0.853 (0.61-1.19)	NS	0.821 (0.50-1.34)	NS	1.031 (0.66-1.61)	NS

AOR, adjusted odds ratio; CI, confidence interval; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Country variable was included in the logistic regression model for Table 4 and has been included in seperate supplementary table due to space restrictions.

[€]Reference category 18-24 years

[¥]Reference category not attended high school

[†]Reference category United Kingdom

Supplementary Table E: Logistic regression model[¶] for age, educational attainment and country of residence and relationships with emotions associated with drinking any type of alcohol[€] in different settings[†]

a: Positive emotions

			Mostly drank a drink which made you feel energised				Mostly drank mostly a drink which made you feel relaxed				Mostly drank a drink which made you feel sexy				Mostly drank a drink which made you feel confident			
			At home		When out		At home		When out		At home		When out		At home		When out	
		n	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p
Age (years)	18-24[¥]	16333																
	25-29	8744	0.825 (0.78-0.88)	***	0.704 (0.67-0.74)	***	0.966 (0.91-1.02)	NS	1.087 (1.02-1.15)	**	0.859 (0.81-0.91)	***	0.759 (0.72-0.80)	***	0.832 (0.79-0.88)	***	0.756 (0.72-0.80)	***
	30-34	4759	0.817 (0.76-0.88)	***	0.563 (0.52-0.60)	***	0.956 (0.89-1.02)	NS	1.097 (1.03-1.17)	**	0.775 (0.72-0.84)	***	0.618 (0.57-0.67)	***	0.680 (0.64-0.73)	***	0.555 (0.52-0.59)	***
Attended high school	No[¥]	471																
	Yes	29365	0.826 (0.68-1.00)	NS	0.818 (0.68-0.99)	*	1.214 (1.00-1.47)	*	1.176 (0.97-1.42)	NS	0.818 (0.67-1.00)	*	0.918 (0.76-1.11)	NS	0.864 (0.71-1.05)	NS	0.782 (0.64-0.96)	*
Country	United Kingdom[¥]	2604																
	Germany	10294	1.091 (1.03-1.15)	**	0.467 (0.43-0.51)	***	0.962 (0.88-1.05)	NS	1.338 (1.27-1.41)	***	0.952 (0.87-1.05)	NS	0.888 (0.81-0.97)	*	0.650 (0.59-0.71)	***	0.526 (0.48-0.58)	***
	Switzerland	2230	1.087 (0.95-1.24)	NS	0.787 (0.70-0.89)	***	0.821 (0.73-0.92)	**	1.130 (1.01-1.27)	*	0.819 (0.72-0.93)	**	1.025 (0.91-1.16)	NS	0.570 (0.51-0.64)	***	0.615 (0.54-0.70)	***
	Netherlands	1715	1.312 (1.15-1.50)	***	0.595 (0.53-0.68)	***	0.834 (0.73-0.95)	**	1.362 (1.20-1.54)	***	1.458 (0.28-1.66)	***	0.855 (0.75-0.97)	*	0.925 (0.82-1.05)	NS	0.658 (0.58-0.75)	***
	US	1698	1.553 (1.36-1.78)	***	0.991 (0.87-1.13)	NS	1.328 (1.16-1.52)	***	1.707 (1.51-1.93)	***	1.343 (1.18-1.53)	***	1.421 (1.25-1.61)	***	1.111 (0.98-1.26)	NS	1.042 (0.91-1.20)	NS
	New Zealand	1360	1.321 (0.14-1.53)	***	0.695 (0.61-0.80)	***	1.180 (1.03-1.36)	*	2.088 (1.83-2.39)	***	1.074 (0.93-1.24)	NS	1.004 (0.87-1.15)	NS	1.371 (1.20-1.57)	***	1.008 (0.87-1.17)	NS
	France	1478	1.560 (0.136-1.80)	NS	1.040 (0.91-1.19)	NS	1.077 (0.94-1.23)	NS	1.892 (1.66-2.15)	***	0.798 (0.69-0.92)	**	0.944 (0.83-1.08)	NS	0.743 (0.65-0.85)	***	0.631 (0.55-0.72)	***
	Australia	1360	1.106 (0.95-1.29)	***	0.628 (0.55-0.72)	***	1.486 (1.28-1.72)	***	2.388 (2.09-2.73)	***	0.850 (0.73-0.98)	*	0.787 (0.68-0.91)	**	1.113 (0.97-1.27)	NS	0.934 (0.81-1.08)	NS
	Hungary	1055	1.447 (1.23-1.70)	NS	0.637 (0.55-0.74)	***	0.521 (0.45-0.60)	***	1.019 (0.88-1.18)	NS	1.058 (0.90-1.24)	NS	0.822 (0.70-0.96)	*	0.646 (0.56-0.75)	***	0.469 (0.40-0.55)	***
	Italy	1268	1.159 (0.99-1.35)	***	0.696 (0.61-0.80)	***	0.677 (0.59-0.78)	***	1.148 (1.00-1.32)	*	0.813 (0.70-0.95)	**	0.823 (0.71-0.95)	**	0.607 (0.53-0.70)	***	0.420 (0.37-0.49)	***
	Spain	692	1.437 (1.19-1.73)	***	1.038 (0.87-1.23)	NS	0.736 (0.62-0.87)	***	0.969 (0.81-1.15)	NS	0.802 (0.66-0.97)	*	0.961 (0.80-1.15)	NS	0.896 (0.76-1.06)	***	0.873 (0.73-1.05)	NS
	Colombia	372	2.063 (1.64-2.59)	NS	1.547 (1.23-1.95)	***	0.913 (0.73-1.15)	NS	1.079 (0.86-1.35)	NS	1.338 (1.06-1.68)	*	1.641 (1.31-2.05)	***	0.800 (0.64-1.00)	*	0.934 (0.74-1.19)	NS
	Austria	880	0.966 (0.81-1.16)	***	0.377 (0.32-0.45)	***	1.083 (0.92-1.28)	NS	1.813 (1.55-2.12)	***	0.957 (0.81-1.13)	NS	0.791 (0.67-0.93)	**	0.701 (0.60-0.82)	***	0.463 (0.39-0.54)	***
	Norway	782	1.849 (1.56-2.19)	***	0.640 (0.54-0.76)	***	1.427 (1.19-1.71)	***	2.578 (2.19-3.04)	***	1.211 (1.02-1.44)	*	0.758 (0.64-0.90)	**	1.221 (1.03-1.44)	*	0.763 (0.64-0.91)	**
	Canada	468	1.509 (1.22-1.87)	***	0.950 (0.78-1.16)	NS	1.337 (1.08-1.66)	**	1.689 (1.39-2.06)	***	1.414 (1.15-1.74)	**	0.972 (0.79-1.20)	NS	1.334 (1.09-1.64)	**	0.916 (0.74-1.14)	NS
	Mexico	210	2.016 (1.50-2.70)	NS	0.996 (0.75-1.33)	NS	1.064 (0.79-1.44)	NS	1.736 (1.31-2.30)	***	1.130 (0.84-1.53)	NS	1.149 (0.86-1.54)	NS	1.098 (0.82-1.47)	NS	1.001 (0.73-1.37)	NS
	Belgium	378	1.021 (0.80-1.31)	***	0.588 (0.47-0.73)	***	1.198 (0.95-1.52)	NS	1.741 (1.40-2.16)	***	1.196 (0.95-1.50)	NS	0.924 (0.74-1.16)	NS	0.655 (0.53-0.82)	***	0.540 (0.43-0.68)	***
	Brazil	213	1.734 (1.29-2.34)	*	0.719 (0.54-0.96)	*	1.407 (1.03-1.93)	*	2.034 (1.53-2.70)	***	1.725 (1.29-2.30)	***	1.187 (0.89-1.59)	NS	0.980 (0.74-1.30)	NS	0.797 (0.59-1.07)	NS
	Portugal	237	1.430 (1.07-1.92)	***	0.711 (0.54-0.93)	*	0.836 (0.64-1.10)	NS	1.241 (0.95-1.63)	NS	0.802 (0.59-1.09)	NS	0.819 (0.61-1.09)	NS	0.662 (0.51-0.87)	**	0.508 (0.39-0.67)	***
	Sweden	312	1.788 (1.39-2.30)	NS	0.638 (0.50-0.81)	***	1.275 (0.99-1.65)	NS	1.323 (1.01-1.74)	***	1.010 (0.78-1.31)	NS	0.755 (0.58-0.98)	*	1.259 (0.99-1.61)	NS	0.690 (0.54-0.89)	**
	Ireland	230	0.965 (0.75-1.07)	NS	0.543 (0.41-0.72)	***	0.894 (0.67-1.18)	NS	1.332 (1.22-1.46)	*	0.879 (0.65-1.18)	NS	0.690 (0.52-0.93)	*	0.959 (0.73-1.26)	NS	0.650 (0.49-0.87)	**

AOR, adjusted odds ratio; CI, confidence interval; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Country variable was included in the logistic regression model for Table 5 and has been included in seperate supplementary table due to space restrictions.

[€]Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with spirits, white wine, red wine and beer.

[†]Respondents reported which drink type they mostly drank when at home and when out.

[¥]Reference category

b: Negative emotions

			Mostly drank a drink which makes you feel tired				Mostly drank a drink which makes you feel aggressive				Mostly drank a drink which makes you feel ill				Mostly drank a drink which makes you feel tearful			
			When at home		When out		When at home		When out		When at home		When out		When at home		When out	
		n	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p
Age (years)	18-24[¥]	16333																
	25-29	8744	0.986 (0.94-1.04)	NS	1.147 (1.08-1.22)	***	0.884 (0.79-0.99)	*	0.774 (0.71-0.84)	***	0.995 (0.92-1.08)	NS	0.851 (0.80-0.91)	***	0.897 (0.83-0.97)	**	0.893 (0.83-0.96)	**
	30-34	4759	0.863 (0.81-0.92)	***	1.115 (1.04-1.20)	***	0.904 (0.78-1.04	*	0.712 (0.64-0.79)	***	0.961 (0.87-1.07)	NS	0.713 (0.65-0.78)	***	0.806 (0.73-0.89)	***	0.746 (0.67-0.83)	***
Attended high school	No[¥]	471																
	Yes	29365	1.008 (0.84-1.22)	*	0.940 (0.77-1.15)	NS	0.799 (0.58-1.09)	NS	0.750 (0.59-0.96)	*	0.762 (0.60-0.97)	*	0.717 (0.58-0.88)	***	0.754 (0.60-0.95)	*	0.735 (0.58-0.93)	**
Country	United Kingdom[¥]	2604																
	Germany	10294	0.763 (0.70-0.83)	***	1.400 (1.26-1.55)	***	0.447 (0.38-0.53)	***	0.559 (0.50-0.63)	***	0.436 (0.38-0.50)	***	0.476 (0.43-0.53)	***	0.851 (0.49-0.56)	***	0.685 (0.61-0.77)	***
	Switzerland	2230	0.797 (0.71-0.89)	***	0.606 (0.52-0.70)	***	0.536 (0.42-0.68)	***	0.641 (0.54-0.76)	***	0.395 (0.33-0.48)	***	0.459 (0.40-0.53)	***	0.636 (0.53-0.76)	***	0.546 (0.46-0.65)	***
	Netherlands	1715	0.806 (0.71-0.91)	**	1.387 (1.21-1.60)	***	0.636 (0.51-0.80)	***	0.503 (0.42-0.60)	***	1.062 (0.91-1.25)	NS	0.830 (0.72-0.95)	**	0.761 (0.65-0.90)	**	0.612 (0.52-0.72)	***
	US	1698	0.889 (0.79-1.01)	NS	1.303 (1.13-1.50)	***	1.389 (1.15-1.68)	**	1.657 (1.43-0.92)	***	1.326 (1.13-1.55)	***	1.498 (1.31-1.71)	***	1.307 (1.12-1.53)	**	1.264 (1.09-1.47)	**
	New Zealand	1360	0.843 (0.74-0.96)	*	1.539 (1.33-1.78)	***	0.746 (0.89-0.95)	*	0.686 (0.57-0.83)	***	1.113 (0.94-1.32)	NS	0.834 (0.72-0.97)	*	0.606 (0.50-0.74)	***	0.748 (0.62-0.90)	**
	France	1478	0.494 (0.43-0.57)	***	0.938 (0.80-1.09)	NS	0.460 (0.35-0.60)	***	1.003 (0.85-1.18)	NS	1.085 (0.92-1.28)	NS	1.282 (1.12-1.47)	***	0.878 (0.74-1.05)	NS	1.016 (0.87-1.19)	NS
	Australia	1360	0.969 (0.85-1.11)	NS	1.633 (1.41-1.89)	***	0.747 (0.59-0.95)	*	0.645 (0.53-0.78)	***	1.000 (0.84-1.19)	NS	0.734 (0.63-0.86)	***	0.941 (0.79-1.12)	NS	0.829 (0.70-0.99)	*
	Hungary	1055	0.548 (0.47-0.64)	***	1.289 (1.11-1.53)	**	0.566 (0.42-0.76)	***	0.614 (0.50-0.76)	***	0.684 (0.55-0.85)	***	0.639 (0.53-0.76)	***	0.747 (0.60-0.92)	**	0.573 (0.46-0.71)	***
	Italy	1268	0.399 (0.35-0.46)	***	0.719 (0.61-0.85)	***	0.552 (0.42-0.73)	***	0.936 (0.78-1.12)	NS	0.422 (0.33-0.53)	***	0.583 (0.49-0.69)	***	0.501 (0.40-0.63)	***	0.440 (0.35-0.55)	***
	Spain	692	0.717 (0.60-0.85)	***	1.058 (0.87-1.29)	NS	0.706 (0.51-0.97)	*	1.235 (1.00-1.53)	NS	0.393 (0.29-0.53)	***	0.715 (0.58-0.88)	**	0.847 (0.67-1.08)	NS	1.024 (0.83-1.27)	NS
	Colombia	372	0.526 (0.42-0.66)	***	0.814 (0.62-1.06)	NS	0.866 (0.60-1.26)	NS	1.367 (1.05-1.78)	*	0.824 (0.61-1.12)	NS	1.067 (0.84-1.36)	NS	0.885 (0.65-1.20)	NS	1.599 (1.24-2.06)	***
	Austria	880	0.842 (0.72-0.98)	*	1.892 (1.60-2.23)	***	0.282 (0.18-0.43)	***	0.327 (0.25-0.44)	***	0.380 (0.29-0.53)	***	0.307 (0.24-0.39)	***	0.848 (0.68-1.06)	NS	0.571 (0.45-0.72)	***
	Norway	782	0.852 (0.73-1.00)	NS	2.103 (1.77-2.50)	***	0.475 (0.34-0.67)	***	0.352 (0.27-0.47)	***	0.831 (0.67-1.04)	NS	0.556 (0.45-0.68)	***	1.117 (0.91-1.38)	NS	0.868 (0.70-1.07)	NS
	Canada	468	1.038 (0.85-1.26)	NS	1.833 (1.48-2.27)	***	1.232 (0.90-1.69)	NS	1.145 (0.89-1.47)	NS	1.199 (0.93-1.54)	NS	1.132 (0.91-1.41)	NS	1.230 (0.96-1.58)	NS	1.090 (0.85-1.39)	NS
	Mexico	210	0.648 (0.46-0.87)	**	1.103 (0.80-1.53)	NS	1.236 (0.80-1.90)	NS	1.374 (0.98-1.93)	NS	0.908 (0.62-1.34)	NS	0.851 (0.61-1.18)	NS	1.091 (0.76-1.57)	NS	1.172 (0.83-1.65)	NS
	Belgium	378	0.730 (0.59-0.91)	**	1.107 (0.86-1.42)	NS	0.527 (0.34-0.82)	**	0.535 (0.39-0.74)	***	1.157 (0.88-1.52)	NS	0.981 (0.77-1.25)	NS	0.902 (0.67-1.21)	NS	0.805 (0.61-1.07)	NS
	Brazil	213	0.736 (0.55-	*	1.591 (1.18-	**	1.141 (0.72-	NS	1.048 (0.73-	NS	0.719 (0.47-	NS	0.954 (0.69-	NS	1.149 (0.80-	NS	1.014 (0.71-	NS

		0.98)		2.16)		1.81)		1.51)		1.09)		1.31)		1.65)		1.45)	
Portugal	237	0.652 (0.50-0.86)	**	0.747 (.53-1.05)	NS	0.965 (0.60-1.55)	NS	0.573 (0.37-0.88)	*	0.538 (0.35-0.84)	**	0.388 (0.26-0.58)	***	0.820 (0.56-1.20)	NS	0.513 (0.34-0.78)	**
Sweden	312	1.131 (0.89-1.43)	NS	2.656 (2.09-3.38)	***	0.423 (0.25-0.72)	**	0.344 (0.22-0.53)	***	0.895 (0.65-1.24)	NS	0.566 (0.42-0.77)	***	1.077 (0.78-1.49)	NS	0.905 (0.66-1.24)	NS
Ireland	230	0.881 (0.67-1.16)	NS	1.362 (1.01-1.84)	*	0.776 (0.49-1.22)	NS	0.721 (0.50-1.03)	NS	0.784 (0.54-1.15)	NS	0.684 (0.49-0.95)	*	0.930 (0.65-1.33)	NS	0.781 (0.55-1.11)	NS

AOR, adjusted odds ratio; CI, confidence interval; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Country variable was included in the logistic regression model for Table 5 and has been included in seperate supplementary table due to space restrictions.

[€]Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with spirits, white wine, red wine and beer.

[†]Respondents reported which drink type they mostly drank when at home and when out.

[¥]Reference category

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	5
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	5/6
Bias	9	Describe any efforts to address potential sources of bias	6
Study size	10	Explain how the study size was arrived at	5/6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6
		(*b*) Describe any methods used to examine subgroups and interactions	6
		(*c*) Explain how missing data were addressed	5/6
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5/Supplementary Table A
		(b) Indicate number of participants with missing data for each variable of interest	5
Outcome data	15*	Report numbers of outcome events or summary measures	NA
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	6-17
		(*b*) Report category boundaries when continuous variables were categorized	6-17
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6-17
Discussion			
Key results	18	Summarise key results with reference to study objectives	18
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	19
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	18/19
Generalisability	21	Discuss the generalisability (external validity) of the study results	18/19
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	3

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Do emotions related to alcohol consumption differ by alcohol type? An international cross-sectional survey of emotions associated with alcohol consumption and influence on drink choice in different settings.

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Manuscript Title: Do emotions related to alcohol consumption differ by alcohol type? An international cross-sectional survey of emotions associated with alcohol consumption and influence on drink choice in different settings.

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ABSTRACT

Objectives

To examine the emotions associated with drinking different types of alcohol, explore whether these emotions differ by socio-demographics and alcohol dependency and whether the emotions associated with different drink types influence people's choice of drinks in different settings.

Design

International cross-sectional opportunistic survey (Global Drug Survey) using an online anonymous questionnaire in 11 languages promoted through newspapers, magazines and social media from November 2015-January 2016.

Study Population

Individuals aged 18-34 years who reported consumption of beer, spirits, red and white wine in the previous 12 months and were resident in countries with more than 200 respondents (n= 21 countries; 29,836 respondents).

Main outcome measures

Positive and negative emotions associated with consumption of different alcoholic beverages (energised, relaxed, sexy, confident, tired, aggressive, ill, restless and tearful) over the past 12 months in different settings.

Results

Alcoholic beverages vary in the types of emotions individuals report they elicit, with spirits more frequently eliciting emotional changes of all types. Overall 29.8% of respondents reported feeling aggressive when drinking spirits, compared to only 7.1% when drinking red wine ($p<0.001$). Women more frequently reported feeling all emotions when drinking alcohol, apart from feelings of aggression. Respondents' level of alcohol dependency was strongly associated with feeling all emotions, with the likelihood of aggression being significantly higher in possible dependent versus low risk drinkers (AOR 6.4; 95%CI 5.79-7.09; $p<0.001$). The odds of feeling the majority of positive and negative emotions also remained highest amongst dependent drinkers irrespective of setting.

Conclusion

Understanding emotions associated with alcohol consumption is imperative to addressing alcohol misuse, providing insight into what emotions influence drink choice between different groups in the population. The differences identified between socio-demographic groups and influences on drink choice within different settings will aid future public health practice to further comprehend individuals' drinking patterns and influence behaviour change.

ARTICLE SUMMARY

Strengths and limitations of this study

- The Global Drug Survey is a well-established international survey that allows analysis of both drug and alcohol use.
- Using online methods in multiple languages, the Global Drug Survey 2016 included unique questions on alcohol consumption and emotions related to consuming different types of alcohol.
- All respondents within the sample used for this study drank all types of alcohol included in the analysis.
- Although the sample size for the study is large, the sample is opportunistic and non-probability samples cannot be considered representative of more general population groups.
- Analysis makes the assumption that alcohol consumption behaviours are based on rational choice, which may not always be the case due to confounding factors such as the influence of alcohol on recollection.

Funding statement

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors. The Global Drug Survey is a independent self-funded survey.

No competing interests

We have read and understood BMJ policy on declaration of interests and declare that we have no competing interests.

Ethics

Ethical approval for the Global Drug Survey 2016 was obtained from the Psychiatry, Nursing and Midwives Ethics Subcommittee at Kings College London.

INTRODUCTION

Alcohol use is of international public health concern with approximately 3.3 million deaths and 5.1% of the global burden of disease and injury attributable to alcohol consumption in 2014.[1] In addition, there is a growing body of evidence illustrating the harms caused by those who drink alcohol to individuals around them and to wider communities (for example, . through alcohol related violence and anti-social behaviour).[2-4] Understanding why people choose particular drink types and whether different drinks elicit different emotions may help inform more effective public health interventions.

Alcohol consumption has a long-standing association with mood, with evidence showing that people consume alcohol to help regulate emotional experiences, reduce negative emotions and enhance positive emotions.[5-6] A substantial body of research exists which outlines drinking motives, defined as the gateway to the decision to consume alcohol, and makes the assumption that people drink in order to achieve a particular goal.[7-9] Social motives have been associated with moderate alcohol use; enhancement motives (for example, increasing levels of confidence) with heavy drinking; and coping motives with alcohol-related problems.[7] Evidence also outlines how expectancies about the perceived consequences of drinking alcohol affects whether people start to drink, become regular drinkers or become dependent on alcohol.[10]

Historically, alcohol's perceived capacity to temporarily reduce negative emotions (and consequently increase pleasure and relaxation) has been regarded as the primary reason for consumption.[11] Individuals across the United States, Canada and Sweden have previously reported associating generally positive emotions with alcohol consumption, emphasising feelings of relaxation, and reporting alcohol as an antidote to fatigue and contributing to increasing the values of sociability.[12] Social mood enhancement has also been found to be the most highly endorsed reason for drinking, with alcohol consumption being strongly associated with short term increases in self-reported positive mood, decreases in negative mood and increases in levels of social bonding.[13] However, although alcohol may initially induce stimulation, consumption has also been associated with triggering negative emotions, such as aggression and depression[14-16] and can lead to out-of-character actions being undertaken by the drinker and exacerbate premorbid personality traits.[17]

Outside cultural myth and folklore, little attention has been paid to the immediate emotions associated with drinking different types of alcohol. Potential differences in the emotional consequences (both positive and negative) of drinking different types of alcohol (for example spirits vs. beer) and how emotional expectations from past experiences of different alcohol types influence drink choice remain relatively unexplored areas. However, measures that look to change drinking behaviour and consequently reduce alcohol related harms could benefit from a better understanding of how different drink types are associated with diverse social and emotional outcomes and how such relationships vary with demographics and drinking situation (for example, whether drinking at home or when out). In this study, we used the internationally established Global Drug Survey (GDS) to identify which drink types are associated with different emotional outcomes in alcohol consumers from 21 countries and how both demographic factors and levels of dependency on alcohol affect such relationships. Finally, we explored whether emotions that

respondents associate with different drink types influence their choices of drinks in different settings.

METHODS

Data source

The GDS is the world's biggest drug survey. Using encrypted online survey methods, the GDS is implemented as an annual, opportunistic, self-reported, cross sectional survey of alcohol and drug use amongst adults over the age of 16 years.[18] The GDS 2016 was launched online in November 2015 in 11 languages (English, German, Greek, Polish, French, Italian, Spanish, Portuguese, Flemish, Hungarian and Danish) and promoted internationally through national media (newspapers, magazines and social media networks). While the GDS non-probability methodology does not allow for the assessment of general population prevalence, the GDS sample enables examination of drug and alcohol behaviours and perceptions across age groups, gender, sexual preferences, place of residence, or mental health status within the sample. GDS can efficiently add nuance and add depth to the findings of more representative surveys, which are often less detailed and based on smaller samples. The GDS has previously been used to examine both alcohol and drug use, for example exploring the risk of emergency admission after drug use, trends in self-reported drug use such as nitrous oxide and examining harm to others from alcohol consumption.[4, 19-20] Whilst it was not designed to create supra-national or nationally representative population estimates it does provides access to a large sample of self-selected individuals. Other publications provide full details of other aspects of the utility, design and limitations of the GDS.[4, 19]

Variables

Socio-demographic data were collected on age, sex, country of residence and educational attainment (here categorised into either not attended high school, or attended high school) as a proxy for socio-economic status. The GDS also collects data on the consumption of both legal and illegal drug use and alcohol use.[18] Analyses within this study focus on individual alcohol use and utilise a range of questions that asked respondents to self-report what type of alcoholic drink(s) they consume and which different emotions they associated with each alcohol type. Emotions included were both positive (energised, relaxed, sexy and confident) and negative (tired, aggressive, ill, restless and tearful). Data were also collected on what types of alcohol were most likely to be drunk at home or when out and levels of consumption for each participant using the Alcohol Use Disorders Test (AUDIT) were also calculated.[21]

Study population

In total, 87,925 respondents completed the survey and had reported drinking alcohol in the last 12 months. However, in order to strengthen the robustness of the effect estimates the dataset for analyses was restricted to respondents who had reported their sex, were resident in a country which contributed at least 200 responses to the overall survey and were aged 18-34 years old. In total, 4,271 cases were excluded due to low country response and 23,076 were excluded as they were out of the desired age range leaving a sample of 60,578. All respondents to the survey reported their gender. For the purposes of examining emotional relationships with different alcohol types only

individuals who had consumed all alcohol types of interest (i.e. spirits, red wine, white wine and beer) at some point in the last 12 months and had indicated one of these as their main drink when at home and when outside of the home were included. Although some respondents reported drinking other beverages, for example cider, the numbers were too small for inclusion in the analysis. This resulted in a final sample size of 29,836. Full details of sample demographics used in the analysis are outlined in Supplementary Table A.

Statistical methods

To identify and quantify the strength of association between variables used in the analysis, chi squared, Cochran's Q, McNemar's test and logistic regression modelling were undertaken in SPSS (V.23). Demographics included in analyses were age (categorised as 18-24, 25-29 and 30-34 years), sex, country of residence, educational attainment and levels of dependency on alcohol (based on the AUDIT questionnaire score). Respondents were classified into the following dependency categories: 0-7, low risk; 8-15, increasing risk; 16-19, higher risk; 20+, possible dependence.[21] The emotions associated with drinking individual types of alcohol were analysed and the emotions individuals experience regardless of the drink they associated the emotion with were combined to create a set of variables which describe the emotions associated with drinking any of the different types of alcohol (spirits, white wine, red wine or spirits). In addition, to analyse how emotions related to drink choice in different settings, the responses to what drinks were reported to be mostly consumed in different settings and the emotions which people reported with those particular drink types were linked.

RESULTS

Results indicated that respondents attributed different emotions to drinking different types of alcohol (Table 1). Over half of all respondents associated drinking spirits with emotions of energy and confidence and 42.4% reported that drinking spirits made them feel sexy. Respondents were most likely to report feeling relaxed (52.8%) when drinking red wine; although almost half of respondents also reported feeling relaxed when drinking beer (Table 1). Drinking spirits was more likely to draw out feelings of aggression, illness, restlessness and tearfulness than all other drink types (Table 1). However, red wine was the most likely to make individuals feel tired (60.1%, Table 1).

Table 1: Overall reported emotions by individual type of alcoholic drink (%)

			Drink type									
		n	Spirits	95%CI	Red wine	95%CI	White wine	95%CI	Beer	95%CI	Cochran's Q	P
Positive emotions	Energised	29836	58.36	57.80-58.92	7.14	6.84-7.43	15.07	14.66-15.47	24.76	24.27-25.24	23610.470	<0.001
	Confident	29836	59.08	58.52-59.63	27.88	27.37-28.39	28.27	27.76-28.78	44.54	43.97-45.10	11885.08	<0.001
	Relaxed	29836	20.15	19.70-20.61	52.80	52.23-53.37	32.67	32.14-33.20	49.87	49.30-50.43	9578.230	<0.001
	Sexy	29836	42.42	41.85-42.98	25.20	24.71-25.70	23.73	23.24-24.21	18.86	18.41-19.31	6261.860	<0.001
Negative emotions	Tired	29836	15.33	14.92-15.74	60.08	59.52-60.63	18.44	18.00-18.88	38.92	38.36-39.47	17024.29	<0.001
	Aggressive	29836	29.83	29.31-30.35	2.57	2.39-2.75	2.74	2.55-2.92	6.73	6.44-7.01	17467.32	<0.001
	Ill	29836	47.82	47.26-48.39	19.29	18.84-19.74	14.50	14.10-14.90	16.71	16.28-17.13	13032.62	<0.001
	Restless	29836	27.81	27.30-28.32	5.18	4.93-5.43	6.43	6.15-6.71	9.34	9.01-9.67	11329.91	<0.001
	Tearful	29836	22.24	21.77-22.71	17.10	16.67-17.52	9.96	9.62-10.30	9.88	9.54-10.22	3551.28	<0.001

Emotional associations with drinking any type of alcohol (spirits, white wine, red wine and beer)

Differences in emotions reported by respondents when drinking alcohol of any type (inclusive of spirits, white wine, red wine and beer) were examined for socio-demographic groups. With the exception of feeling aggressive, females were significantly more likely than males to report each emotion as a result of drinking any type of alcohol (Table 2). Younger age groups (18-24 years) most frequently reported most emotion types when drinking alcohol. Exceptions were aggression and tiredness where there was no significant association with age (Table 2). Respondents' alcohol consumption (AUDIT score) was strongly associated with both positive and negative emotions, with heavier drinkers more likely to report all emotional changes as a result of drinking. This relationship was especially strong for the emotions of aggression, whereas the increase in tiredness was negligible(Table 2). A greater proportion of those with lower educational attainment reported both positive (energised, sexy or confident) and negative (aggressive, ill or tearful) emotions when drinking alcohol compared with those who had attended high school (Table 2). Bivariate associations between emotions and both alcohol dependence level and demographics remained significant after using logistic regression modelling to control for confounding relationships between variables (Table 3; online supplementary table B for country of residence). Thus, females had higher odds of feeling all emotions compared to males apart from aggression where males had significantly higher odds. Younger age groups had higher odds of feeling all emotions apart from tiredness and aggression. Odds of reporting all emotions except tiredness increased with AUDIT score category, in particular feelings of aggression (Table 3). Differences in emotions were also reported by respondents from different countries with the highest association with the positive emotions of feeling energised, relaxed and sexy being the South American sample of Colombia and Brazil. For negative emotions, the country sample with the strongest association with aggression when drinking alcohol was Norway and for feeling restless was France (online supplementary table B). However, caution must be taken when interpreting these results due to the small sample for each country.

Table 2: Bivariate relationship between emotions associated with drinking any type of alcohol[¶] and AUDIT score and socio-demographics (%)

			Emotions associated with drinking any type of alcohol[¶]								
			Positive emotions				Negative emotions				
		n	Energised	Relaxed	Sexy	Confident	Tired	Aggressive	Ill	Restless	Tearful
AUDIT	Lower risk (0-7)	10577	61.11	83.32	51.74	65.78	85.07	20.28	62.33	29.25	26.78
	Increasing risk (8-15)	14205	79.25	90.55	65.91	80.76	87.83	38.24	72.22	39.63	39.87
	Higher risk (16-19)	2895	86.60	93.16	73.92	87.63	89.50	52.71	79.24	48.70	50.78
	Dependence (20+)	2159	90.13	93.61	73.83	89.95	88.42	63.08	80.64	55.16	59.70
	x^2		1659.410	452.744	868.464	1244.958	63.389	2218.420	563.548	770.746	1220.481
	p		***	***	***	***	***	***	***	***	***
Sex	Male	19934	73.01	88.06	57.17	75.88	85.45	36.97	67.45	36.98	32.27
	Female	9902	76.96	89.28	72.43	78.61	90.29	31.27	75.16	39.92	48.71
	x^2		54.179	9.635	655.165	27.760	137.980	94.407	187.240	24.269	761.188
	p		***	**	***	***	***	***	***	***	***
Age (years)	18-24	16333	79.30	89.19	67.03	81.36	86.97	35.39	72.32	40.06	40.38
	25-29	8744	70.53	87.98	59.00	73.28	87.64	35.16	68.57	36.76	35.94
	30-34	4759	64.22	86.85	51.73	67.49	86.28	33.83	64.70	32.95	31.88
	x^2		532.72	22.585	422.007	482.601	5.278	3.993	114.045	86.724	130.036
	p		***	***	***	***	NS	NS	***	***	***
Attended high school	Yes	29365	74.17	88.42	62.13	76.64	87.05	34.95	69.85	37.91	37.61
	No	471	84.08	91.08	68.79	85.99	87.26	43.10	79.62	41.19	45.01
	x^2		23.855	3.224	8.743	22.742	0.0180	13.5330	21.0560	2.1220	10.8190
	p		***	NS	**	***	NS	***	***	NS	***

AUDIT, alcohol use disorders identification test; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with drinking spirits, white wine, red wine and beer.

Table 3: Logistic regression model[¶] for AUDIT score and socio-demographic relationships with emotions associated with drinking any type of alcohol[†]

			Emotions associated with drinking any type of alcohol[†]							
			Positive emotions							
			Energised		Relaxed		Sexy		Confident	
		n	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
AUDIT	Lower risk (0-7)[‡]	10577								
	Increasing risk (8-15)	14205	2.28 (2.15-2.42)	***	1.86 (1.73-2.02)	***	1.83 (1.73-1.93)	***	2.03 (1.92-2.16)	***
	Higher risk (16-19)	2895	3.51 (3.12-3.94)	***	2.55 (2.19-2.98)	***	2.64 (2.40-2.90)	***	3.18 (2.82-3.59)	***
	Dependence (20+)	2159	4.73 (4.07-5.50)	***	2.66 (2.21-3.19)	***	2.58 (2.32-2.87)	***	3.86 (3.33-4.48)	***
Sex	Female[‡]	9902								
	Male	19934	0.73 (0.69-0.78)	***	0.86 (0.80-0.93)	***	0.48 (0.45-0.50)	***	0.82 (0.77-0.87)	***
Age (years)	18-24[‡]	16333								
	25-29	8744	0.70 (0.65-0.74)	***	0.96 (0.88-1.04)	NS	0.77 (0.73-0.82)	***	0.69 (0.65-0.74)	***
	30-34	4759	0.52 (0.48-0.56)	***	0.90 (0.81-1.00)	*	0.61 (0.57-0.65)	***	0.53 (0.49-0.57)	***
Attended high school	No[‡]	471								
	Yes	29365	0.86 (0.66-1.11)	NS	1.08 (0.78-1.50)	NS	0.97 (0.79-1.20)	NS	0.78 (0.60-1.03)	NS

			Negative emotions									
			Tired		Aggressive		Ill		Restless		Tearful	
		n	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
AUDIT	Lower risk (0-7)‡	10577	1.35 (1.25-1.45)	***	2.40 (2.27-2.55)	***	1.40 (1.33-1.49)	***	1.55 (1.47-1.64)	***	1.90 (1.79-2.01)	***
	Increasing risk (8-15)	14205	1.64 (1.43-1.87)	***	4.26 (3.90-4.66)	***	1.83 (1.65-2.03)	***	2.18 (2.00-2.38)	***	2.96 (2.71-3.23)	***
	Higher risk (16-19)	2895	1.49 (1.28-1.72)	***	6.41 (5.79-7.09)	***	1.82 (1.35-2.03)	***	2.81 (2.55-3.10)	***	4.25 (3.84-4.70)	***
	Dependence (20+)	2159										
Sex	Female‡	9902	0.63 (0.58-0.68)	***	1.18 (1.12-1.24)	***	0.66 (0.62-0.70)	***	0.84 (0.80-0.88)	***	0.45 (0.43-0.48)	***
	Male	19934										
Age (years)	18-24‡	16333	1.10 (1.01-1.19)	*	1.11 (1.04-1.17)	***	0.96 (0.91-1.02)	***	0.92 (0.87-0.97)	**	0.90 (0.85-0.95)	***
	25-29	8744	1.04 (0.94-1.14)	NS	1.09 (1.01-1.17)	***	0.80 (0.74-0.86)	***	0.79 (0.74-0.85)	***	0.82 (0.76-0.88)	***
	30-34	4759										
Attended high school	No‡	471	1.12 (0.85-1.48)	NS	0.91 (0.74-1.10)	NS	0.86 (0.68-1.10)	NS	1.05 (0.87-1.28)	NS	0.8329 (0.68-1.01)	NS
	Yes	29365										

AUDIT, alcohol use disorders identification test; AOR, adjusted odds ratio; CI, confidence interval; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

¶Country of residence was also included in the logistic regression model. See online Supplementary Table B.

†Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with drinking spirits, white wine, red wine and beer.

‡reference category.

Emotional associations by individual drink type

For each individual drink type, positive emotions were more frequently reported by those with higher alcohol dependency scores. This was also true of negative emotions, with the exception of feeling tired when drinking spirits or white wine. Females were more likely to report each emotion when drinking spirits, red wine and white wine, with the exceptions of feeling relaxed, tired or aggressive with spirits, and energised with red wine. Males were more likely to report each emotion when drinking beer, apart from feeling tearful (Table 4).

Emotions reported with each alcohol type varied by age group. For example, feeling tired or relaxed when drinking spirits and red wine were more frequently reported by the youngest age group, whereas for white wine and beer these emotions were more frequently reported by the oldest age group. In addition, emotions associated with each drink type were more frequently reported by respondents who had not attended high school or higher education, with the exception of feeling sexy, ill or restless when drinking spirits, relaxed or tired when drinking red wine and energised or relaxed when drinking beer. Italian residents more frequently reported feeling energised whilst drinking red wine and those from Colombia were more likely to report feeling energised when drinking spirits (Online supplementary tables C and D).

Table 4: Logistic regression models[¶] for AUDIT score and socio-demographic relationships with emotions associated with drinking an individual type of alcohol

		Positive emotions								Negative emotions									
		Energised		Relaxed		Sexy		Confident		Tired		Aggressive		Ill		Restless		Tearful	
		AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
Spirits																			
AUDIT[†]	Increasing risk (8-15)	1.88 (1.78-.198)	***	0.92 (0.86-0.98)	**	1.60 (1.52-1.69)	***	1.63 (1.55-1.72)	***	0.76 (0.71-0.82)	***	2.42 (2.27-2.58)	***	1.20 (1.14-1.26)	***	1.55 (1.46-1.65)	***	1.67 (1.56-1.79)	***
	Higher risk (16-19)	2.47 (2.25-2.71)	***	0.95 (0.86-1.06)	NS	2.10 (1.93-2.29)	***	2.28 (2.08-2.50)	***	0.80 (0.71-0.90)	***	4.17 (3.81-4.57)	***	1.35 (1.24-1.47)	***	1.96 (1.79-2.15)	***	2.40 (2.18-2.65)	***
	Dependence (20+)	3.02 (2.71-3.37)	***	1.04 (0.93-1.06)	NS	2.21 (2.01-2.44)	***	2.51 (2.25-2.79)	***	0.71 (0.62-0.81)	***	6.02 (5.44-6.66)	***	1.29 (1.18-1.42)	***	2.65 (2.40-2.93)	***	3.280 (2.95-3.65)	***
Sex[‡]	Male	0.77 (0.73-0.81)	***	1.19 (1.11-1.26)	***	0.64 (0.61-0.67)	***	0.889 (0.84-0.94)	***	1.42 (1.32-1.52)	***	1.16 (1.10-1.23)	***	0.85 (0.80-0.89)	***	0.82 (0.78-0.87)	***	0.53 (0.50-0.56)	***
Red wine																			
AUDIT[†]	Increasing risk (8-15)	1.23 (1.11-1.37)	***	1.189 (1.13-1.25)	***	1.31 (1.23-1.39)	***	1.28 (1.21-1.36)	***	1.19 (1.12-1.25)	***	1.57 (1.29-1.90)	***	1.31 (1.22-1.41)	***	1.18 (1.04-1.34)	**	1.82 (1.68-1.96)	***
	Higher risk (16-19)	1.41 (1.20-1.65)	***	1.20 (1.13-1.25)	***	1.53 (1.39-1.68)	***	1.45 (1.32-1.59)	***	1.31 (1.20-1.43)	***	2.68 (2.11-3.42)	***	1.72 (1.56-1.91)	***	1.74 (1.46-2.07)	***	2.64 (2.37-2.94)	***
	Dependence (20+)	1.82 (1.55-2.14)	***	1.19 (1.09-1.32)	***	1.46 (1.31-1.62)	***	1.62 (1.46-1.79)	***	1.26 (1.14-1.39)	***	3.70 (2.91-4.71)	***	1.80 (1.61-2.02)	***	2.08 (1.73-2.49)	***	3.29 (2.93-3.69)	***
Sex[‡]	Male	1.16	**	0.76	***	0.60	***	0.77	***	0.54	***	0.81	**	0.78	***	0.90	*	0.45	***

		(1.05-1.28)		(0.72-0.80)		(0.57-0.86)		(0.73-0.81)		(0.52-0.57)		(0.69-0.94)		(0.73-0.83)		(0.80-0.10)		(0.43-0.48)		
White wine																				
AUDIT[†]	Increasing risk (8-15)	1.57 (1.45-1.69)	***	1.44 (1.35-1.53)	***	1.04 (0.98-1.10)	NS	1.47 (1.38-1.56)	***	0.86 (0.80-0.92)	***	2.18 (1.79-2.64)	***	1.38 (1.27-1.50)	***	1.38 (1.23-1.54)	***	1.68 (1.52-1.85)	***	
	Higher risk (16-19)	1.92 (1.71-2.16)	***	1.75 (1.59-1.94)	***	1.10 (1.01-1.20)	*	1.69 (1.54-1.85)	***	0.94 (0.84-1.04)	NS	3.53 (2.76-4.52)	***	1.71 (1.52-1.92)	***	2.123 (0.82-2.49)	***	2.54 (2.22-2.91)	***	
	Dependence (20+)	2.22 (1.96-2.52)	***	1.78 (1.60-1.99)	***	1.07 (0.96-1.18)	NS	1.80 (1.63-2.00)	***	0.85 (0.76-0.97)	*	5.47 (4.28-6.99)	***	1.99 (1.76-2.25)	***	2.55 (2.16-3.01)	***	3.39 (2.95-3.90)	***	
Sex[‡]	Male	0.56 (0.53-1.60)	***	0.41 (0.39-0.44)	***	0.57 (0.54-0.60)	***	0.53 (0.50-0.56)	***	0.71 (0.67-0.76)	***	0.76 (0.65-0.88)	***	0.73 (0.69-0.79)	***	0.79 (0.71-0.87)	***	0.36 (0.33-0.39)	***	
Beer																				
AUDIT[†]	Increasing risk (8-15)	1.58 (0.15-1.68)	***	1.36 (1.29-1.43)	***	1.55 (1.45-1.66)	***	1.58 (1.50-1.66)	***	1.02 (0.97-1.08)	NS	1.70 (1.51-1.91)	***	1.06 (0.97-1.12)	NS	1.37 (1.25-1.51)	***	1.63 (1.48-1.79)	***	
	Higher risk (16-19)	1.94 (1.77-2.14)	***	1.50 (1.37-1.63)	***	1.98 (1.79-2.20)	***	1.98 (1.81-2.15)	***	1.09 (1.00-1.19)	*	2.56 (2.19-3.00)	***	1.09 (0.98-1.22)	NS	1.77 (1.55-2.03)	***	2.32 (1.03-2.65)	***	
	Dependence (20+)	2.14 (1.93-2.38)	***	1.63 (1.48-1.79)	***	1.94 (1.72-2.18)	***	1.96 (1.78-2.16)	***	1.11 (1.00-1.22)	*	3.28 (2.79-3.86)	***	1.08 (0.95-1.22)	NS	2.41 (2.09-2.77)	***	3.00 (1.61-3.45)	***	
Sex[‡]	Male	1.25 (1.18-1.32)	***	1.77 (1.69-1.86)	***	1.41 (1.32-1.51)	***	1.55 (1.48-1.63)	***	1.46 (1.39-1.54)	***	1.59 (1.43-1.77)	***	0.67 (0.63-0.72)	***	1.01 (0.93-1.10)	NS	0.99 (0.91-1.07)	NS	

AUDIT, alcohol use disorders identification test; AOR, adjusted odds ratio; CI, confidence interval; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Country of residence, age and educational attainment was also included in the logistic regression model. See online Supplementary Table D.

[†]Reference category is lower risk (0-7).

‡Reference category is female.

Emotional associations with any type of alcohol by choice of drink in different settings

Finally, how the different emotions associated with drink type influence people's choices of alcoholic beverages in different settings was examined, taking into account confounding demographic factors (Table 5a and 5b; online supplementary table E). For each type of emotion, significant differences were reported between emotions elicited by the types of drinks which were mostly drunk at home compared to on a night out (Table 5a). Reporting a dependency on alcohol showed a strong association with drinking any type of alcohol which made them feel energised, sexy and confident whether drinking at home or when out. In addition, respondents dependent on alcohol reported a greater tendency to select any type of drink that elicited emotions of aggression and tearfulness when drinking at home or when out. The association between emotions of aggression and dependency was noticeably strongest, independent of setting. Females more frequently reported drinking types of alcohol at home and when out which elicit the emotion of feeling sexy compared to men (Table 5b).

The youngest age group indicated a very strong relationship with choosing any type of alcohol that made them feel energised, sexy and confident when drinking outside of the home. However, these relationships were not as strong when drinking at home. The oldest age group more frequently chose to drink alcohol that made them feel tired and relaxed when out and the youngest age groups selecting drinks that made them feel tired when drinking at home (online supplementary table E).

Table 5a: Bivariate association[¶] for emotions associated with drinking any type of alcohol[‡] by setting, AUDIT score and socio-demographic relationships

				n[¥]	%[¥]	x^2 (p) [¶]
Positive emotions	**Mostly drank a drink associated with feeling:**	**Energised**	**At home**	8008	26.84	
			When out	13259	44.44	3683.349 (***)
		Relaxed	**At home**	19271	64.59	
			When out	13929	46.69	3428.640 (***)
		Sexy	**At home**	9244	30.98	
			When out	10458	35.05	257.954 (***)
		Confident	**At home**	14613	48.98	
			When out	17673	59.23	1642.240 (***)
Negative emotions	**Mostly drank a drink associated with feeling:**	**Tired**	**At home**	12535	42.01	
			When out	8394	28.13	2204.450 (***)
		Aggressive	**At home**	1888	6.33	
			When out	4087	13.7	1646.066 (***)
		Ill	**At home**	3653	12.24	
			When out	6077	20.37	135.873 (***)
		Restless	**At home**	2589	8.68	
			When out	4583	15.36	1336.490 (***)
		Tearful	**At home**	4367	14.64	
			When out	4573	15.33	13.636 (***)

AUDIT, alcohol use disorders identification test; AOR, adjusted odds ratios; CI, confidence intervals; NS, non significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]McNemar test (x2)

[‡]Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with drinking spirits, white wine, red wine and beer.

[¥]Refers to the number and percentage of respondents out of the whole sample (n=to836) who stated that they mostly drank a type of drink which makes them feel particular emotions in different settings.

Table 5b: Logistic regression model† for emotions associated with drinking any type of alcohol‡ by setting¥, AUDIT score and socio-demographic relationships

		At home AOR (95%CI)	p	When out AOR (95%CI)	p	At home AOR (95%CI)	p	When out AOR (95%CI)	p	At home AOR (95%CI)	p	When out AOR (95%CI)	p	At home AOR (95%CI)	p	When out AOR (95%CI)	p
Positive emotions		**Energised**				**Relaxed**				**Sexy**				**Confident**			
AUDIT	Lower risk (0-7)€																
	Increasing risk (18-15)	1.56 (1.47-1.66)	***	1.65(1.57-1.75)	***	1.20 (1.14-1.27)	***	1.134(1.08-1.20)	***	1.45 (1.37-1.54)	***	1.52 (1.43-1.60)	***	1.56 (1.48-1.65)	***	1.66 (1.58-1.75)	***
	Higher risk (16-19)	2.08 (1.90-2.28)	***	2.25 (2.07-2.46)	***	1.34 (1.23-1.47)	***	1.17 (1.08-1.28)	***	1.812 (1.66-1.99)	***	1.98 (1.82-2.17)	***	2.06 (1.89-2.24)	***	2.34 (2.14-2.57)	***
	Dependence (20+)	2.61 (2.36-2.88)	***	2.59 (2.35-2.86)	***	1.32 (1.19-1.46)	***	1.18 (1.07-1.30)	***	1.96 (1.77-2.16)	***	2.08 (1.88-2.29)	***	2.15 (1.95-2.37)	***	2.31 (2.08-2.56)	***
Sex	Female€																
	Male	1.09 (1.03-1.15)	**	0.76 (0.72-0.80)	***	0.91 (0.86-0.95)	***	1.34 (1.27-1.41)	***	0.54 (0.51-0.57)	***	0.64 (0.61-0.68)	***	0.99 (0.94-1.04)	NS	0.93 (0.86-0.98)	**
Negative emotions		**Tired**				**Aggressive**				**Ill**				**Tearful**			
AUDIT	Lower risk (0-7)€																
	Increasing risk (18-15)	0.99 (0.94-1.04)	NS	0.90 (0.85-0.95)	***	1.96 (1.91-2.23)	***	2.14 (1.96-2.34)	***	1.20 (1.10-1.30)	***	1.18 (1.11-1.27)	***	1.70 (1.56-1.84)	***	1.71 (1.58-1.85)	***
	Higher risk (16-19)	0.99 (0.91-1.08)	NS	0.98 (0.81-0.98)	*	3.62 (3.08-4.26)	***	3.61 (3.21-4.06)	***	1.42 (1.26-1.61)	***	1.35 (1.22-1.50)	***	2.49 (2.22-2.79)	***	2.53 (2.26-2.82)	***
	Dependence (20+)	0.90 (0.82-0.99)	*	0.85 (0.76-0.94)	**	5.13 (4.35-6.05)	***	5.10 (4.51-5.76)	***	1.61 (1.41-1.84)	***	1.43 (1.29-1.61)	***	3.62 (3.21-4.08)	***	3.57 (8.18-4.02)	***
Sex	Female€																
	Male	1.05 (1.00-1.11)	*	1.66 (1.56-1.75)	***	1.54 (1.38-1.72)	***	1.11 (0.94-1.10)	NS	0.86 (0.80-0.93)	***	0.76 (0.72-0.81)	***	0.52 (0.49-0.56)	***	0.59 (0.55-0.93)	***

AUDIT, alcohol use disorders identification test; AOR, adjusted odds ratios; CI, confidence intervals; NS, non significant.

*p<0.05, **p<0.01, ***p<0.001.

†Country of residence, age and educational attainment was also included in the logistic regression model. See online Supplementary Table E.

‡Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with drinking spirits, white wine, red wine and beer.

¥Respondents reported which drink type they mostly drank when at home and when out

€reference category

DISCUSSION

Using an international sample, our study found that different types of alcohol are associated with different types of emotions , eliciting both positive and negative emotions (Table 1), and highlights the complex relationships between drink choice, emotions and the settings in which alcohol is consumed. Emotions were found to differ substantially between different demographic groups and these relationships were maintained after accounting for confounding socio-demographics and level of alcohol dependency (Table 3). The association between drinking spirits and the emotion of aggression was a key finding with 29.8% of respondents reporting this relationship, significantly higher than other types of alcohol ($p<0.001$; Table 1). Findings suggest dependent drinkers (AUDIT >20) rely on alcohol to obtain the positive emotions they associated with drinking, being five times more likely to feel energised compared to low risk drinkers (Adjusted Odds Ratio (AOR) 4.7; 95%CI 4.07-5.50; Table 3). However, heavier drinkers also reported negative emotions more frequently with respondents being just over six times more likely to report feelings of aggression (AOR 6.4; 95%CI 5.79-7.09; $p<0.001$; Table 3), which may in part be a result of drinking greater quantities of alcohol in a session so increasing the impact on emotions. Conversely, relationships between tiredness and drinking pattern were negligible and for some drink types (spirits, white wine) heavier drinkers were less likely to report feelings of tiredness. These results are consistent with existing evidence on heavy drinking and alcohol dependence, including the development of tolerance to the sedative effects of alcohol.[22-23]. The reported emotions for wine differed, with red wine drinkers more likely to report tiredness than white wine drinkers. Within the limits of the GDS it was not possible to explore, for instance whether this was due to drinking each at different times of day or expected effects of specific alcoholic drinks potentially influenced by culture or marketing. Females more frequently reported all emotions apart from feelings of aggression and younger age groups more frequently reported all emotions with the exception of aggression and tiredness (Table 3). Our findings support previous research which highlights that male beer drinkers show less aggression than males who drink spirits (Table 4).[24] Spirits are a popular choice of drink in a number of countries, with substantial proportions of the population consuming spirits on a regular basis.[25] Within our sample, spirits were more likely than beer, red wine and white wine to elicit the majority of positive emotions when consumed. However, they were also more likely to be associated with negative emotions (Table 4). These findings suggest that individuals make the assumption that positive emotions associated with drinking particular types of alcohol will outweigh the negative emotions. The continued selection of particular types of alcohol with negative emotional outcomes may in part rely on positive emotions being emphasised by almost ubiquitous advertising [26-27] and negative emotions framed as infrequent and largely a result of abuse. Finally, our results show that individuals dependent on alcohol more frequently associated emotions with alcohol whether they were drinking at home or when out (Table 5).

Existing literature illustrates that previous experiences with alcohol are related to intentions to drink alcohol in the future.[28] Our analyses suggest that individuals are, to some extent, consuming beverages in different settings based on the emotions they perceive to be associated with particular types of alcohol (Table 5). These findings suggest that individuals inadvertently select drinks which are known to elicit negative emotions because they crave the positive emotions that go with them, and link with existing evidence that those dependent on alcohol drink alcohol as a coping mechanism, rather than drinking for pleasure.[7] This was evident particularly amongst heavier drinkers. This highlights a potential emotional gap which individuals may be looking to fill by drinking alcohol. This gap can be a concern, particularly with exploitation by the alcohol industry with advertising focused on pushing the positive emotions associated with alcohol use without outlining the negatives which go alongside them.

Understanding the relationship between different types of alcohol and the emotions and associated behaviours they may elicit may help improve public health messages and health promotion, and may help to prevent escalation to dependent drinking.[6-7, 10] The results from this study can be used to influence behaviour change policy and contribute significantly to the limited evidence base on alcohol use and emotions. Previous studies have tended to focus on the effect of alcohol as a whole.[5-6] These results suggest that the different types of alcohol are not necessarily perceived or used in the same way and therefore harm prevention policy may benefit from treating types of drinks differently; especially when addressing spirits and, for instance their significant association with aggression (Table 4).

A strength of the GDS is that it allows relationships between alcohol and emotions to be explored within a large, international sample which includes a high proportion of younger age respondents who can be difficult to capture via telephone or face-to-face interviews. This age group corresponds with age groups often studied within this field of research, for example students and adolescents.[5, 15, 28] Using a unique range of questions, the survey data allowed for novel analysis on how groups within the survey population associate emotions with different types of alcohol in different settings. More specific surveys which are perhaps limited for instance to only one country (e.g. the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) in America [29]) can examine these issues in more details within a more tightly defined respondent group.

Although the sample size for the study is large, the opportunistic nature of the survey means it should not be considered representative of any country or region. Thus, the analyses undertaken should not be considered to represent proportions of any population other than the study sample. As the sample was self-selected, there may be an over-representation of individuals who are more likely to participate in drug and alcohol use. The sample may also will be biased towards those with access to the internet. However, confounders of socio-demographics and alcohol dependency were accounted for in the analysis to illustrate the associations between emotions and drink types in different groups of the population. This study uses data which has been self-reported by respondents and the emotions associated with alcohol consumption may have been affected by confounding factors such as mood prior to drinking and mixing of alcohol drink type in individual drinking sessions which were unable to be controlled for. Additionally, without knowledge about the amount of alcohol consumed and the rate at which it was drunk, such inferences remain speculative. Respondents may have also undertaken other activities while consuming specific drinks such as dancing, socialising and drug use, which may have affected emotions reported to be associated with each drink type. We also cannot rule out the impact of recall bias and the deliberate misreporting of results.

This study is an initial exploration to understand the relationships between perceived emotions and alcohol consumption. Further research is required into why people choose to consume specific drink types in different settings, their mood prior to drinking, drinking patterns including combination of drinks consumed on individual occasions, differences in alcohol volume, mixers consumed with drinks and the effect of alcohol advertising on the perceived mood of drinkers.This arena of evidence may also benefit from additional qualitative research to further understand how alcohol makes people feel and how this affects drink choice in different settings. Research using an experimental approach is also an area for future research to examine the immediate effects on individual emotions when consuming alcohol.

CONCLUSION

This research adds international evidence to a limited number of studies undertaken on the feelings associated with drinking different types of alcohol and how such relationships may influence what alcohol is being consumed in different settings. Findings show that individuals associate different emotional responses with different alcohol types and identifies variation in such emotions between demographic groups. Feeling positive emotions may in part be related to the promotion of positive experiences by advertising and the media, but the case for experiencing negative emotions is less well founded given that negative emotions are generally not promoted. Emotions experienced could also be related to when the alcohol is drunk, the levels of alcohol within each beverage type and the different compounds found in different drinks. Consequently, this study represents an initial exploration of alcohol's perceived relationship with emotions on an international basis across a large sample of young people. Moreover, alcohol already plays a large part in violence in many countries, but the concept that consumption of different alcohol products may be more likely to result in violence is rarely reflected in public health responses. Results from these analyses can be used by public health bodies to better understand alcohol consumption behaviour and to inform strategies and interventions to promote changes in consumption, particularly amongst heavier drinkers.

Contributorship statement

Adam Winstock developed and directed the survey. Mark A Bellis conceived and designed the survey questions on alcohol. Adam Winstock coordinated data collection and Kathryn Ashton carried out data cleaning on the alcohol data. Kathryn Ashton performed the statistical analyses and drafted the manuscript. Kathryn Ashton, Mark A Bellis, Alisha Davies, Karen Hughes and Adam Winstock edited and approved the final manuscript.

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Supplementary Table A: Sample demographics

		%	n
Sex	Male	66.81	19934
	Female	33.19	9902
Age (years)	18-24	54.74	16333
	25-29	29.31	8744
	30-34	15.95	4759
Attended high school	No	1.58	471
	Yes	98.42	29365
AUDIT	Lower risk (0-7)	35.45	10577
	Increasing risk (8-15)	47.61	14205
	Higher risk (16-19)	9.70	2895
	Dependence (20+)	7.24	2159
Country of residence	Australia	4.56	1360
	Austria	2.95	880
	Belgium	1.27	378
	Brazil	0.71	213
	Canada	1.57	468
	Colombia	1.25	372
	France	4.95	1478
	Germany	34.50	10294
	Hungary	3.54	1055
	Ireland	0.77	230
	Italy	4.25	1268
	Mexico	0.70	210
	Netherlands	5.75	1715
	New Zealand	4.56	1360
	Norway	2.62	782
	Portugal	0.79	237
	Spain	2.32	692
	Sweden	1.05	312
	Switzerland	7.47	2230
	United Kingdom	8.73	2604
	United States	5.69	1698

AUDIT, alcohol use disorders identification test

Supplementary Table B: Logistic regression model[¶] for country of residence and relationships with emotions associated with drinking any type of alcohol[€]

			Emotions associated with drinking any type of alcohol**																	
			Energised		Relaxed		Sexy		Confident		Tired		Aggressive		Ill		Restless		Tearful	
		n	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
Country	United Kingdom[¥]	2604																		
	Germany	1029	0.392 (0.35-4.41)	** *	0.716 (0.62-0.83)	** *	0.799 (0.73-0.88)	** *	0.480 (0.42-0.54)	** *	0.797 (0.69-0.93)	**	0.691 (0.63-0.76)	** *	0.219 (0.19-0.25)	** *	0.788 (0.72-0.86)	** *	0.811 (0.74-0.89)	** *
	Switzerland	2230	0.713 (0.62-0.83)	** *	0.715 (0.60-0.86)	** *	0.981 (0.87-1.11)	NS	0.564 (0.49-0.66)	** *	1.130 (0.92-1.39)	NS	0.871 (0.77-0.99)	** *	0.178 (0.15-0.21)	** *	1.081 (0.96-1.22)	NS	0.579 (0.51-0.66)	** *
	Netherlands	1715	0.785 (0.66-0.93)	**	0.905 (0.73-1.12)	NS	1.353 (1.18-156)	** *	0.739 (0.62-0.88)	**	0.651 (0.53-0.80)	** *	0.646 (0.57-0.74)	** *	0.783 (0.66-0.94)	**	0.748 (0.66-0.85)	** *	0.644 (0.57-0.73)	** *
	US	1698	1.008 (0.85-1.20)	NS	1.524 (1.20-1.93)	**	1.574 (1.37-1.81)	** *	1.068 (0.89-1.28)	NS	0.823 (0.67-1.01)	NS	1.352 (1.19-1.54)	** *	0.747 (0.63-0.89)	**	1.002 (0.88-1.14)	NS	1.114 (0.98-1.27)	NS
	New Zealand	1360	0.904 (0.76-1.08)	NS	1.337 (1.04-1.71)	*	1.016 (0.88-1.17)	NS	1.064 (0.88-1.28)	NS	0.550 (0.45-0.68)	** *	0.896 (0.78-1.03)	NS	0.874 (0.72-1.06)	NS	1.089 (0.95-1.25)	NS	0.916 (0.80-1.05)	NS
	France	1478	0.958 (0.80-1.14)	NS	0.934 (0.75-1.17)	NS	0.881 (0.77-1.01)	NS	0.617 (0.52-0.73)	** *	0.360 (0.30-0.43)	** *	0.936 (0.82-1.07)	NS	0.777 (0.65-0.93)	**	2.292 (2.01-2.62)	** *	0.826 (0.72-0.95)	**
	Australia	1360	0.715 (0.60-0.85)	** *	1.616 (1.24-2.11)	** *	0.918 (0.80-1.06)	NS	0.850 (0.71-1.02)	NS	0.728 (0.59-0.90)	** *	0.628 (0.54-0.73)	** *	0.792 (0.66-0.95)	** *	0.891 (0.78-1.02)	NS	0.904 (0.79-1.04)	NS
	Hungary	1055	0.886 (0.73-1.07)	NS	0.346 (0.28-0.42)	** *	1.198 (1.03-1.40)	*	0.682 (0.57-0.82)	** *	0.438 (0.36-0.54)	** *	0.882 (0.76-1.03)	NS	0.756 (0.62-0.92)	**	0.576 (0.49-0.68)	** *	0.728 (0.62-0.85)	** *
	Italy	1268	0.885 (0.74-1.06)	NS	0.551 (0.45-0.68)	** *	0.898 (0.78-1.04)	NS	0.393 (0.33-0.46)	** *	0.319 (0.26-0.39)	** *	1.089 (0.94-1.26)	NS	0.294 (0.25-0.35)	** *	0.622 (0.54-0.72)	** *	0.455 (0.39-0.53)	** *
	Spain	692	1.018 (0.81-1.28)	NS	0.453 (0.36-0.57)	** *	0.861 (0.72-1.03)	NS	0.886 (0.70-1.11)	NS	0.432 (0.34-0.55)	** *	0.813 (0.68-0.98)	*	0.180 (0.15-0.22)	** *	0.977 (0.82-1.16)	NS	0.670 (0.56-0.81)	** *
	Colombia	372	2.404 (1.63-3.55)	** *	1.481 (0.96-2.30)	NS	2.339 (1.79-3.06)	** *	1.044 (0.76-1.43)	NS	0.558 (0.41-0.76)	** *	0.937 (0.74-1.18)	NS	0.335 (0.26-0.43)	** *	1.946 (1.56-2.43)	** *	1.284 (1.02-1.61)	*
	Austria	880	0.493 (0.41-0.59)	** *	0.849 (0.66-1.09)	NS	0.939 (0.80-1.11)	NS	0.549 (0.45-0.67)	** *	0.826 (0.64-1.06)	NS	0.877 (0.74-1.03)	NS	0.213 (0.18-0.26)	** *	0.900 (0.77-1.06)	NS	0.785 (0.67-0.93)	**
	Norway	782	1.919 (1.47-2.50)	** *	2.106 (1.46-3.04)	** *	1.470 (1.23-1.76)	** *	1.100 (0.87-1.40)	NS	0.850 (0.65-1.11)	NS	1.358 (1.15-1.60)	** *	1.169 (0.91-0.50)	NS	1.889 (1.60-2.23)	** *	1.222 (1.03-1.44)	*
	Canada	468	1.043 (0.79-1.37)	NS	1.781 (1.17-2.71)	**	1.256 (1.01-1.57)	*	0.806 (0.62-1.05)	NS	0.529 (0.40-0.71)	** *	1.105 (0.90-1.36)	NS	0.641 (0.49-0.83)	**	1.003 (0.82-1.23)	NS	0.951 (0.77-1.17)	NS
	Mexico	210	1.134 (0.76-1.69)	NS	1.647 (0.90-3.01)	NS	1.423 (1.03-1.96)	*	0.901 (0.61-1.33)	NS	0.390 (0.27-0.56)	** *	1.150 (0.86-1.55)	NS	0.230 (0.17-0.31)	** *	1.283 (0.96-1.71)	NS	1.060 (0.79-1.42)	NS
	Belgium	378	0.613 (0.47-0.80)	** *	0.935 (0.64-1.36)	NS	1.043 (0.83-1.32)	NS	0.685 (0.51-0.91)	**	0.538 (0.39-0.74)	** *	0.776 (0.62-0.98)	*	0.905 (0.66-1.24)	NS	0.731 (0.58-0.92)	**	0.700 (0.56-0.88)	**
	Brazil	213	0.995 (0.68-1.45)	NS	2.375 (1.20-4.71)	*	3.943 (2.61-5.96)	** *	1.189 (0.79-1.80)	NS	0.702 (0.46-1.08)	NS	1.173 (0.87-1.58)	NS	0.751 (0.51-1.10)	NS	1.985 (1.49-2.64)	** *	1.241 (0.93-1.66)	NS
	Portugal	237	0.848 (0.60-1.19)	NS	0.659 (0.44-0.98)	*	1.079 (0.81-1.44)	NS	0.514 (0.37-0.71)	** *	0.395 (0.28-0.56)	** *	0.608 (0.45-0.83)	**	0.253 (0.19-0.34)	** *	1.264 (0.96-1.66)	NS	0.603 (0.45-0.81)	**
	Sweden	312	1.481 (1.04-2.10)	*	2.078 (1.21-3.56)	**	1.127 (0.88-1.45)	NS	0.886 (0.64-1.22)	NS	1.041 (0.69-1.57)	NS	0.851 (0.66-1.09)	NS	1.068 (0.75-1.51)	NS	1.409 (1.11-1.79)	**	1.049 (0.82-1.34)	NS
	Ireland	230	1.411 (0.91-2.19)	NS	0.795 (0.50-1.25)	NS	0.809 (0.61-1.08)	NS	0.547 (0.39-0.77)	**	0.711 (0.69-0.93)	NS	1.038 (0.78-1.37)	NS	0.761 (0.52-1.11)	NS	1.212 (0.92-1.60)	NS	1.164 (0.88-1.54)	NS

AOR, adjusted odds ratio; CI, confidence interval: NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Country variable was included in the logistic regression model for Table 3 and has been included in seperate supplementary table due to space restrictions.

[€]Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with spirits, white wine, red wine and beer.

[¥]reference category.

Supplementary Table C: Bivariate relationship between emotions associated with drinking individual types of alcohol and AUDIT and socio-demographics (%)

			Positive emotions				Negative emotions				
		n	Energised	Relaxed	Sexy	Confident	Tired	Aggressive	Ill	Restless	Tearful
Spirits											
AUDIT	Lower risk (0-7)	10577	45.49	19.72	33.69	48.54	17.37	16.70	43.53	20.65	15.26
	Increasing risk (8-15)	14205	62.73	19.64	45.05	62.22	14.24	32.64	49.28	29.45	23.20
	Higher risk (16-19)	2895	70.92	21.49	52.54	71.16	14.68	45.35	52.82	35.13	30.95
	Dependence (20+)	2159	75.82	23.85	54.24	73.83	13.34	54.93	52.62	42.33	38.40
	x^2		1290.803	25.102	615.502	912.888	54.348	1908.209	139.037	593.266	758.589
	p		***	***	***	***	***	***	***	***	***
Sex	Male	19934	56.89	20.77	39.10	58.32	16.67	31.52	46.60	26.81	18.89
	Female	9902	61.37	18.91	49.09	60.59	12.62	26.43	50.29	29.82	28.97
	x^2		55.222	14.350	270.432	14.118	83.462	82.042	36.181	29.830	388.839
	p value		***	***	***	***	***	***	***	***	***
Age (years)	18-24	16333	64.02	19.06	46.44	63.77	14.73	29.82	48.82	29.95	23.66
	25-29	8744	54.07	20.17	39.30	55.38	15.37	30.23	47.47	26.81	21.25
	30-34	4759	46.84	23.87	34.33	49.78	17.29	29.14	45.07	22.34	19.16
	x^2		541.325	53.009	270.366	368.307	18.666	1.724	21.304	112.493	50.157
	p		***	***	***	***	***	NS	***	***	***
Attended high school	Yes	29365	58.20	20.03	42.33	58.89	15.27	29.70	47.73	27.80	22.07
	No	471	68.79	27.81	47.56	70.91	18.68	38.43	54.14	28.45	32.91
	x^2		21.412	17.448	5.183	27.733	4.1540	16.8920	7.6490	0.0970	31.5090
	p		***	***	*	***	*	***	**	NS	***
Red wine											
AUDIT	Lower risk (0-7)	10577	5.56	50.23	20.85	23.22	58.70	1.47	14.67	3.97	11.62
	Increasing risk (8-15)	14205	7.32	54.04	26.45	29.06	60.63	2.44	19.91	5.00	18.16
	Higher risk (16-19)	2895	8.74	54.51	30.78	32.88	61.97	4.46	26.39	7.53	23.77
	Dependence (20+)	2159	11.49	54.93	30.85	36.27	60.63	6.25	28.30	9.17	28.02
	x^2		113.324	44.051	202.364	235.632	14.711	209.963	354.627	134.965	507.751

	p		***	***	***	***	**	***	***	***	***
Sex	Male	19934	7.62	50.61	22.12	26.29	55.52	2.47	18.15	5.07	13.62
	Female	9902	6.16	57.20	31.40	31.08	69.25	2.77	21.57	5.40	24.10
	x^2		21.275	115.233	301.899	75.578	520.004	2.364	49.602	1.477	512.269
	p		***	***	***	***	***	NS	***	NS	***
Age (years)	18-24	16333	7.67	49.68	27.03	28.86	58.46	2.65	20.55	5.41	17.81
	25-29	8744	6.62	55.90	24.10	27.52	62.42	2.36	18.00	5.24	16.94
	30-34	4759	6.24	57.79	20.95	25.22	61.29	2.67	17.34	4.31	14.94
	x^2		16.32	144.807	80.309	25.113	40.660	2.216	37.596	9.132	21.645
	p		***	***	***	***	***	NS	***	*	***
Attended high school	Yes	29365	7.11	52.79	25.07	27.79	60.17	2.56	19.23	5.14	17.03
	No	471	8.70	53.50	33.12	33.55	54.35	2.97	23.14	7.86	21.23
	x^2		1.778	0.095	15.924	7.633	6.534	0.314	4.565	6.964	5.772
	p		NS	NS	***	**	*	NS	*	**	*
White wine											
AUDIT	Lower risk (0-7)	10577	11.55	31.70	19.38	22.72	19.08	1.43	10.28	4.76	6.44
	Increasing risk (8-15)	14205	16.11	32.81	25.11	30.14	17.67	2.77	15.19	6.33	10.22
	Higher risk (16-19)	2895	18.58	34.44	28.77	33.85	19.69	4.49	20.00	9.50	14.89
	Dependence (20+)	2159	20.70	34.14	29.13	35.62	16.67	6.62	23.25	11.21	18.94
	x^2		195.650	10.862	201.011	287.306	11.553	223.999	361.664	176.759	419.873
	p		***	*	***	***	**	***	***	***	***
Sex	Male	19934	12.82	28.21	18.29	24.04	16.51	2.60	13.21	6.06	6.85
	Female	9902	19.58	41.65	34.67	36.78	22.32	3.01	17.09	7.18	16.23
	x^2		236.235	543.290	980.770	529.645	148.465	4.093	80.084	13.799	648.311
	p		***	***	***	***	***	*	***	***	***
Age (years)	18-24	16333	15.67	34.68	25.98	29.76	20.98	2.45	15.49	6.23	11.62
	25-29	8744	14.67	31.08	22.42	27.57	15.95	2.80	13.53	6.62	8.46
	30-34	4759	13.72	28.68	18.39	24.44	14.29	3.61	12.88	6.77	7.04
	x^2		12.40	74.345	129.206	54.339	160.325	18.973	29.626	2.483	117.299
	p		**	***	***	***	***	***	***	NS	***

Attended high school	Yes	29365	15.04	32.60	23.66	28.19	18.37	2.72	14.44	6.38	9.90
	No	471	16.56	37.15	27.60	32.91	22.72	3.61	18.47	9.77	14.01
	x^2		0.836	4.379	3.970	5.083	5.830	1.363	6.090	8.842	8.742
	p		NS	*	*	*	*	NS	*	**	**
Beer											
AUDIT	Lower risk (0-7)	10577	18.17	43.18	14.19	34.93	37.21	3.91	15.27	6.66	6.60
	Increasing risk (8-15)	14205	26.93	52.42	20.56	47.98	39.10	6.98	17.04	9.57	10.35
	Higher risk (16-19)	2895	31.47	55.54	24.21	54.75	41.52	10.67	18.55	12.54	13.96
	Dependence (20+)	2159	33.67	58.22	23.44	55.21	42.57	13.52	19.08	16.67	17.46
	x^2		444.546	323.844	261.117	684.950	33.464	365.745	32.689	263.021	324.623
	p		***	***	***	***	***	***	***	***	***
Sex	Male	19934	26.16	54.67	20.58	47.94	41.74	7.60	14.55	9.43	9.99
	Female	9902	21.93	40.19	15.40	37.69	33.23	4.97	21.05	9.16	9.67
	x^2		63.290	554.585	116.075	281.321	201.887	73.010	200.433	0.575	0.728
	p		***	***	***	***	***	***	***	NS	NS
Age (years)	18-24	16333	26.77	52.09	20.36	47.88	39.58	7.41	17.41	10.08	10.39
	25-29	8744	23.25	47.93	17.91	42.22	38.85	5.92	16.55	8.81	9.71
	30-34	4759	20.61	45.79	15.49	37.30	36.75	5.86	14.58	7.77	8.47
	x^2		89.98	77.123	64.484	194.018	12.448	26.736	21.430	27.385	15.704
	p		***	***	***	***	**	***	***	***	***
Attended high school	Yes	29365	24.66	49.83	18.83	44.38	38.79	6.69	16.63	9.30	9.83
	No	471	30.57	52.02	21.23	54.56	46.92	9.13	21.66	11.89	13.16
	x^2		8.696	0.886	1.754	19.482	12.901	4.403	8.4190	3.6700	5.7780
	p		**	NS	NS	***	***	*	**	NS	*

AUDIT, alcohol use disorders identification test; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

Supplementary Table D: Logistic regression model[¶] for age, educational attainment and country of residence and relationships with emotions associated with each individual drink type

				Emotions associated with individual drink type																	
				Energised		Relaxed		Sexy		Confident		Tired		Aggressive		Ill		Restless		Tearful	
			n	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
Spirits																					
	Age (years)[€]	25-29	8744	0.722 (0.68-0.76)	***	1.167 (1.09-1.25)	***	0.804 (0.76-0.85)	***	0.765 (0.72-0.81)	***	1.043 (0.97-1.12)	NS	1.119 (1.05-1.19)	***	1.02 (0.97-1.08)	NS	0.909 (0.86-0.97)	**	0.96 (0.90-1.02)	NS
		30-34	4759	0.533 (0.50-0.57)	***	1.355 (1.25-1.47)	***	0.668 (0.62-0.72)	***	0.607 (0.57-0.65)	***	1.166 (1.07-1.27)	**	1.125 (1.04-1.21)	**	0.947 (0.89-1.01)	NS	0.735 (0.68-0.80)	***	0.883 (0.81-0.96)	**
	Attended high school[¥]	Yes	29365	0.909 (0.74-1.12)	NS	0.822 (0.67-1.02)	NS	1.03 (0.85-1.25)	NS	0.817 (0.66-1.01)	NS	0.849 (0.67-1.08)	NS	0.87 (0.71-1.06)	NS	1.004 (0.83-1.22)	NS	1.126 (0.91-1.39)	NS	0.676 (0.55-0.83)	***
	Country[†]	Germany	10294	0.330 (0.30-0.37)	***	0.544 (0.49-0.61)	***	0.727 (0.67-0.80)	NS	0.482 (0.44-0.53)	***	1.456 (1.27-1.67)	***	0.989 (0.90-1.09)	NS	0.871 (0.80-0.95)	**	0.824 (0.75-0.91)	***	0.667 (0.60-0.74)	***
		Switzerland	2230	0.488 (0.43-0.55)	***	0.760 (0.66-0.88)	***	0.921 (0.82-1.04)	***	0.538 (0.48-0.61)	***	1.046 (0.87-1.26)	NS	0.918 (0.80-1.05)	NS	0.614 (0.55-0.69)	***	0.898 (0.79-1.02)	NS	0.500 (0.47-0.64)	***
		Netherlands	1715	0.443 (0.39-0.51)	***	1.631 (1.42-1.88)	***	0.917 (0.81-1.04)	NS	0.625 (0.55-0.71)	***	2.050 (1.72-2.45)	***	0.761 (0.66-0.88)	***	1.719 (0.52-0.95)	***	0.728 (0.63-0.84)	***	0.724 (0.63-0.84)	***
		US	1698	0.984 (0.85-0.14)	NS	1.791 (1.56-2.06)	***	1.600 (1.41-1.82)	*	1.263 (1.10-1.46)	**	1.798 (1.51-2.15)	***	1.917 (1.68-2.19)	***	1.778 (1.57-2.01)	***	0.980 (0.86-1.12)	NS	1.232 (1.07-1.41)	**
		New Zealand	1360	0.690 (0.60-0.80)	***	1.624 (1.40-1.89)	***	0.975 (0.85-1.12)	NS	0.940 (0.81-1.09)	NS	1.531 (1.26-1.86)	***	1.104 (0.95-1.28)	NS	1.200 (1.05-1.67)	**	0.932 (0.80-1.08)	NS	1.229 (1.06-1.43)	**
		France	1478	0.711 (0.62-0.82)	***	1.550 (1.34-1.79)	***	0.876 (0.77-1.00)	NS	0.626 (0.55-0.72)	***	2.510 (2.11-2.99)	***	1.200 (1.04-1.38)	*	1.814 (1.59-2.07)	***	2.502 (2.19-2.86)	***	1.094 (0.95-1.26)	NS
		Australia	1360	0.648 (0.56-0.75)	***	1.619 (1.40-1.88)	***	0.945 (0.83-1.08)	***	0.798 (0.69-0.92)	**	1.324 (1.08-1.62)	**	0.793 (0.68-0.92)	**	0.974 (0.85-1.11)	NS	0.742 (0.64-0.86)	***	0.912 (0.78-1.06)	NS
		Hungary	1055	0.622 (0.53-0.73)	***	0.485 (0.39-0.60)	***	0.996 (0.86-1.15)	NS	0.622 (0.53-0.72)	***	1.789 (1.46-2.19)	***	1.198 (1.02-1.41)	*	2.029 (1.75-2.35)	***	0.533 (0.45-0.64)	***	0.603 (0.50-0.73)	***
		Italy	1268	0.627 (0.54-0.73)	***	0.623 (0.52-0.75)	***	0.730 (0.63-0.84)	***	0.359 (0.31-0.41)	***	1.557 (1.28-1.90)	***	1.335 (1.15-1.55)	***	1.223 (1.07-1.40)	**	0.661 (0.56-0.78)	***	0.500 (0.42-0.60)	***
		Spain	692	0.851 (0.70-1.03)	NS	0.825 (0.67-1.02)	NS	1.069 (0.90-1.27)	**	1.040 (0.86-1.26)	NS	1.663 (1.31-2.10)	***	1.136 (0.94-1.37)	NS	0.714 (0.60-0.85)	***	1.133 (0.94-1.36)	NS	0.848 (0.69-1.04)	NS
		Colombia	372	1.556 (1.18-2.05)	**	1.035 (0.80-1.34)	NS	1.823 (1.46-2.28)	*	1.050 (0.82-1.34)	NS	1.236 (0.89-1.71)	NS	1.285 (1.02-1.63)	*	1.014 (0.82-1.26)	NS	1.921 (1.54-2.40)	***	1.487 (1.78-1.88)	**
		Austria	880	0.340 (0.29-0.40)	***	0.412 (0.32-0.52)	***	0.764 (0.65-0.90)	NS	0.467 (0.40-0.55)	***	0.904 (0.70-1.17)	NS	1.238 (1.04-1.47)	*	0.773 (0.66-0.90)	**	0.820 (0.69-0.98)	*	0.585 (0.48-0.71)	***
		Norway	782	0.843 (0.70-1.01)	NS	0.712 (0.58-0.88)	**	0.843 (0.72-0.99)	NS	0.746 (0.63-0.89)	**	1.748 (1.40-2.19)	***	2.086 (1.76-2.47)	***	2.227 (1.88-2.63)	***	1.865 (1.58-2.20)	***	1.243 (1.04-1.48)	*
		Canada	468	0.952 (0.76-1.20)	NS	1.676 (1.35-2.08)	***	1.096 (0.90-1.34)	NS	0.863 (0.70-1.07)	NS	1.718 (1.31-2.26)	***	1.506 (1.22-1.86)	***	1.360 (1.12-1.66)	**	0.998 (0.80-1.24)	NS	0.951 (0.76-1.19)	NS
		Mexico	210	0.768 (0.56-1.05)	NS	2.073 (1.54-2.79)	***	1.279 (0.96-1.70)	***	0.743 (0.55-1.00)	NS	1.721 (1.18-2.52)	***	1.415 (1.05-1.91)	*	0.651 (0.49-0.87)	**	1.118 (0.83-1.51)	NS	1.134 (0.83-1.56)	NS
		Belgium	378	0.506 (0.40-0.64)	***	1.458 (1.14-1.86)	**	0.841 (0.67-1.05)	NS	0.596 (0.48-0.75)	***	1.602 (1.18-2.17)	**	1.025 (0.81-1.30)	NS	1.664 (1.34-2.07)	***	0.848 (0.67-1.08)	NS	0.728 (0.56-0.95)	*
		Brazil	213	0.955 (0.70-1.31)	NS	1.445 (1.06-1.98)	*	1.880 (1.41-2.51)	NS	1.049 (0.77-1.43)	NS	1.419 (0.95-2.12)	NS	1.742 (1.29-2.35)	***	1.674 (1.26-2.23)	***	2.168 (1.63-2.88)	***	1.196 (0.88-1.63)	NS
		Portugal	237	0.647 (0.49-0.86)	**	1.359 (1.01-1.84)	*	1.311 (1.00-1.72)	**	0.609 (0.46-0.80)	***	1.104 (0.73-1.67)	NS	0.832 (0.61-1.14)	NS	0.736 (0.56-0.97)	*	1.145 (0.86-1.53)	NS	0.586 (0.41-0.83)	**
		Sweden	312	0.992 (0.76-1.30)	NS	0.904 (0.68-1.21)	NS	1.066 (0.84-1.36)	***	0.845 (0.65-1.09)	NS	1.823 (1.34-2.49)	***	1.221 (0.95-1.58)	NS	2.023 (1.59-2.58)	***	1.099 (0.85-1.42)	NS	1.019 (0.77-1.34)	NS
		Ireland	230	1.254 (0.89-1.77)	NS	0.693 (0.48-1.00)	*	0.690 (0.52-0.91)	NS	0.671 (0.50-0.90)	**	0.347 (0.78-0.69)	**	1.382 (1.04-1.84)	*	0.875 (0.67-1.15)	NS	1.133 (0.85-1.51)	NS	1.171 (0.87-1.57)	NS
Red wine																					
	Age (years)[€]	25-29	8744	0.870 (0.78-0.97)	*	1.368 (1.30-1.44)	***	0.931 (0.88-0.99)	*	0.998 (0.94-1.06)	NS	1.220 (1.15-1.29)	***	0.969 (0.82-1.15)	NS	0.910 (0.85-0.98)	**	1.028 (0.91-1.16)	*	1.012 (0.94-1.09)	NS
		30-34	4759	0.799 (0.70-0.92)	**	1.532 (1.43-1.64)	***	0.793 (0.73-0.86)	***	0.876 (0.81-0.95)	**	1.223 (1.14-1.31)	***	1.09 (0.89-1.34)	NS	0.845 (0.77-0.92)	***	0.824 (0.70-0.97)	NS	0.970 (0.88-1.06)	NS
	Attended high school[¥]	Yes	29365	0.963 (0.69-1.35)	NS	1.196 (0.99-1.45)	NS	0.859 (0.70-1.05)	NS	0.906 (0.74-1.11)	NS	1.469 (1.21-1.78)	***	0.809 (0.47-1.41)	NS	0.979 (0.78-1.23)	***	0.748 (0.53-1.06)	NS	0.846 (0.67-1.07)	NS

Country[†]	Germany	10294	0.712 (0.89-0.87)	*	0.702 (0.64-0.77)	***	0.539 (0.49-0.60)	***	0.526 (0.48-0.58)	***	0.834 (0.76-0.92)	***	0.329 (0.25-0.43)	***	0.362 (0.33-0.40)	***	0.737 (0.60-0.91)	**	1.005 (0.90-1.12)	NS
	Switzerland	2230	0.496 (0.36-0.68)	***	0.887 (0.79-1.00)	*	0.458 (0.40-0.53)	***	0.514 (0.45-0.59)	***	2.186 (1.91-2.50)	***	0.369 (0.24-0.57)	***	0.272 (0.23-0.32)	***	0.740 (0.55-1.00)	NS	0.697 (0.59-0.82)	***
	Netherlands	1715	0.809 (0.61-1.07)	NS	1.074 (0.95-1.22)	NS	0.907 (0.79-1.04)	NS	0.824 (0.72-0.94)	**	0.796 (0.70-0.91)	**	0.348 (0.22-0.54)	***	0.521 (0.45-0.60)	***	0.965 (0.72-1.29)	NS	0.591 (0.50-0.70)	***
	US	1698	1.598 (1.26-2.03)	***	1.282 (1.13-1.46)	***	1.498 (0.32-1.71)	***	0.967 (0.85-1.10)	NS	1.074 (0.94-1.23)	NS	0.728 (0.51-1.03)	NS	0.741 (0.64-0.85)	***	1.605 (1.24-2.08)	***	1.418 (1.22-1.65)	***
	New Zealand	1360	1.753 (1.36-2.25)	***	0.662 (0.58-0.76)	***	1.042 (0.90-1.21)	NS	1.295 (1.13-1.49)	***	0.476 (0.42-0.55)	***	1.183 (0.86-1.64)	NS	1.277 (1.11-1.47)	***	1.403 (1.05-1.87)	*	0.612 (0.51-0.74)	***
	France	1478	2.634 (2.11-3.29)	***	0.652 (0.57-0.74)	***	0.741 (0.64-0.86)	***	1.022 (0.89-1.17)	NS	0.444 (0.39-0.51)	***	1.235 (0.91-1.68)	NS	0.959 (0.83-1.10)	NS	2.953 (2.33-3.74)	***	0.818 (0.69-0.97)	*
	Australia	1360	1.049 (0.79-1.39)	NS	1.035 (0.91-1.19)	NS	0.929 (0.80-1.08)	NS	1.012 (0.88-1.16)	NS	1.010 (0.88-1.16)	NS	0.858 (0.61-1.22)	NS	1.033 (0.89-1.19)	NS	1.561 (1.18-2.06)	**	0.998 (0.84-1.18)	NS
	Hungary	1055	2.641 (2.07-3.37)	***	0.339 (0.29-0.40)	***	1.135 (0.97-1.33)	NS	0.748 (0.64-0.88)	***	0.355 (0.31-0.41)	***	1.371 (0.97-1.93)	NS	0.748 (0.63-0.89)	**	1.570 (1.16-2.12)	**	0.785 (0.64-0.96)	*
	Italy	1268	4.045 (3.25-5.03)	***	0.613 (0.54-0.70)	***	0.945 (0.81-1.10)	NS	1.075 (0.93-1.24)	NS	0.514 (0.45-0.59)	***	1.838 (1.36-2.48)	***	0.628 (0.53-0.74)	***	1.542 (1.16-2.06)	**	0.740 (0.61-0.90)	**
	Spain	692	2.951 (2.26-3.86)	***	0.582 (0.49-0.69)	***	0.743 (0.61-0.90)	**	1.277 (1.07-1.52)	**	0.572 (0.48-0.68)	***	0.941 (0.60-1.48)	NS	0.372 (0.29-0.47)	***	1.645 (1.17-2.32)	**	0.667 (0.52-0.85)	**
	Colombia	372	2.062 (1.43-2.97)	***	1.114 (0.89-1.39)	NS	1.101 (0.87-1.40)	NS	0.688 (0.54-0.88)	**	0.732 (0.89-0.92)	**	0.263 (0.10-0.72)	**	0.454 (0.34-0.61)	***	1.671 (1.09-2.56)	*	0.824 (0.61-1.11)	NS
	Austria	880	0.796 (0.55-1.15)	NS	0.793 (0.68-0.93)	**	0.623 (0.52-0.75)	***	0.685 (0.58-0.81)	***	0.597 (0.51-0.70)	***	0.380 (0.21-0.69)	**	0.287 (0.23-0.36)	***	0.612 (0.39-0.94)	*	0.819 (0.66-1.01)	NS
	Norway	782	3.063 (2.37-3.95)	***	1.823 (0.53-2.17)	***	1.433 (1.21-1.70)	***	1.351 (1.15-1.59)	***	0.952 (0.80-1.13)	NS	0.600 (0.37-0.98)	*	1.098 (0.92-1.31)	NS	1.821 (1.33-2.49)	***	1.409 (1.16-1.71)	***
	Canada	468	2.717 (1.99-3.71)	***	1.154 (0.94-1.41)	NS	1.641 (1.34-2.01)	***	1.253 (1.02-1.54)	*	0.674 (0.55-0.83)	***	0.940 (0.56-1.59)	NS	0.747 (0.59-0.94)	*	1.999 (1.38-2.89)	***	1.250 (0.98-1.59)	NS
	Mexico	210	3.000 (1.99-4.53)	***	1.147 (0.86-1.53)	NS	1.685 (1.26-2.25)	***	0.848 (0.62-1.15)	NS	0.501 (0.38-0.67)	***	1.289 (0.68-2.45)	NS	0.502 (0.35-0.72)	***	1.527 (0.88-2.66)	NS	1.028 (0.72-1.47)	NS
	Belgium	378	1.190 (0.77-1.83)	NS	1.001 (0.80-1.25)	NS	0.773 (0.60-0.99)	*	0.698 (0.55-0.89)	**	0.889 (0.71-1.11)	NS	0.694 (0.37-1.31)	NS	0.650 (0.50-0.84)	**	1.114 (0.69-1.81)	NS	0.748 (0.56-1.01)	NS
	Brazil	213	2.112 (1.33-3.36)	**	2.018 (1.47-2.77)	***	2.751 (2.07-3.66)	***	0.924 (0.68-1.25)	NS	0.773 (0.58-1.03)	NS	0.853 (0.39-1.86)	NS	0.439- (0.30-0.64)	***	1.372 (0.76-2.48)	NS	1.024 (0.72-1.47)	NS
	Portugal	237	2.885 (1.93-4.32)	***	0.879 (0.67-1.15)	NS	0.679 (0.49-0.93)	*	1.095 (0.83-1.45)	NS	0.870 (0.66-1.15)	NS	1.390 (0.75-2.57)	NS	0.636 (0.46-0.88)	**	1.864 (1.13-3.08)	*	0.784 (0.54-1.14)	NS
	Sweden	312	1.785 (1.18-2.70)	**	1.353 (1.06-1.73)	*	0.950 (0.73-1.24)	NS	1.178 (0.92-1.51)	NS	1.279 (0.99-1.65)	NS	0.428 (0.17-1.06)	NS	1.396 (1.09-1.79)	**	1.548 (0.96-2..50)	NS	1.314 (0.98-1.77)	NS
	Ireland	230	1.563 (0.97-2.52)	NS	0.810 (0.62-1.06)	NS	0.818 (0.60-1.11)	NS	0.700 (0.52-0.95)	*	0.674 (0.51-0.89)	**	1.052 (0.56-1.99)	NS	0.816 (0.60-1.11)	NS	1.299 (0.75-2.26)	NS	0.891 (0.63-1.26)	NS
White wine																				
Age (years)[€]	25-29	8744	0.944 (0.88-1.02)	NS	0.891 (0.84-0.95)	***	0.898 (0.85-0.95)	***	0.967 (0.91-1.03)	NS	0.748 (0.70-0.80)	***	1.263 (1.07-1.49)	**	0.970 (0.90-1.05)	NS	1.132 (1.02-1.26)	*	0.791 (0.72-0.87)	***
	30-34	4759	0.918 (0.93-1.01)	NS	0.751 (0.69-0.82)	***	0.833 (0.77-0.90)	***	0.842 (0.78-0.91)	***	0.652 (0.60-0.72)	***	1.550 (1.28-1.87)	***	0.859 (0.78-0.95)	**	1.128 (0.99-1.29)	NS	0.710 (0.63-0.80)	***
Attended high school[¥]	Yes	29365	0.946 (0.73-1.22)	NS	0.925 (0.75-1.15)	NS	0.932 (0.77-1.14)	NS	0.865 (0.71-1.06)	NS	0.925 (0.74-1.16)	NS	0.764 (0.46-1.27)	NS	0.917 (0.72-1.17)	NS	0.765 (0.56-1.05)	NS	0.765 (0.58-1.01)	NS
Country[†]	Germany	10294	1.156 (1.02-1.32)	*	0.942 (0.86-1.03)	NS	0.948 (0.86-1.05)	NS	0.628 (0.57-0.69)	***	0.711 (0.64-0.79)	***	0.320 (0.24-0.42)	***	0.219 (0.19-0.25)	***	0.671 (0.55-0.82)	***	0.656 (0.58-0.75)	***
	Switzerland	2230	1.780 (1.52-2.09)	***	0.487 (0.43-0.56)	***	0.749 (0.65-0.87)	***	0.601 (0.53-0.69)	***	0.700 (0.60-0.82)	***	2.883 (2.23-3.74)	***	0.391 (0.33-0.46)	***	2.716 (2.20-3.36)	***	0.400 (0.32-0.50)	***
	Netherlands	1715	1.047 (0.88-1.25)	NS	1.452 (1.28-1.65)	***	1.420 (1.24-0.63)	***	0.953 (0.84-1.09)	NS	1.093 (0.94-1.27)	NS	0.538 (0.36-0.80)	**	0.695 (0.60-0.81)	***	1.111 (0.86-1.44)	NS	0.662 (0.55-0.80)	***
	US	1698	0.893 (0.74-1.08)	NS	1.813 (1.60-2.06)	***	1.264 (1.10-1.46)	**	0.793 (0.69-0.91)	**	1.734 (1.51-1.20)	***	0.448 (0.29-0.69)	***	0.585 (0.50-0.68)	***	1.231 (0.96-1.59)	NS	1.099 (0.92-1.31)	NS
	New Zealand	1360	1.753 (0.47-2.09)	***	1.078 (0.94-1.24)	NS	1.148 (0.98-1.34)	NS	1.376 (1.20-1.58)	***	0.899 (0.76-1.07)	NS	1.323 (0.96-1.83)	NS	1.130 (0.97-1.31)	NS	1.765 (1.38-2.26)	***	0.768 (0.62-0.95)	*
	France	1478	1.427 (1.19-1.71)	***	0.984 (0.86-1.13)	NS	0.889 (0.76-1.04)	NS	0.793 (0.69-0.91)	**	1.260 (1.08-1.47)	**	1.184 (0.86-1.64)	NS	1.159 (1.00-1.34)	*	2.811 (2.25-3.51)	***	0.762 (0.62-0.93)	**
	Australia	1360	1.326 (1.10-	**	1.080 (0.94-	NS	0.877 (0.75-	NS	1.015 (0.88-	NS	0.982 (0.83-	NS	1.136 (0.82-	NS	1.170 (1.01-	*	1.534 (1.19-	**	0.850 (0.70-	NS

				1.60)		1.24)		1.03)		1.17)		1.16)		1.58)		1.36)		1.98)		1.04)	
		Hungary	1055	1.812 (1.49-2.20)	***	0.850 (0.73-1.00)	*	1.297 (1.10-1.53)	**	0.824 (0.70-0.97)	*	1.016 (0.85-1.22)	NS	0.996 (0.67-1.58)	NS	0.428 (0.35-0.53)	***	1.118 (0.82-1.52)	NS	0.883 (0.70-1.11)	NS
		Italy	1268	1.292 (1.06-1.57)	*	0.758 (0.65-0.88)	***	0.963 (0.82-1.14)	NS	0.825 (0.71-0.96)	*	0.709 (0.59-0.85)	***	0.841 (0.57-1.25)	NS	0.385 (0.32-0.47)	***	1.075 (0.80-1.44)	NS	0.489 (0.38-0.63)	***
		Spain	692	1.048 (0.81-1.35)	NS	0.779 (0.65-0.94)	**	0.902 (0.73-1.11)	NS	0.887 (0.74-1.07)	NS	1.092 (0.89-1.34)	NS	0.614 (0.35-1.07)	NS	0.284 (0.21-0.38)	***	0.976 (0.67-1.42)	NS	0.516 (0.38-0.71)	***
		Colombia	372	0.364 (0.22-0.59)	***	1.045 (0.83-1.32)	NS	0.751 (0.57-1.00)	*	0.430 (0.33-0.57)	***	1.350 (1.05-1.74)	*	0.069 (0.01-0.50)	**	0.229 (0.15-0.34)	***	0.912(0.56-1.49)	NS	0.573 (0.39-0.85)	**
		Austria	880	2.643 (2.18-3.20)	***	0.812 (0.69-0.96)	*	1.152 (0.96-1.38)	NS	0.971 (0.82-1.15)	NS	0.430 (0.34-0.55)	***	0.563 (0.33-0.96)	*	0.254 (0.20-0.33)	***	1.423 (1.05-1.93)	*	0.616 (0.47-0.80)	***
		Norway	782	2.803 (2.31-3.41)	***	0.820 (0.69-0.98)	*	1.548 (1.29-1.85)	***	1.061 (0.90-1.26)	NS	0.523 (0.41-0.67)	***	0.666 (0.41-1.09)	NS	0.680 (0.56-0.83)	***	2.303 (1.75-3.03)	***	0.626 (0.48-0.82)	**
		Canada	468	1.697 (1.31-2.20)	***	1.550 (1.27-1.90)	***	1.321 (1.06-1.65)	*	1.075 (0.87-1.33)	NS	1.069 (0.84-1.36)	NS	0.714 (0.39-1.31)	NS	0.569 (0.44-0.74)	***	1.660 (1.16-2.38)	**	1.140 (0.87-1.50)	NS
		Mexico	210	0.681 (0.42-1.11)	NS	1.123 (0.83-1.51)	NS	0.605 (0.41-0.89)	*	0.491 (0.35-0.70)	**	1.058 (0.75-1.50)	NS	0.233 (0.56-0.95)	*	0.234 (0.14-0.39)	***	0.640 (0.31-1.33)	NS	0.422 (0.24-0.74)	**
		Belgium	378	0.899 (0.64-1.26)	NS	1.206 (0.96-1.51)	NS	1.012 (0.78-1.31)	NS	0.664 (0.52-0.85)	**	1.001 (0.77-1.31)	NS	1.177 (0.69-2.00)	NS	0.688 (0.53-0.90)	**	0.823 (0.50-1.36)	NS	0.828 (0.59-1.16)	NS
		Brazil	213	0.519 (0.30-0.89)	*	1.978 (1.49-2.63)	***	1.626 (1.20-2.21)	**	0.632 (0.46-0.88)	**	1.416 (1.03-1.95)	*	0.501 (0.18-1.38)	NS	0.354 (0.23-0.55)	***	0.579 (0.27-1.25)	NS	0.558 (0.34-0.92)	*
		Portugal	237	1.103 (0.75-0.63)	NS	0.873 (0.65-1.17)	NS	0.902 (0.65-1.25)	NS	0.782 (0.58-1.05)	NS	0.899 (0.64-1.26)	NS	1.098 (0.55-2.12)	NS	0.587 (0.41-0.84)	**	1.436 (0.86-2.39)	NS	0.633 (0.40-1.00)	NS
		Sweden	312	1.525 (1.10-2.11)	NS	1.082 (0.84-1.39)	NS	1.305 (0.99-1.72)	NS	1.068 (0.83-1.38)	NS	0.897 (0.66-1.22)	NS	0.457 (0.18-1.13)	NS	0.977 (0.74-1.29)	NS	1.369 (0.86-2.18)	NS	1.187 (0.83-1.70)	NS
		Ireland	230	1.552 (1.09-2.21)	NS	0.981 (0.73-1.31)	NS	0.955 (0.69-1.32)	NS	0.807 (0.60-1.09)	NS	0.638 (0.43-0.94)	*	1.341 (0.74-2.44)	NS	0.601 (0.43-0.85)	**	1.138 (0.67-1.95)	NS	0.895 (0.60-1.33)	NS
Beer																					
	Age (years)[€]	25-29	8744	0.890 (0.84-0.95)	***	0.833 (0.79-0.88)	***	0.877 (0.82-0.94)	***	0.838 (0.79-0.89)	***	0.961 (0.91-1.02)	NS	0.890 (0.80-0.99)	**	1.037 (0.97-1.11)	NS	0.927 (0.85-1.02)	NS	0.987 (0.90-1.08)	NS
		30-34	4759	0.772 (0.71-0.84)	***	0.735 (0.69-0.79)	***	0.761 (0.70-0.83)	***	0.669 (0.62-0.72)	***	0.865 (0.81-0.93)	***	0.888 (0.77-1.02)	NS	0.885 (0.81-0.97)	**	0.814 (0.72-0.92)	**	0.906 (0.81-1.02)	NS
	Attended high school[¥]	Yes	29365	1.001 (0.82-1.23)	NS	1.153 (0.95-1.40)	NS	1.036 (0.82-1.30)	NS	0.889 (0.74-1.08)	NS	0.782 (0.65-0.95)	*	0.936 (0.68-1.30)	NS	0.901 (0.72-1.13)	NS	1.107 (0.83-1.48)	NS	0.902 (0.68-1.19)	NS
	Country[†]	Germany	10294	1.233 (1.11-1.38)	***	1.092 (1.00-1.19)	NS	1.959 (1.73-2.22)	***	0.829 (0.76-0.91)	***	0.797 (0.73-0.87)	***	0.553 (0.48-0.64)	***	0.458 (0.41-0.51)	***	0.797 (0.68-0.93)	**	1.297 (1.12-1.50)	**
		Switzerland	2230	1.951 (1.70-2.24)	***	0.940 (0.94-1.06)	NS	2.043 (1.75-2.39)	***	0.820 (0.73-0.92)	**	0.281 (0.25-0.32)	***	0.521 (0.42-0.65)	***	0.379 (0.32-0.45)	***	0.883 (0.71-1.09)	NS	0.825 (0.66-1.02)	NS
		Netherlands	1715	2.619 (2.28-3.01)	***	0.733 (0.65-0.83)	***	2.466 (2.11-2.89)	***	1.336 (1.18-1.51)	***	0.529 (0.47-0.60)	***	0.938 (0.77-1.15)	NS	1.035 (0.90-1.19)	NS	1.230 (1.01-1.50)	*	1.231 (1.01-1.51)	*
		US	1698	1.564 (1.35-1.81)	***	1.596 (1.41-1.81)	***	1.496 (1.26-1.78)	***	1.076 (0.95-1.22)	NS	0.956 (0.84-1.08)	NS	0.991 (0.81-1.21)	NS	1.252 (1.09-1.44)	**	1.619 (1.34-1.97)	***	1.551 (1.28-1.89)	***
		New Zealand	1360	1.055 (0.89-1.25)	NS	1.626 (1.42-1.86)	***	1.292 (1.07-1.56)	**	1.187 (1.04-1.36)	*	1.166 (1.02-1.33)	*	0.574 (0.45-0.74)	***	0.973 (0.83-1.14)	NS	1.289 (1.04-1.61)	*	0.718 (0.56-0.93)	*
		France	1478	2.220 (1.92-2.57)	***	1.674 (1.47-1.91)	***	1.265 (1.06-1.52)	*	0.806 (0.71-0.92)	**	0.427 (0.37-0.49)	***	0.328 (0.25-0.44)	***	0.649 (0.55-0.77)	***	2.392 (1.99-2.88)	***	1.021 (0.82-1.27)	NS
		Australia	1360	1.374 (1.17-1.61)	***	1.807 (1.58-2.07)	***	1.119 (0.92-1.36)	NS	1.365 (1.19-1.56)	***	0.928 (0.81-1.06)	NS	0.675 (0.53-0.86)	**	1.054 (0.90-1.23)	NS	1.148 (0.92-1.43)	NS	1.037 (0.83-1.30)	NS
		Hungary	1055	1.648 (1.39-1.95)	***	0.813 (0.70-0.94)	**	1.631 (1.34-1.98)	***	0.626 (0.54-0.73)	***	0.858 (0.74-0.99)	*	0.373 (0.27-0.51)	***	0.546 (0.45-0.67)	***	0.760 (0.58-1.00)	NS	1.197 (0.94-1.52)	NS
		Italy	1268	1.389 (1.18-1.64)	***	0.914 (0.80-1.05)	NS	1.171 (0.96-1.43)	NS	0.622 (0.54-0.72)	***	0.372 (0.32-0.43)	***	0.508 (0.39-0.67)	***	0.239 (0.19-0.30)	***	0.521 (0.39-0.70)	***	0.485 (0.36-0.66)	***
		Spain	692	1.756 (1.45-2.13)	***	1.246 (1.05-1.48)	*	1.569 (1.25-1.97)	***	1.064 (0.90-1.26)	NS	0.800 (0.67-0.95)	*	0.517 (0.37-0.73)	***	0.349 (0.27-0.46)	***	1.292 (0.98-1.70)	NS	1.382 (1.06-1.81)	*
		Colombia	372	2.287 (1.81-2.90)	***	1.515 (1.21-1.89)	***	1.949 (1.49-2.56)	***	0.838 (0.67-1.05)	NS	0.557 (0.44-0.70)	***	0.322 (0.19-0.55)	***	0.557 (0.41-0.76)	***	1.685 (1.22-2.32)	**	1.274 (0.90-1.81)	NS
		Austria	880	0.979 (0.80-1.20)	NS	1.241 (1.06-1.45)	**	1.692 (1.38-2.08)	***	0.798 (0.68-0.93)	**	1.331 (1.14-1.55)	***	0.360 (0.25-0.52)	***	0.475 (0.38-0.59)	***	0.643 (0.47-0.88)	**	1.368 (1.06-1.76)	*
		Norway	782	2.408 (2.02-2.87)	***	1.875 (1.59-2.22)	***	2.129 (1.74-2.60)	***	1.471 (0.25-1.73)	***	0.962 (0.82-1.13)	NS	0.442 (0.32-0.62)	***	0.712 (0.58-0.87)	**	2.245 (1.79-2.81)	***	1.825 (1.44-2.31)	***

Canada	468	1.825 (1.46-2.28)	***	1.476 (1.21-1.81)	***	1.644 (1.27-2.13)	***	1.362 (1.12-1.67)	**	1.232 (1.01-1.50)	*	0.981 (0.71-1.36)	NS	1.264 (1.01-1.58)	*	1.646 (1.22-2.21)	**	1.511 (1.11-2.05)	**
Mexico	210	2.337 (1.73-3.16)	***	1.518 (1.34-2.03)	**	1.499 (1.03-2.17)	*	1.408 (1.06-1.88)	*	0.764 (0.57-1.02)	NS	0.912 (0.58-1.45)	NS	0.794 (0.56-1.13)	NS	2.355 (1.63-3.42)	***	1.571 (1.04-2.38)	*
Belgium	378	1.964 (1.55-2.49)	***	1.059 (0.85-1.32)	NS	2.297 (1.77-2.98)	***	0.963 (0.77-1.20)	NS	0.513 (0.41-0.65)	***	0.733 (0.50-1.07)	NS	1.488 (1.17-1.89)	**	1.053 (0.73-1.52)	NS	1.501 (1.09-2.08)	*
Brazil	213	2.153 (1.58-2.93)	***	1.653 (1.24-2.20)	**	2.623 (1.89-3.65)	***	1.275 (0.96-1.70)	NS	1.040 (0.79-1.38)	NS	0.992 (0.62-1.58)	NS	0.960 (0.69-1.34)	NS	2.089 (1.42-3.08)	***	2.294 (1.57-3.35)	***
Portugal	237	2.359 (1.77-3.15)	***	0.766 (0.58-1.01)	NS	1.467 (1.02-2.11)	*	0.821 (0.62-1.08)	NS	0.311 (0.23-0.43)	***	0.391 (0.20-0.75)	**	0.479 (0.32-0.71)	***	1.573 (1.05-2.36)	*	0.832 (0.50-1.39)	NS
Sweden	312	2.462 (1.91-3.17)	***	1.796 (1.41-2.30)	***	2.027 (1.52-2.70)	***	1.471 (1.16-1.87)	**	1.093 (0.86-1.39)	NS	0.386 (0.23-0.66)	***	0.675 (0.49-0.93)	*	2.556 (1.87-3.49)	***	1.841 (1.31-2.58)	***
Ireland	230	1.100 (0.79-1.53)	NS	1.239 (0.94-1.63)	NS	1.179 (0.81-1.71)	NS	1.108 (0.84-1.46)	NS	1.046 (0.80-1.37)	NS	0.542 (0.33-0.90)	*	0.853 (0.61-1.19)	NS	0.821 (0.50-1.34)	NS	1.031 (0.66-1.61)	NS

AOR, adjusted odds ratio; CI, confidence interval; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Country variable was included in the logistic regression model for Table 4 and has been included in seperate supplementary table due to space restrictions.

[€]Reference category 18-24 years

[¥]Reference category not attended high school

[†]Reference category United Kingdom

Supplementary Table E: Logistic regression model[¶] for age, educational attainment and country of residence and relationships with emotions associated with drinking any type of alcohol[€] in different settings[†]

a: Positive emotions

			Mostly drank a drink which made you feel energised				Mostly drank mostly a drink which made you feel relaxed				Mostly drank a drink which made you feel sexy				Mostly drank a drink which made you feel confident			
			At home		When out		At home		When out		At home		When out		At home		When out	
		n	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p
Age (years)	18-24[¥]	16333																
	25-29	8744	0.825 (0.78-0.88)	***	0.704 (0.67-0.74)	***	0.966 (0.91-1.02)	NS	1.087 (1.02-1.15)	**	0.859 (0.81-0.91)	***	0.759 (0.72-0.80)	***	0.832 (0.79-0.88)	***	0.756 (0.72-0.80)	***
	30-34	4759	0.817 (0.76-0.88)	***	0.563 (0.52-0.60)	***	0.956 (0.89-1.02)	NS	1.097 (1.03-1.17)	**	0.775 (0.72-0.84)	***	0.618 (0.57-0.67)	***	0.680 (0.64-0.73)	***	0.555 (0.52-0.59)	***
Attended high school	No[¥]	471																
	Yes	29365	0.826 (0.68-1.00)	NS	0.818 (0.68-0.99)	*	1.214 (1.00-1.47)	*	1.176 (0.97-1.42)	NS	0.818 (0.67-1.00)	*	0.918 (0.76-1.11)	NS	0.864 (0.71-1.05)	NS	0.782 (0.64-0.96)	*
Country	United Kingdom[¥]	2604																
	Germany	10294	1.091 (1.03-1.15)	**	0.467 (0.43-0.51)	***	0.962 (0.88-1.05)	NS	1.338 (1.27-1.41)	***	0.952 (0.87-1.05)	NS	0.888 (0.81-0.97)	*	0.650 (0.59-0.71)	***	0.526 (0.48-0.58)	***
	Switzerland	2230	1.087 (0.95-1.24)	NS	0.787 (0.70-0.89)	***	0.821 (0.73-0.92)	**	1.130 (1.01-1.27)	*	0.819 (0.72-0.93)	**	1.025 (0.91-1.16)	NS	0.570 (0.51-0.64)	***	0.615 (0.54-0.70)	***
	Netherlands	1715	1.312 (1.15-1.50)	***	0.595 (0.53-0.68)	***	0.834 (0.73-0.95)	**	1.362 (1.20-1.54)	***	1.458 (0.28-1.66)	***	0.855 (0.75-0.97)	*	0.925 (0.82-1.05)	NS	0.658 (0.58-0.75)	***
	US	1698	1.553 (1.36-1.78)	***	0.991 (0.87-1.13)	NS	1.328 (1.16-1.52)	***	1.707 (1.51-1.93)	***	1.343 (1.18-1.53)	***	1.421 (1.25-1.61)	***	1.111 (0.98-1.26)	NS	1.042 (0.91-1.20)	NS
	New Zealand	1360	1.321 (0.14-1.53)	***	0.695 (0.61-0.80)	***	1.180 (1.03-1.36)	*	2.088 (1.83-2.39)	***	1.074 (0.93-1.24)	NS	1.004 (0.87-1.15)	NS	1.371 (1.20-1.57)	***	1.008 (0.87-1.17)	NS
	France	1478	1.560 (0.136-1.80)	NS	1.040 (0.91-1.19)	NS	1.077 (0.94-1.23)	NS	1.892 (1.66-2.15)	***	0.798 (0.69-0.92)	**	0.944 (0.83-1.08)	NS	0.743 (0.65-0.85)	***	0.631 (0.55-0.72)	***
	Australia	1360	1.106 (0.95-1.29)	***	0.628 (0.55-0.72)	***	1.486 (1.28-1.72)	***	2.388 (2.09-2.73)	***	0.850 (0.73-0.98)	*	0.787 (0.68-0.91)	**	1.113 (0.97-1.27)	NS	0.934 (0.81-1.08)	NS
	Hungary	1055	1.447 (1.23-1.70)	NS	0.637 (0.55-0.74)	***	0.521 (0.45-0.60)	***	1.019 (0.88-1.18)	NS	1.058 (0.90-1.24)	NS	0.822 (0.70-0.96)	*	0.646 (0.56-0.75)	***	0.469 (0.40-0.55)	***
	Italy	1268	1.159 (0.99-1.35)	***	0.696 (0.61-0.80)	***	0.677 (0.59-0.78)	***	1.148 (1.00-1.32)	*	0.813 (0.70-0.95)	**	0.823 (0.71-0.95)	**	0.607 (0.53-0.70)	***	0.420 (0.37-0.49)	***
	Spain	692	1.437 (1.19-1.73)	***	1.038 (0.87-1.23)	NS	0.736 (0.62-0.87)	***	0.969 (0.81-1.15)	NS	0.802 (0.66-0.97)	*	0.961 (0.80-1.15)	NS	0.896 (0.76-1.06)	***	0.873 (0.73-1.05)	NS
	Colombia	372	2.063 (1.64-2.59)	NS	1.547 (1.23-1.95)	***	0.913 (0.73-1.15)	NS	1.079 (0.86-1.35)	NS	1.338 (1.06-1.68)	*	1.641 (1.31-2.05)	***	0.800 (0.64-1.00)	*	0.934 (0.74-1.19)	NS
	Austria	880	0.966 (0.81-1.16)	***	0.377 (0.32-0.45)	***	1.083 (0.92-1.28)	NS	1.813 (1.55-2.12)	***	0.957 (0.81-1.13)	NS	0.791 (0.67-0.93)	**	0.701 (0.60-0.82)	***	0.463 (0.39-0.54)	***
	Norway	782	1.849 (1.56-2.19)	***	0.640 (0.54-0.76)	***	1.427 (1.19-1.71)	***	2.578 (2.19-3.04)	***	1.211 (1.02-1.44)	*	0.758 (0.64-0.90)	**	1.221 (1.03-1.44)	*	0.763 (0.64-0.91)	**
	Canada	468	1.509 (1.22-1.87)	***	0.950 (0.78-1.16)	NS	1.337 (1.08-1.66)	**	1.689 (1.39-2.06)	***	1.414 (1.15-1.74)	**	0.972 (0.79-1.20)	NS	1.334 (1.09-1.64)	**	0.916 (0.74-1.14)	NS
	Mexico	210	2.016 (1.50-2.70)	NS	0.996 (0.75-1.33)	NS	1.064 (0.79-1.44)	NS	1.736 (1.31-2.30)	***	1.130 (0.84-1.53)	NS	1.149 (0.86-1.54)	NS	1.098 (0.82-1.47)	NS	1.001 (0.73-1.37)	NS
	Belgium	378	1.021 (0.80-1.31)	***	0.588 (0.47-0.73)	***	1.198 (0.95-1.52)	NS	1.741 (1.40-2.16)	***	1.196 (0.95-1.50)	NS	0.924 (0.74-1.16)	NS	0.655 (0.53-0.82)	***	0.540 (0.43-0.68)	***
	Brazil	213	1.734 (1.29-2.34)	*	0.719 (0.54-0.96)	*	1.407 (1.03-1.93)	*	2.034 (1.53-2.70)	***	1.725 (1.29-2.30)	***	1.187 (0.89-1.59)	NS	0.980 (0.74-1.30)	NS	0.797 (0.59-1.07)	NS
	Portugal	237	1.430 (1.07-1.92)	***	0.711 (0.54-0.93)	*	0.836 (0.64-1.10)	NS	1.241 (0.95-1.63)	NS	0.802 (0.59-1.09)	NS	0.819 (0.61-1.09)	NS	0.662 (0.51-0.87)	**	0.508 (0.39-0.67)	***
	Sweden	312	1.788 (1.39-2.30)	NS	0.638 (0.50-0.81)	***	1.275 (0.99-1.65)	NS	1.323 (1.01-1.74)	***	1.010 (0.78-1.31)	NS	0.755 (0.58-0.98)	*	1.259 (0.99-1.61)	NS	0.690 (0.54-0.89)	**
	Ireland	230	0.965 (0.75-1.07)	NS	0.543 (0.41-0.72)	***	0.894 (0.67-1.18)	NS	1.332 (1.22-1.46)	*	0.879 (0.65-1.18)	NS	0.690 (0.52-0.93)	*	0.959 (0.73-1.26)	NS	0.650 (0.49-0.87)	**

AOR, adjusted odds ratio; CI, confidence interval; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Country variable was included in the logistic regression model for Table 5 and has been included in seperate supplementary table due to space restrictions.

[€]Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with spirits, white wine, red wine and beer.

[†]Respondents reported which drink type they mostly drank when at home and when out.

[¥]Reference category

b: Negative emotions

			Mostly drank a drink which makes you feel tired				Mostly drank a drink which makes you feel aggressive				Mostly drank a drink which makes you feel ill				Mostly drank a drink which makes you feel tearful			
			When at home		When out		When at home		When out		When at home		When out		When at home		When out	
		n	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p
Age (years)	18-24[¥]	16333																
	25-29	8744	0.986 (0.94-1.04)	NS	1.147 (1.08-1.22)	***	0.884 (0.79-0.99)	*	0.774 (0.71-0.84)	***	0.995 (0.92-1.08)	NS	0.851 (0.80-0.91)	***	0.897 (0.83-0.97)	**	0.893 (0.83-0.96)	**
	30-34	4759	0.863 (0.81-0.92)	***	1.115 (1.04-1.20)	***	0.904 (0.78-1.04	*	0.712 (0.64-0.79)	***	0.961 (0.87-1.07)	NS	0.713 (0.65-0.78)	***	0.806 (0.73-0.89)	***	0.746 (0.67-0.83)	***
Attended high school	No[¥]	471																
	Yes	29365	1.008 (0.84-1.22)	*	0.940 (0.77-1.15)	NS	0.799 (0.58-1.09)	NS	0.750 (0.59-0.96)	*	0.762 (0.60-0.97)	*	0.717 (0.58-0.88)	***	0.754 (0.60-0.95)	*	0.735 (0.58-0.93)	**
Country	United Kingdom[¥]	2604																
	Germany	10294	0.763 (0.70-0.83)	***	1.400 (1.26-1.55)	***	0.447 (0.38-0.53)	***	0.559 (0.50-0.63)	***	0.436 (0.38-0.50)	***	0.476 (0.43-0.53)	***	0.851 (0.49-0.56)	***	0.685 (0.61-0.77)	***
	Switzerland	2230	0.797 (0.71-0.89)	***	0.606 (0.52-0.70)	***	0.536 (0.42-0.68)	***	0.641 (0.54-0.76)	***	0.395 (0.33-0.48)	***	0.459 (0.40-0.53)	***	0.636 (0.53-0.76)	***	0.546 (0.46-0.65)	***
	Netherlands	1715	0.806 (0.71-0.91)	**	1.387 (1.21-1.60)	***	0.636 (0.51-0.80)	***	0.503 (0.42-0.60)	***	1.062 (0.91-1.25)	NS	0.830 (0.72-0.95)	**	0.761 (0.65-0.90)	**	0.612 (0.52-0.72)	***
	US	1698	0.889 (0.79-1.01)	NS	1.303 (1.13-1.50)	***	1.389 (1.15-1.68)	**	1.657 (1.43-0.92)	***	1.326 (1.13-1.55)	***	1.498 (1.31-1.71)	***	1.307 (1.12-1.53)	**	1.264 (1.09-1.47)	**
	New Zealand	1360	0.843 (0.74-0.96)	*	1.539 (1.33-1.78)	***	0.746 (0.89-0.95)	*	0.686 (0.57-0.83)	***	1.113 (0.94-1.32)	NS	0.834 (0.72-0.97)	*	0.606 (0.50-0.74)	***	0.748 (0.62-0.90)	**
	France	1478	0.494 (0.43-0.57)	***	0.938 (0.80-1.09)	NS	0.460 (0.35-0.60)	***	1.003 (0.85-1.18)	NS	1.085 (0.92-1.28)	NS	1.282 (1.12-1.47)	***	0.878 (0.74-1.05)	NS	1.016 (0.87-1.19)	NS
	Australia	1360	0.969 (0.85-1.11)	NS	1.633 (1.41-1.89)	***	0.747 (0.59-0.95)	*	0.645 (0.53-0.78)	***	1.000 (0.84-1.19)	NS	0.734 (0.63-0.86)	***	0.941 (0.79-1.12)	NS	0.829 (0.70-0.99)	*
	Hungary	1055	0.548 (0.47-0.64)	***	1.289 (1.11-1.53)	**	0.566 (0.42-0.76)	***	0.614 (0.50-0.76)	***	0.684 (0.55-0.85)	***	0.639 (0.53-0.76)	***	0.747 (0.60-0.92)	**	0.573 (0.46-0.71)	***
	Italy	1268	0.399 (0.35-0.46)	***	0.719 (0.61-0.85)	***	0.552 (0.42-0.73)	***	0.936 (0.78-1.12)	NS	0.422 (0.33-0.53)	***	0.583 (0.49-0.69)	***	0.501 (0.40-0.63)	***	0.440 (0.35-0.55)	***
	Spain	692	0.717 (0.60-0.85)	***	1.058 (0.87-1.29)	NS	0.706 (0.51-0.97)	*	1.235 (1.00-1.53)	NS	0.393 (0.29-0.53)	***	0.715 (0.58-0.88)	**	0.847 (0.67-1.08)	NS	1.024 (0.83-1.27)	NS
	Colombia	372	0.526 (0.42-0.66)	***	0.814 (0.62-1.06)	NS	0.866 (0.60-1.26)	NS	1.367 (1.05-1.78)	*	0.824 (0.61-1.12)	NS	1.067 (0.84-1.36)	NS	0.885 (0.65-1.20)	NS	1.599 (1.24-2.06)	***
	Austria	880	0.842 (0.72-0.98)	*	1.892 (1.60-2.23)	***	0.282 (0.18-0.43)	***	0.327 (0.25-0.44)	***	0.380 (0.29-0.53)	***	0.307 (0.24-0.39)	***	0.848 (0.68-1.06)	NS	0.571 (0.45-0.72)	***
	Norway	782	0.852 (0.73-1.00)	NS	2.103 (1.77-2.50)	***	0.475 (0.34-0.67)	***	0.352 (0.27-0.47)	***	0.831 (0.67-1.04)	NS	0.556 (0.45-0.68)	***	1.117 (0.91-1.38)	NS	0.868 (0.70-1.07)	NS
	Canada	468	1.038 (0.85-1.26)	NS	1.833 (1.48-2.27)	***	1.232 (0.90-1.69)	NS	1.145 (0.89-1.47)	NS	1.199 (0.93-1.54)	NS	1.132 (0.91-1.41)	NS	1.230 (0.96-1.58)	NS	1.090 (0.85-1.39)	NS
	Mexico	210	0.648 (0.46-0.87)	**	1.103 (0.80-1.53)	NS	1.236 (0.80-1.90)	NS	1.374 (0.98-1.93)	NS	0.908 (0.62-1.34)	NS	0.851 (0.61-1.18)	NS	1.091 (0.76-1.57)	NS	1.172 (0.83-1.65)	NS
	Belgium	378	0.730 (0.59-0.91)	**	1.107 (0.86-1.42)	NS	0.527 (0.34-0.82)	**	0.535 (0.39-0.74)	***	1.157 (0.88-1.52)	NS	0.981 (0.77-1.25)	NS	0.902 (0.67-1.21)	NS	0.805 (0.61-1.07)	NS
	Brazil	213	0.736 (0.55-	*	1.591 (1.18-	**	1.141 (0.72-	NS	1.048 (0.73-	NS	0.719 (0.47-	NS	0.954 (0.69-	NS	1.149 (0.80-	NS	1.014 (0.71-	NS

		0.98)		2.16)		1.81)		1.51)		1.09)		1.31)		1.65)		1.45)	
Portugal	237	0.652 (0.50-0.86)	**	0.747 (.53-1.05)	NS	0.965 (0.60-1.55)	NS	0.573 (0.37-0.88)	*	0.538 (0.35-0.84)	**	0.388 (0.26-0.58)	***	0.820 (0.56-1.20)	NS	0.513 (0.34-0.78)	**
Sweden	312	1.131 (0.89-1.43)	NS	2.656 (2.09-3.38)	***	0.423 (0.25-0.72)	**	0.344 (0.22-0.53)	***	0.895 (0.65-1.24)	NS	0.566 (0.42-0.77)	***	1.077 (0.78-1.49)	NS	0.905 (0.66-1.24)	NS
Ireland	230	0.881 (0.67-1.16)	NS	1.362 (1.01-1.84)	*	0.776 (0.49-1.22)	NS	0.721 (0.50-1.03)	NS	0.784 (0.54-1.15)	NS	0.684 (0.49-0.95)	*	0.930 (0.65-1.33)	NS	0.781 (0.55-1.11)	NS

AOR, adjusted odds ratio; CI, confidence interval; NS, not significant.

*p<0.05, **p<0.01, ***p<0.001.

[¶]Country variable was included in the logistic regression model for Table 5 and has been included in seperate supplementary table due to space restrictions.

[€]Emotions from drinking respondents reported regardless of the type of alcohol they associate it with. Includes emotions associated with spirits, white wine, red wine and beer.

[†]Respondents reported which drink type they mostly drank when at home and when out.

[¥]Reference category

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	5
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	5/6
Bias	9	Describe any efforts to address potential sources of bias	6
Study size	10	Explain how the study size was arrived at	5/6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6
		(*b*) Describe any methods used to examine subgroups and interactions	6
		(*c*) Explain how missing data were addressed	5/6
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5/Supplementary Table A
		(b) Indicate number of participants with missing data for each variable of interest	5
Outcome data	15*	Report numbers of outcome events or summary measures	NA
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	6-17
		(*b*) Report category boundaries when continuous variables were categorized	6-17
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6-17
Discussion			
Key results	18	Summarise key results with reference to study objectives	18
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	19
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	18/19
Generalisability	21	Discuss the generalisability (external validity) of the study results	18/19
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	3

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.