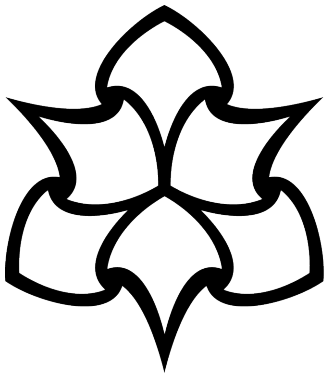

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A cross-national study of predrinking motives in Spain and the UK: Cross-sectional associations with risk-taking and alcohol consumption

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ABSTRACT

This study contrasts young people's predrinking in two European cultural contexts: Spain and the UK. Whilst UK predrinking typically occurs amongst small groups of individuals who already know one another, the distinctive Spanish context of the *Botellón* details a far larger gathering in which participants may be less likely to know each other. As such, predrinking motives which drive consumption and risk-taking may be expected to vary between these cultures. An online questionnaire (N = 397; UK = 167, Spain = 230) was used to examine a variety of drinking behaviours and associated beliefs/motivations including predrinking motivations, drinking behaviour, and risk taking. Path analysis was used to analyse both direct and indirect relationships between the measures with the aim of predicting problem alcohol consumption with the most parsimonious model. Varying (in)direct paths were observed between predrinking motives and alcohol consumption between the cultures. Most notably and pointing towards inconsistency in the drivers of young adults' drinking, fun predrinking motives featured prominently among Spanish respondents and predicted their reported consumption (not so in the UK), while conviviality was a more prevalent predrinking motive in the UK sample and associated with alcohol consumption (not the case in Spain). Further, (personal) risky behaviour and risk-taking predicted consumption in both samples, suggesting the importance of group norms and behaviours in predrinking activity, irrespective of alcohol consumption. These findings highlight the potential importance of the environment in which young people predrink. Given their importance in shaping alcohol consumption and risk taking in young people, cultural differences in predrinking contexts and motives warrant further investigation.

1. Introduction

Recent years have witnessed an increase in consuming alcohol in private (e.g., homes) or public spaces (e.g., streets) before moving to more expensive locations. Research into predrinking (or preloading; pregaming; prepartying; Labhart et al., 2013) has primarily been conducted in English speaking countries (Foster & Ferguson, 2014) with a focus upon motivations for behaviour or documenting its association with hazardous consumption and harms (e.g., Caudwell & Hagger, 2014; Labhart et al., 2013; Miller et al., 2016; Room et al., 2005). There is a relative lack of predrinking research in non-English speaking countries to help ascertain the extent to which sociocultural practices reflect differences in predrinking. The current paper therefore examines the extent to which predrinking motivations differ between young people in the UK and Spain, and how these relate to alcohol consumption and risk taking.

Research attention has begun to shift beyond affordability as a dominant predrinking driver (e.g., Ostergaard & Andrade, 2014; Riordan et al., 2018) and increasingly focusses on wider psychosocial influences. Atkinson and Sumnall (2019) show that predrinking is a gendered phenomenon, with young women conceptualising it within a wider collection of social activities centred on 'getting ready' for a night out, whilst young men focus on predrinking as a self-contained activity. Wilson and colleagues (2018) highlight how practical considerations interact with motivational forces to shape young Australians' predrinking participation, by exploring underage drinkers' relationships

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with licensed premises and law enforcement. Consistent with earlier contributions (Niland et al., 2013), this work highlights that young people's reasons for predrinking may be excluded from official regulatory control and public health practices. These qualitative investigations illustrate need for considering sociocultural contexts in which predrinking occurs.

Cross-cultural investigations highlight differences in alcohol consumption. Despite eighteen being the legal alcohol purchasing age in both countries, young people's alcohol behaviours in Spain and the UK reflect sociocultural and price differences which may impact predrinking. From the 1990s and involving groups of up to 400 or more (Rodriguez-Martos, 2006) several authors describe the drinking culture of 'botellón' ('big bottle'), a widespread nightlife activity among Spanish youths (e.g., Espejo et al., 2012; Pedrero-García, 2018; Rodriguez-Martos, 2006) who gather in public spaces to socialise and drink. Accounts stress the sociability within botellón culture (Pedrero-García, 2018) and although often a discrete activity, participants frequently move onto drinking in private homes or licensed establishments (e.g., Calafat, et al, 2005; Pedrero-García, 2018; Rodriguez-Martos, 2006). In contrast, botellón is not a behaviour reported in UK settings (Hughes et al., 2008), where predrinking occurs in small group indoor settings (Foster & Ferguson, 2014) as a precursor to drinking in licensed establishments.

Despite contextual differences in drinking and predrinking practices, comparisons between Spain and the UK suggests similar predrinking levels. Using Global Drug Survey data, Labhart and colleagues (2017) report higher alcohol price ratios between on- and off-sales are in Spain (making drinking in licensed premises relatively more expensive) but that both countries have similar proportions of predrinkers, despite Spain having a lower proportion of drinkers (68.3% vs the UK's 83.9%) and heavy drinkers overall (19.4% vs the UK's 33.4%). More recently, Ferris and colleagues' (2019) analysis across 27 countries suggests that Spanish predrinking is more prevalent among men (80% versus 60% of women) in comparison to the UK where there was less divergence (≈70% for both; all questions referred to the previous year). Similarly, Hughes and colleagues (2008), found more excessive drinking in the UK compared to Spain, and gender differences were apparent, 60% of respondents in both countries reported forms of predrinking which were reflected in Blood Alcohol Concentrations. As such, while overall predrinking levels may be similar across both countries, the contexts in which potentially hazardous alcohol behaviours occur may vary and could be reflective of differences in underlying predrinking motives, although this needs investigating.

Reflecting that *why* people engage in drinking behaviours shapes alcohol outcomes (Bresin & Mekawi, 2021), instruments have been developed to assess predrinking motives (Bachrach et al., 2012; LaBrie et al., 2012). This builds on investigations identifying drinking motives as significant influences on consumption (Kuntsche et al., 2006; Kuntsche et al., 2008; Kuntsche et al., 2015; Németh et al., 2011), although predrinking motives are distinct from general drinking motives. Bachrach and colleagues (2012) identify three categories of predrinking motives (inebriation/fun, instrumental, social ease), closely mirrored by Labhart and Kuntsche's (2017) three factor categorisation (fun/intoxication, conviviality and personal facilitation motives) and other four factor models (e.g., LaBrie et al., 2012; Pilatti & Read, 2018). To date, however, literature on predrinking motives has primarily focussed on English-speaking countries (with notable exceptions: Switzerland (Labhart and Kuntsche, 2017); Argentina (Pilatti and Read, 2018); Germany (Wahl et al., 2013); and Brazil (Santos et al., 2015)), there are no published studies of Spanish predrinking motives, and less is known about the extent to which motives vary in settings with different cultural positionings of alcohol which, despite a degree of homogenization in international drinking practices (Leifman, 2001), continue to exist (Gordon et al., 2012; Room & Makela, 2000).

Understanding how predrinking motives may differ as a function of context is also important in view of research indicating that these cognitions may be associated with risk taking (O'Rourke et al., 2016; Santos et al., 2015). Smit and colleagues (2021) recently found that 'fun/intoxication' predrinking motives were associated with more consumption and adverse consequences. The context in which predrinking (and botellón) occurs may therefore exacerbate risk taking behaviours when the behaviour occurs in environments with weaker social controls upon consumption practices, or lack serving restrictions (Hughes et al., 2008) which is concerning due to the association between consumption and aggression (Ito et al., 1996), drunk-driving (Taylor et al., 2010), and sexual risk-taking (Rehm et al., 2012). For example, Santos and colleagues (2015) found that St Paulo clubgoers were more likely to report drink driving (men) or experience of sexual harassment (women) if they had previously engaged in predrinking.

Similarly, motives for predrinking may relate to risk-taking given the possible alcohol situations afforded by social or fun-seeking motivations. Loxton and colleagues (2015) examined personality traits in Australian students, finding that impulsivity best predicted drinking variation, mediated by drinking motivations (see also Curcio & George, 2011). Similar results have been reported in UK and US samples (Jones, Chryssanthakis & Groom, 2014).

Demonstrating how the alcohol-risk taking nexus may be impacted by group dynamics, Levine and colleagues (2012) illustrate how group processes can (de)escalate alcohol-fuelled violence. Erskine-Shaw and colleagues' (2017; 2022) research further suggests that group identity, as well as amount of alcohol consumed, is related to affective states and risk-taking. Similarly Wells and colleagues' (2015) found elevated blood alcohol levels were higher among groups in which more than 50% had been predrinking. This work attests to the extent to which individuals' (predrinking) alcohol behaviours are shaped by group dynamics. Given the social nature of the botellón phenomenon (Pedrero-García, 2018), investigations of associations between risk-taking and predrinking therefore need to be sensitive to such social dynamics.

The current study therefore compares predrinking motives and their association with alcohol consumption and risk-taking behaviour across Spain and the UK. Recognising differences between the two countries regarding how alcohol behaviours are enacted, it is important to build on the limited number of investigations that consider predrinking motives beyond English speaking countries. In this exploratory study, we examined the relationship between predrinking motives and alcohol consumption, risk taking and demographics. Bresin and Mekawi's *meta*-analysis of drinking motives (2020) suggests that whilst enhancement motives are the strongest predictors of alcohol use, coping motives are also implicated in problem drinking. Intriguingly Labhart and Kuntsche (2017) find that predrinking motives may be different with "fun/intoxication" motives particularly associated. We expected this to be reflected in our analyses, and include age and gender following previous work (e.g., Ferris et al., 2019; Jackson, & Tinkler, 2007). As such, we examine the extent to which comparatively less marked gender-role differences in relation to alcohol behaviours in the UK compared to Spain (Ferris et al., 2019; Jackson, & Tinkler, 2007) would be reflected in predrinking motives. Age is included in view of previous work pointing to differences in predrinking as a function of age (Ferris et al., 2019). This may parallel research conducted on general drinking motivations (Heim, Monk, & Qureshi, 2021) where gender and age appear as antecedents of motivations.

In light of differences in the contexts in which Spanish and UK predrinking behaviours occur (i.e., botellón compared to small house gatherings: e.g., Calafat, et al, 2005; Pedrero-García, 2018; Rodriguez-Martos, 2006; Foster & Ferguson, 2014), we expected to find cross-national variability in predrinking motivations due to the different types of social relations and examined how these may, in turn, impact risk taking behaviour and alcohol consumption.

Table 1
Measures by country and by gender (comparisons using ANOVA).

Measure	UK (n = 166; 42%)	Spain (n = 227; 58%)	ANOVA	Overall (n = 393)
Age	22.51 (3.21)	20.06 (2.60)	F (1,391) = 69.94, $p < .001$, $\eta_p^2 = 0.15$	21.10 (3.11)
Risk Taking (RT-18)	7.95 (3.41)	8.88 (3.37)	F (1,391) = 7.32, $p = .007$, $\eta_p^2 = 0.02$	8.49 (3.41)
Fun Intoxication	20.93 (5.42)	19.12 (6.65)	F (1,391) = 8.22, $p = .004$, $\eta_p^2 = 0.02$	19.89 (6.22)
Conviviality	17.60 (4.03)	13.38 (5.23)	F (1,391) = 75.27, $p < .001$, $\eta_p^2 = 0.16$	15.16 (5.19)
Facilitation	13.48 (3.25)	6.63 (3.15)	F (1,391) = 440.01, $p < .001$, $\eta_p^2 = 0.53$	9.52 (4.65)
Timeline Follow Back (TLFB)	29.70 (14.31)	16.42 (14.22)	F (1,391) = 83.14, $p < .001$, $\eta_p^2 = 0.18$	22.03 (15.68)
Measure (Cronbach's α)	UK Men (n = 58; 35%)	Women (n = 108; 65%)	ANOVA	Overall (n = 166)
Age	22.60 (2.91)	22.46 (3.37)	F (1,164) = 0.072, $p = .789$, $\eta_p^2 = 0.00$	22.51 (3.21)
RT-18 (0.69)	8.00 (2.67)	7.92 (3.75)	F (1,164) = 0.022, $p = .881$, $\eta_p^2 = 0.00$	7.95 (3.41)
Fun Intoxication (0.70)	20.62 (5.33)	21.09 (5.50)	F (1,164) = 0.284, $p = .595$, $\eta_p^2 = 0.00$	20.93 (5.42)
Conviviality (0.67)	17.22 (4.36)	17.80 (3.85)	F (1,164) = 0.759, $p = .385$, $\eta_p^2 = 0.01$	17.60 (4.03)
Facilitation (0.65)	12.55 (3.22)	13.97 (3.17)	F (1,164) = 7.49, $p = .007$, $\eta_p^2 = 0.04$	13.48 (3.25)
TLFB (0.53)	29.35 (17.19)	29.89 (12.58)	F (1,164) = .053$p = .819$, $\eta_p^2 = 0.00$	29.70 (14.31)
Measure (Cronbach's α)	Spain Men (n = 77; 34%)	Women (n = 150; 66%)	ANOVA	Overall (n = 227)
Age	20.07 (2.82)	19.73 (2.42)	F (1,225) = 7.27, $p = .008$, $\eta_p^2 = 0.03$	20.06 (2.60)
RT-18 (0.69)	10.01 (2.99)	8.30 (3.42)	F (1,225) = 13.90, $p < .001$, $\eta_p^2 = 0.06$	8.88 (3.37)
Fun Intoxication (0.90)	19.57 (6.16)	18.89 (6.90)	F (1,225) = 0.53, $p = .468$, $\eta_p^2 = 0.00$	19.02 (6.65)
Conviviality (0.82)	13.68 (5.02)	13.23 (5.35)	F (1,225) = 0.37, $p = .542$, $\eta_p^2 = 0.00$	13.38 (5.23)
Facilitation (0.79)	7.95 (3.51)	5.96 (2.73)	F (1,225) = 22.14, $p < .001$, $\eta_p^2 = 0.09$	6.63 (3.15)
TLFB (0.54)	21.87 (15.58)	13.63 (12.65)	F (1,225) = 18.41, $p < .001$, $\eta_p^2 = 0.08$	16.42 (14.22)

2. Material and methods

2.1. Design

A cross cultural study design was implemented whereby all participants received the same battery of standardised questionnaires (see below) presented in their respective first language (English or Spanish).

2.2. Participants

Opportunity samples of social drinkers from one Spanish and one UK university were recruited by advertising the study on campuses and social media. Participants were required to confirm drinking a minimum of once a week. A total of 425 people completed the survey, which was conducted at the same time in both countries, although after testing for multivariate outliers (Tabachnick & Fidell, 2001) and restricting the age range to 18–30, the final sample was 393: 227 participants in Spain and 166 participants in the UK. 258 participants identified as women, 135 as men. The mean age of the sample was 21.10yrs (s.d. = 3.11, range 18–30) and the UK sample was significantly older than the Spanish sample (Table 1). There were more women in the sample, but no difference in proportions between UK and Spanish samples ($X^2 = 1$, N = 393) = 0.044, p = .834).

2.3. Materials and measures

An online questionnaire examined a variety of drinking behaviors and beliefs/motivations. The study was hosted by Bristol Online survey. It contained the following measures:

2.3.1. Standard demographic questions – age, gender, ethnicity

Timeline Follow Back – TLFB (Sobell & Sobell, 1992), validated for both English and Spanish (Sobell et al., 2001). Participants retrospectively self-reported alcohol consumption (in units) for the previous 14 days.

Risk Taking - RT-18 (de Haan et al., 2011). 18 statements, e.g., 'I sometimes do "crazy" things just for fun' are responded to by either 'No' or 'Yes' to measure risk-taking behaviour, risk-assessment and overall trait risk-taking (not necessarily related to alcohol). Each statement is scored from 0 to 1, with a possible range of 0 to 18. This English-language validated questionnaire was translated into Spanish by the current authors, checked and 'back-translated' to ensure that the meaning had not changed – a method previously used where fully validated translations were unavailable (Heim et al., 2004).

Predrinking motives questionnaire (Labhart & Kuntsche, 2017). Participants were to think back to the times over the last 12 months when they engaged in predrinking and to state how often they did this for each of 24 presented reasons. Each item was rated on a five-part Likert scale from 'never' (coded as 1) to 'always' (5). Fifteen items are divided into three categories: fun/intoxication (six items), conviviality (five items), and facilitation (four items).

The English-language questions were taken from Labhart and Kuntsche's (2017; validated in French and German) and the English version was (back)translated as outlined above.

2.4. Ethical considerations

The research was conducted with attention to The British Psychological Society's (BPS) Code of Ethics and Conduct (BPS, 2009), and Code of Human Research Ethics (BPS, 2014). The protocol for this study was approved by the ethics committees of the Edge Hill University, UK and Universidad Publica de Navarra, Spain.

2.5. Analytical procedure

Path analysis was used to analyze both direct and indirect relationships between measures predicting alcohol consumption - age and gender were the distal variables, with risk taking and then pre-drinking motives positioned as potential mediators of any relationship with the dependent variable of general alcohol consumption. All measures (distal and mediator) could also directly predict the dependent variable of general alcohol consumption. Models were tested for the Spanish and UK samples separately.

An initial model was constructed with all paths present (Fig. 1) and

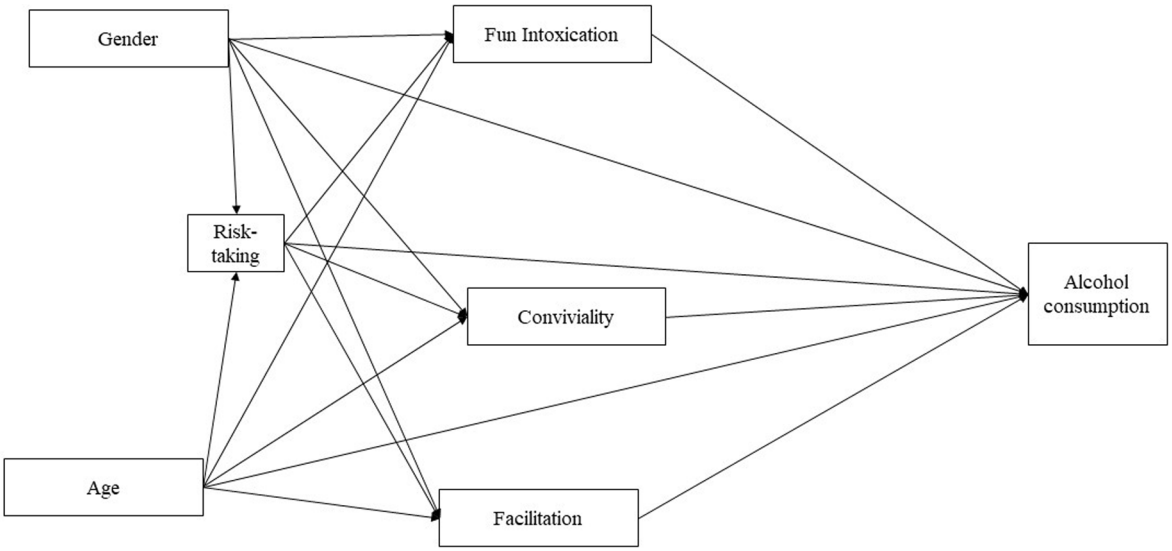

Fig. 1. Initial model based on correlation matrix for full sample.

Table 2
Model fits and comparisons for unconstrained and constrained (between UK and Spanish group) models.

	df	CMIN[1]/ DF	*p*	NFI[2]	CFI[3]	RMSEA[4]			TLI[5]	Model comparison	ΔCMIN	*p*	ΔTLI	ΔNFI
							10% CI	90% CI						
Unconstrained (M1)	2	3.627	0.027	0.981	0.985	0.082	0.024	0.150	0.679	–	–	–	–	–
Structural weights constrained (M2)	19	4.955	< 0.001	0.756	0.781	0.101	0.081	0.121	0.516	M1	86.90	< 0.001	0.163	0.226
Structural covariances constrained (M3)	21	4.891	< 0.001	0.733	0.762	0.100	0.081	0.119	0.524	M2	8.55	0.014	-0.008	0.022
Structural residuals constrained (M4)	29	6.230	< 0.001	0.531	0.558	0.116	0.100	0.132	0.360	M3	77.97	< 0.001	0.164	0.202

[1] While the global X2 and Wald test are different, they return almost identical results with similar power.
[2] CMIN = minimum value of discrepancy between the given model and the saturated model (with all paths present)
[3] Bentler and Bonett (1980) normed fit index. Values above 0.9 are indicative of good fit.
[4] Comparative fit index (Bentler, 1990). Values close to 1 indicate a very good fit.
[5] Root mean square error of approximation. Values of < 0.05 indicate a close fit. 90% confidence interval should be < 0.10
[6] Tucker-Lewis coefficient. Values close to 1 indicate a good fit. Changes of < 0.01 indicate no impact of adding constraints.

was tested across both samples in AMOS 25 (IBM Corp, 2017). The multi-group analysis option, using maximum likelihood estimation, was used after creating separate groups for the two samples, with an initial unconstrained model (where parameters were free to vary between the groups). Results from a Monte Carlo simulation run in MPlus suggest that the sample size, with the effect size set to detect a small difference (0.20) between groups, was sufficient to test each parameter for equality in turn (although the global X2 test had a power of 0.24 with $\alpha = 0.05$, which is arguably underpowered, the Wald test of the equality of effects between the groups has a power of 0.73 with d.f. of 1[1] , suggesting that parameter by parameter comparisons are sufficiently powered). However, interpretation of the final models should be treated with caution.

A series of nested models were then tested and compared: 1.) structural weights (path parameters) were constrained. 2.) structural weights and covariances were constrained, and 3.) structural weights, constraints and residuals were constrained.

Model comparisons were based on chi-square differences (testing if adding constraints significantly (and negatively) impacted the model fit, or if there was no significant difference) and changes in Tucker-Lewis Index (TLI; < 0.01 indicated no significant impact in adding constraints). If stages 1 and/or 2 were found to be significant, each parameter was constrained in turn to ascertain which parameters significantly differed between the countries. Finally, a model allowing specific parameters to vary and constraining those that did not differ between countries was run, with any parameters not significantly different from zero being held to zero.

3. Results

3.1. Descriptive statistics

3.1.1. Groups were classified by nation (UK vs Spain)

To ensure that the samples did not differ in how they interpreted the questionnaires, measurement invariance testing was conducted on pre-drinking motives and RT18. This used the multi-group analysis option on AMOS 25. Full results are shown in the appendices, Tables X1-5. The countries differed on item 6 of the fun/intoxication pre-drinking motive, there was no difference for conviviality or facilitation. Difference on the RT18 were in the magnitude of loadings, but their general interpretation appeared similar.

ANOVAs and post-hoc tests (with Bonferroni adjustments) were conducted to check for significant differences between measures (for descriptives see Table 1). These indicated that significant differences between UK and Spanish groups were found for all measures. The UK

[1] While the global X2 and Wald test are different, they return almost identical results with similar power.

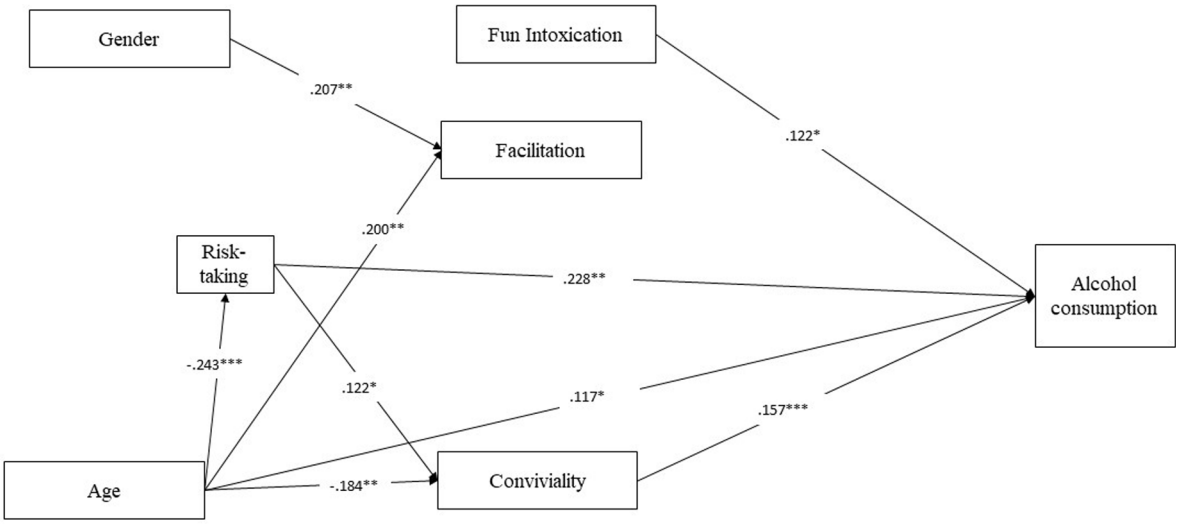

Fig. 2. Final model for UK sample (values are standardised B).

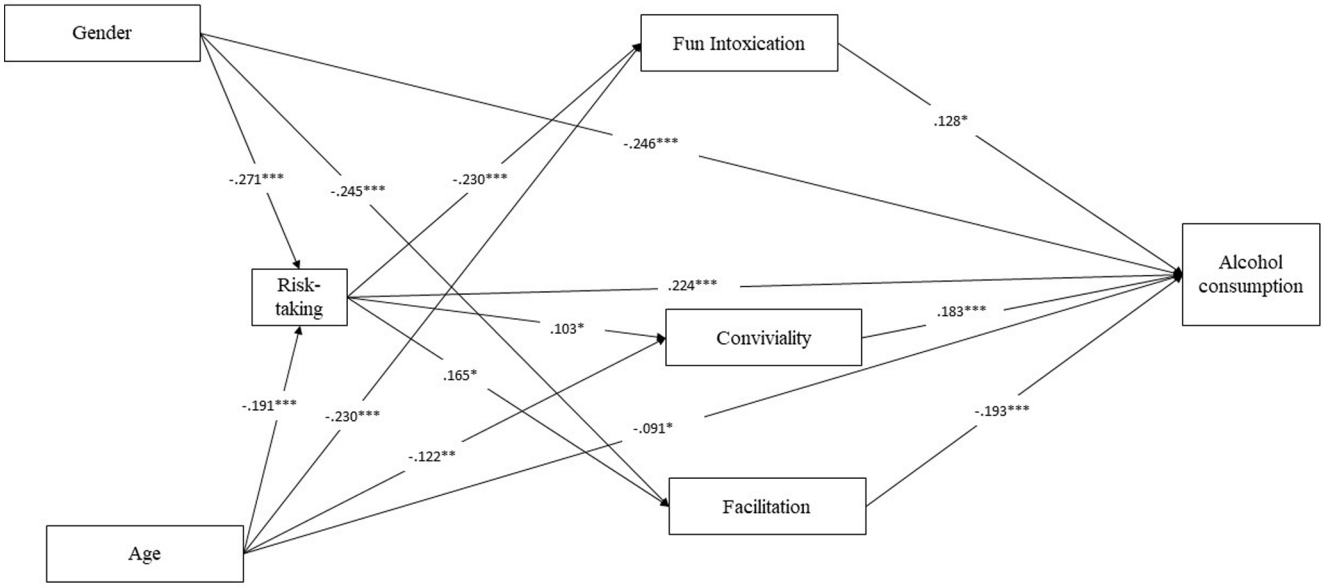

Fig. 3. Final model for Spain sample (values are standardised B).

Table 3
Final model fit indices relative to unconstrained model (M1).

	df	CMIN/DF	*p*	NFI	CFI	RMSEA			TLI
							10% CI	90% CI	
Unconstrained (M1)	2	3.627	0.027	0.981	0.985	0.082	0.024	0.150	0.679
Final model	15	1.262	0.217	0.951	0.989	0.026	0.000	0.057	0.968

sample reported higher general alcohol consumption. The Spanish sample reported higher risk taking on the RT-18. Predrinking motivations also differed with UK drinkers reporting significantly higher motivations to predrink in all categories.

Within the UK sample, the only significant gender difference was that women reported greater facilitation predrinking motivation. However more differences were observed in the Spanish sample. The Spanish men's sample was slightly older (20.07 years to 19.73 years). They also reported greater tendency to general risk -taking on the RT-18 than women, as well as much larger alcohol consumption. However, this was still lower than either men or women in the UK sample. Spanish men recorded a significantly higher predrinking motivation of facilitation than Spanish women, F (1,225).

3.2. Main results

Model comparisons showed that constraining the structural weights significantly and negatively impacted the fit relative to the unconstrained model (Table 2). A similar pattern was shown when constraining the covariances. Additionally constraining the residuals also

Table 4
Indirect path parameters for Spain final model.

Indirect Paths (Spain)	Unstandardized Estimate (upper and lower bounds)	Standardized Estimate
Gender –> Risk taking –> Fun Intoxication –> Consumption	-0.337 (-0.821, -0.037)	-0.086***
Gender –> Risk taking –> Conviviality –> Consumption	-0.203 (-0.595, -0.015)	-0.086***
Gender –> Risk taking –> Facilitation –> Consumption	0.309 (0.091, 0.730)	-0.076***
Gender –> Risk taking –> Consumption	−1.942 (-3.226, −1.049)	-0.029*
Gender –> Facilitation –> Consumption	1.283 (0.455, 2.39)	0.064**
Age –> Risk taking –> Fun Intoxication –> Consumption	-0.041 (-0.129, -0.005)	0.088***
Age –> Risk taking –> Conviviality –> Consumption	-0.025 (-0.078, -0.002)	0.051***
Age –> Risk taking –> Facilitation –> Consumption	0.038 (0.010, 0.103)	0.113***
Age –> Risk taking –> Consumption	-0.238 -0.438, -0.106)	-0.068***
Age –> Conviviality –> Consumption	-0.132 (-0.365, -0.010)	-0.040**
Age –> Fun Intoxication –> Consumption	-0.172 (-0.378, -0.024)	0.040*
Risk taking –> Fun Intoxication –> Consumption	0.173 (0.014, 0.386)	0.086**
Risk taking –> Conviviality –> Consumption	0.105 (0.000, 0.266)	0.114***
Risk taking –> Facilitation –> Consumption	-0.159 (-0.339, -0.052)	-0.038**
Indirect Paths (UK)		
Age → Risk taking → Consumption	-0.214 (-0.426, -0.088)	-0.048**
Age → Risk taking → Conviviality → Consumption	-0.006 (-0.037 - 0.020)	-0.001
Age → Conviviality → Consumption	-0.097 (-0.294, -0.003)	-0.022
Risk-taking → Conviviality → Consumption	0.024 (-0.077, 0.134)	0.001

* $p < .05$, ** $p < .01$, *** $p < .001$

negatively impacted the model fit relative to the model with the structural weights and covariance constrained. In all cases, the chi-square difference tests were significant.

Therefore, each parameter was constrained in turn to assess which parameters did and did not differ between countries. Full comparisons are shown in the appendices, Tables X1-5.

Final models are shown in Fig. 2 (UK) and Fig. 3 (Spain), with all values standardised (B). The final model fit indices are shown in Table 3, indicating an excellent fit to the data. Model parameters for the final model for the UK and Spain samples are shown in Table X6 in the appendix.

3.3. Age, gender and risk-taking

Age was invariant between countries, with older age associated with greater consumption. Risk-taking was also invariant, with higher risk-taking linked to greater consumption. While gender was variant, the pattern of men drinking more was only significant in the Spanish sample.

The relationship between age and risk-taking was invariant, with both samples showing that risk-taking decreased with age. The relationship between gender and risk-taking varied, with men being likely to take risks present in both samples but only significant in Spain.

3.4. Pre-drinking motives and their predictors

The relationship between gender and both fun intoxication and conviviality was invariant, with neither path significantly different from zero. The path between gender and facilitation was free to vary, with women in the UK showing greater facilitation motives whereas in Spain it was men who showed this pattern.

Age and conviviality had an invariant relationship, with younger adults in both samples endorsing higher conviviality motives. Both facilitation and fun intoxication were variant with age. In the UK, being older was associated with greater facilitation. In Spain, being younger was associated with greater fun intoxication motives.

Higher risk-taking being associated with greater conviviality was invariant Higher risk-taking was linked to greater fun intoxication and facilitation in the Spanish sample.

3.5. Pre-drinking motives and consumption

Fun intoxication and conviviality were invariant and positively related to consumption, whereas facilitation varied between samples. Specifically, there was no relationship between facilitation and consumption in the UK, but in Spain higher facilitation was associated with lower consumption.

3.6. Pre-drinking motives and risk-taking as mediators of age and gender differences in consumption

The Spanish sample showed indirect relationships where pre-

Table A1
Model fits and comparisons for Fun Intoxication.

	df	CMIN/DF	*p*	NFI	CFI	RMSEA			TLI	Model comparison	ΔCMIN	*p*	ΔTLI	ΔNFI
							10% CI	90% CI						
Unconstrained (M1)	18	7.21	< 0.001	0.892	0.904	0.126	0.106	0.147	0.841	–	–	–	–	–
Measurement weights constrained (M2)	23	8.01	< 0.001	0.846	0.862	0.134	0.116	0.152	0.820	M1	54.56	< 0.001	0.021	0.045
Structural covariances constrained (M3)	24	7.77	< 0.001	0.845	0.861	0.132	0.114	0.149	0.826	M2	2.05	0.152	-0.002	-0.006
Measurement residuals constrained (M4)	30	9.11	< 0.001	0.772	0.792	0.144	0.129	0.160	0.792	M3	86.87	< 0.001	0.072	0.034

The model fit indices suggested there were significant differences between the countries overall. Pairwise parameter comparisons indicated that item 4 ("To get drunk quickly"), item 5 ("It is the normal way to start an evening") and item 6 ("To spend less money on alcoholic drinks") differed between the countries, though measurement weights suggested item 6 had the most effect, with the UK sample parameter being not significantly different from 0 while the Spanish parameter was significant (B = 0.687, $p < .001$). Items 4 and 5 were significant in both samples, with the strength of the association greater in the Spanish sample.

Table A2
Model fits and comparisons for Conviviality.

	df	CMIN/DF	*p*	NFI	CFI	RMSEA			TLI	Model comparison	ΔCMIN	*p*	ΔTLI	ΔNFI
							10% CI	90% CI						
Unconstrained (M1)	20	7.89	< 0.001	0.867	0.880	0.133	0.106	0.147	0.760	–	–	–	–	–
Measurement weights constrained (M2)	16	7.56	< 0.001	0.822	0.840	0.130	0.116	0.152	0.772	M1	27.02	< 0.001	-0.011	0.045
Structural covariances constrained (M3)	15	7.59	< 0.001	0.809	0.828	0.130	0.114	0.149	0.771	M2	7.95	0.005	0.013	0.001
Measurement residuals constrained (M4)	10	6.60	< 0.001	0.778	0.805	0.120	0.129	0.160	0.805	M3	18.25	0.003	-0.034	0.031

The model fit indices suggested there were significant differences between the countries overall. However, pairwise parameter comparisons indicated there were no significant differences between the measurement weights.

Table A3
Model fits and comparisons for Facilitation.

	df	CMIN/DF	*P*	NFI	CFI	RMSEA			TLI	Model comparison	ΔCMIN	*p*	ΔTLI	ΔNFI
							10% CI	90% CI						
Unconstrained (M1)	16	13.14	< 0.001	0.870	0.877	0.176	0.136	0.220	0.630	–	–	–	–	–
Measurement weights constrained (M2)	13	7.71	< 0.001	0.867	0.881	0.131	0.100	0.165	0.796	M1	1.37	0.713	-0.166	0.003
Structural covariances constrained (M3)	12	6.78	< 0.001	0.866	0.883	0.122	0.092	0.153	0.824	M2	0.312	0.577	-0.028	0.001
Measurement residuals constrained (M4)	8	8.81	< 0.001	0.740	0.762	0.141	0.117	0.167	0.762	M3	51.48	< 0.001	0.060	0.127

The model fit indices indicated no significant differences between the countries, and pairwise parameter comparisons supported this.

Table A4
Model fits and comparisons for RT18.

Model fits and comparisons for	df	CMIN/DF	*p*	NFI	CFI	RMSEA			TLI	Model comparison	ΔCMIN	*p*	ΔTLI	ΔNFI
							10% CI	90% CI						
Unconstrained (M1)	71	3.73	< 0.001	0.457	0.525	0.087	0.082	0.093	0.463	–	–	–	–	–
Measurement weights constrained (M2)	55	3.86	< 0.001	0.406	0.473	0.089	0.084	0.095	0.438	M1	95.87	< 0.001	0.025	0.051
Structural covariances constrained (M3)	53	3.83	< 0.001	0.406	0.475	0.089	0.083	0.094	0.444	M2	0.059	0.971	-0.005	0.000
Measurement residuals constrained (M4)	36	4.08	< 0.001	0.330	0.395	0.093	0.087	0.098	0.395	M3	141.49	< 0.001	0.049	0.076

The model fit indices indicated a significant difference between the countries, which was supported by the pairwise parameter comparisons. For Item 1 = "I like to think about things for a long time before I make a decision", the loadings differed between the groups (UK B = -0.19, Spain B = 0.36). The same was true for Item 3 = "Do you mostly speak before thinking things out", with the UK parameter not being significant and the Spanish parameter significantly different from 0 (Spain B = 0.29). For Item 9 ("I like to think about things for a long time before I make a decision") and Item 10 ("I usually think about all the facts in detail before I make a decision"), loadings were higher for the UK sample (B = 0.79 and 0.76 respectively) compared to the Spanish sample (B = 0.45 and 0.55).

drinking motives, risk-taking and their combination mediated the links between age, gender and alcohol consumption (see Table 4).

Risk-taking alone mediated relationships between gender, age and consumption (both negatively overall), but also mediated relationships between gender, age, all three pre-drinking motives and consumption (in these cases with the same patterns shown for the direct paths of gender and age to consumption).

Facilitation mediated the relationship between gender and consumption (overall positive), whereas both conviviality and fun intoxication mediated the relationship between age and consumption.

There were fewer indirect mediated relationships in the UK sample. Risk-taking mediated the relationship between age and general alcohol consumption in the UK sample, with an overall negative relationship between age and consumption. This is in contrast to the positive direct relationship between age and consumption. The other paths mediated by risk-taking and conviviality were not significantly different from zero.

4. Discussion

This study examined predrinking motives, risk-taking and alcohol consumption in purposive samples drawn from Spain and the UK. It captures differences between the two settings, including elements familiar in existing literature (e.g., the link between consumption and risk taking: Stamates & Lau-Barraco, 2017). Simultaneously, differences between the models provide insights into the contrasting nature of drinking in both countries, and suggests that varied cultural positions occupied by alcohol and drinking settings shape the psychological drivers of predrinking behaviours. As such, findings highlight cross-cultural differences regarding predrinking motive endorsement and how they relate to potentially hazardous consumption and risk behaviour.

Table A5
Parameter *constraint comparisons relative to unconstrained model.*

df = 1	CMIN	*p*	ΔTLI	ΔNFI
Gender -> Risk taking	6.618	0.010	0.122	0.017
Age -> Risk taking	0.062	0.803	-0.145	0.000
Age -> Facilitation	7.509	0.006	0.158	0.019
Risk taking -> Fun Intoxication	14.496	< 0.001	0.443	0.038
Conviviality -> TLFB	0.738	0.390	-0.118	0.002
Facilitation -> TLFB	8.08	0.004	0.182	0.021
Risk taking -> TLFB	0.243	0.622	-0.138	0.001
Age -> TLFB	0.015	0.904	-0.147	0.000
Age -> Conviviality	2.997	0.083	-0.026	0.008
Age -> Fun Intoxication	12.428	< 0.001	0.359	0.032
Gender -> Fun Intoxication	0.391	0.532	-0.132	0.001
Gender -> Conviviality	1.018	0.313	-0.106	0.003
Gender -> Facilitation	22.718	< 0.001	0.779	0.059
Risk taking -> Conviviality	2.155	0.142	-0.06	0.006
Risk taking -> Facilitation	5.23	0.022	0.065	0.014
Fun Intoxication -> TLFB	0.001	0.974	-0.148	0.000
Gender -> TLFB	4.921	0.027	0.053	0.013
Gender (variance)	0.009	0.923	-0.148	0.000
Age (variance)	8.543	0.003	0.201	0.022
Fun Intoxication <-> Conviviality	59.64	< 0.001	2.285	0.155
Conviviality <-> Facilitation	17.746	< 0.001	0.576	0.046
Fun Intoxication <-> Facilitation	7.527	0.006	0.159	0.020
Risk taking (error)	0.119	0.73	-0.143	0.000
Fun Intoxication (error)	1.907	0.167	-0.07	0.005
Conviviality (error)	9.636	0.002	0.245	0.025
Facilitation (error)	0.566	0.452	-0.125	0.001
TLFB (error)	0.719	0.396	-0.119	0.002

Note. Significant differences and/or changes more than 0.01 in TLI indicate a significantly negative impact on model fit; non-significant change indicates no difference when constraining the parameter relative to leaving them unconstrained.

Consistent with previous work (Juan et al., 2011) and possibly reflective of the UK's more hedonistic drinking (Szmigin et al., 2008), levels of overall consumption were lower in the Spanish sample. Clearly, the small and purposive nature of our samples must be considered when interpreting these findings. However, these may be an indication that drinking patterns of Spanish young people (in particular women) cluster around lower levels of drinking while, in the UK, higher consumption is a more universal among young people. Conviviality and fun/intoxication predrinking motives had positive associations with consumption in both samples while facilitation motives had a negative direct association with drinking in the Spanish sample (and no association in the UK sample). Direct relationships between consumption and the desire to be convivial and to have fun point to the importance of social aspects in both cultures. The current study thereby contributes to the growing body of predrinking literature in non-English speaking countries and indicates that, although the association between risk taking and predrinking motives differs, the link between conviviality and fun/intoxication predrinking motives and alcohol consumption may be uniform across both national settings. This highlights the differences and similarities between the UK home-pub-club model and the Spanish botellón phenomena of larger social drinking (Barton & Husk, 2014; Espejo et al., 2012; Pedrero-García, 2018; Rodriguez-Martos, 2006).

Further evidencing variability, risk taking had a direct, positive association with consumption in the UK sample and a negative direct association in the Spanish sample. While there was support for previous research suggesting that trait risk taking may mediate the association between drinking motives and consumption (Curcio & George, 2011; Jones, Chryssanthakis, & Groom, 2014; Loxton, Bunker, Dingle, & Wong, 2015), cultural divergences were apparent. Here, risk taking had an indirect (positive) association with consumption via conviviality motives in both samples. Akin to previous research on sensation seeking (Cooper et al., 2000), it therefore appears that (higher) natural risk takers in both populations may be motivated by the social/convivial nature of pre drinking to enhance their current experience via alcohol. However, this was the only common mediatory relationship between the UK (which had no further mediatory links between risk taking, motives and consumption) and Spain. Specifically, risk taking was negatively associated with consumption via facilitation motives, and positively associated with consumption via fun intoxication pre drinking motives. It may therefore be that the Spanish culture of botellón manifests in more nuanced links between risk taking, predrinking motives and consumption. Further research is recommended to examine this notion.

Considering demographic influences, age was directly and negatively associated with general risk taking (RT-18) in both samples, in accordance with previous findings (Labhart et al., 2013; Zamboanga et al., 2011). Gender differences are some of the most striking in this study; whilst previous research suggests that men are more likely to report predrinking (Ferris et al., 2019; Juan et al., 2011), the current research points to a level of complexity not previously found. Specifically, being a man was associated with higher facilitation predrinking motives in Spanish respondents, supporting previous Swiss work (Labhart & Kuntsche, 2017), as well as being related with risk taking and personal alcohol-based risk behavior. Yet, in contrast, facilitation predrinking motives in the UK were higher among women respondents, while no other gender differences observed. This finding is striking as it suggests that gender-based differences in predrinking motives are not ubiquitously observed between the cultures. This finding may reflect the gendered predrinking experiences reported by Atkinson and Sumnall (2019), such that predrinking is conceptualised as an activity in its own right amongst males, while women report it as part of a wider collection of social activities. As such, the current findings suggest that predrinking behaviours should be understood in wider cultural spheres, sounding a cautionary note regarding the extent to which pathways between predrinking motives and problem consumption can be conceptualised homogeneously. Further work is required worldwide to explore such relationships.

Several limitations need to be borne in mind when considering current findings. First, as the study was cross-sectional, causality should not be inferred, and longitudinal inquiries of this nature are required. Two surveys in the paper (the RT-18 - de Haan et al., 2011 and the Predrinking Motives Questionnaire - Labhart & Kuntsche, 2017) were translated by the current authors. This was done using a back-translation procedure to allow the expediency of comparing the current samples, and whilst the limited difference between the samples supports this comparison, fully validated translations would provide greater assurance. The study also relied on self-report from limited sampling (one Spanish and one UK university). Future (e.g., observational) studies should seek to capture behavioral or real-time data (e.g., via the use of Ecological Momentary Assessment: Monk et al., 2015), to help allay concerns regarding demand characteristics or to minimise biases associated with recall. It would be useful for future studies to include fine-grained measures of alcohol consumption. Finally, whilst the current study represents a step towards considering cultural influences on predrinking by including an assessment of predrinking motives.

In conclusion, the current study sought to address a relative lack of research investigating the ways in which predrinking motives and demographic factors are associated with potentially problematic forms of alcohol consumption across cultural contexts. Findings suggest that whilst there are similarities regarding endorsements of predrinking motives, on some dimensions these vary between Spain and the UK. Predrinking motives also appear differentially associated with gender and age, risky behavior and alcohol consumption. Gender differences in facilitation predrinking motives, and the extent to which these were (in) directly related to consumption were also evident. Overall, by highlighting that cultural contexts shape predrinking motives and their association with problem consumption, the findings attest to the need for more cross-cultural investigations of predrinking.

5. Role of funding sources

No financial support was provided in the conduct of this research or

Table A6
Parameter estimates for UK and Spain models (final). Shaded rows for constrained parameters.

Path	UK		Spain	
	Unstandardised Estimate (S.E.)	**Standardised Estimate (CI)**	**Unstandardised Estimate (S.E.)**	**Standardised Estimate (CI)**
Gender → Risk-taking	-0.119 (0.531)	-0.017 (-0.122, 0.090)	−1.959 (0.454)	-0.271 (-0.353, -0.170)***
Age → Risk-taking	-0.254 (0.057)	-0.243 (-0.331, -0.160)***	-0.254 (0.057)	-0.191 (-0.270, -0.123)***
Age → Facilitation	0.202 (0.077)	0.200 (0.076, 0.312)**	-0.039 (0.071)	-0.033 (-0.112, 0.074)
Age → Conviviality	-0.238 (0.080)	-0.184 (-0.292, -0.079)**	-0.238 (0.080)	-0.122 (-0.212, -0.051)**
Age → Fun Intoxication	0.068 (0.143)	0.038 (-0.078, 0.169)	-0.560 (1.35)	-0.230 (-0.312, -0.105)***
Gender → Fun Intoxication	0.264 (0.574)	0.022 (-0.053, 0.099)	0.264 (0.574)	0.020 (-0.048, 0.092)
Gender → Conviviality	0.171 (0.452)	0.020 (-0.090, 0.103)	0.171 (0.452)	0.016 (-0.073, 0.090)
Gender → Facilitation	1.411 (0.505)	0.207 (0.061, 0.308)**	−1.597 (0.392)	-0.245 (-0.339, -0.106)***
Risk-taking → Fun Intoxication	-0.103 (0.137)	-0.060 (-0.213, 0.081)	0.550 (0.106)	0.300 (0.193, 0.392)***
Risk-taking → Conviviality	0.151 (0.069)	0.122 (0.032, 0.226)*	0.151 (0.069)	0.103 (0.027, 0.191)*
Risk-taking → Facilitation	-0.035 (0.074)	-0.036 (-0.179, 0.069)	0.149 (0.056)	0.165 (0.033, 0.258)**
Fun Intoxication -> Consumption	0.293 (0.118)	0.122 (0.053, 0.211)*	0.293 (0.118)	0.128 (0.053, 0.220)*
Conviviality -> Consumption	0.525 (0.159)	0.157 (0.091, 0.236)***	0.525 (0.159)	0.183 (0.101, 0.266)***
Facilitation-> Consumption	553 (0.327)	0.129 (-0.027, 0.249)	-0.899 (0.327)	-0.193 (-0.275, -0.074)**
Gender -> Consumption	-0.540 (2.191)	-0.019 (-0.146, 0.141)	−7.494 (1.959)	-0.246 (-0.359, -0.128)***
Risk taking -> Consumption	0.942 (0.207)	0.228 (0.128, 0.283)***	0.942 (0.207)	0.224 (0.131, 0.281)***
Age → Consumption	0.505 (0.243)	0.117 (0.021, 0.210)*	0.505 (0.243)	0.091 (0.025, 0.163)*
Covariances	**Unstandardised Estimate (S.E.)**	**Standardised Estimate**	**Unstandardised Estimate (S.E.)**	**Standardised Estimate**
Fun Intoxication ↔ Conviviality	−4.179 (1.790)	-0.181 (-0.335, 0.044)*	15.923 (1.947)	0.557 (0.468, 0.625)***
Conviviality ↔ Facilitation	0.945 (0.968)	0.076 (-0.070, 0.168)	6.935 (1.058)	0.478 (0.383, 0.560)***
Fun Intoxication ↔ Facilitation	1.112 (1.380)	0.063 (-0.123, 0.201)	5.527 (1.125)	0.330 (0.248, 0.424)***
Variances	**Unstandardised Estimate (S.E.)**		**Unstandardised Estimate (S.E.)**	
Gender	0.225 (0.016)***		0.225 (0.016)***	
Age	10.214 (1.124)***		6.710 (0.631)***	
Risk taking	10.500 (0.751)***		10.500 (0.751)***	
Fun Intoxication	32.974 (2.358)***		32.974 (2.358)***	
Conviviality	16.128 (1.174)***		24.759 (2.282)***	
Facilitation	9.544 (1.050)***		8.518 (0.800)***	
Consumption	170.938 (12.225)***		170.938 (12.225)***	
Squared Multiple Correlations	**Estimate**		**Estimate**	
Risk taking	0.059		0.110	
Facilitation	0.088		0.112	
Conviviality	0.060		0.030	
Fun Intoxication	0.007		0.167	
Consumption	0.107		0.181	

* $p < .05$, ** $p < .01$, *** $p < .001$.

preparation of the manuscript.

6. Contributors

The authors wish to share credit equally for all facets of this work amongst all co-authors. All authors have approved the final manuscript.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix A

As the pre-drinking motives were included as separate variables in the models, they were tested for measurement invariance individually. YACQ (consequences of drinking alcohol) and RT18 (Risk taking) were also tested. Pairwise parameter comparisons which indicate the critical ratio for differences between the parameters (values over ± 1.96 indicate significant differences between groups) were used to assess differences in individual parameters. Model comparisons were based on chi-square differences (testing if adding constraints significantly (and negatively) impacted the model fit, or if there was no significant difference) and changes in Tucker-Lewis Index (TLI; < 0.01 indicated no significant impact in adding constraints) (See Tables A1–A6).

References

(BPS), B. P. S. (2009). *Code of ethics and conduct.* Retrieved 21st December 2022 from https://www.bps.org.uk/guideline/code-ethics-and-conduct. British Psychological Society.

(BPS), B. P. S. (2014). *Code of human research ethics*. BPS. Retrieved 21st December from https://www.bps.org.uk/.../bps-code-human-research-ethics-2nd-edition-2014. British Psychological Society.

Atkinson, A. M., & Sumnall, H. (2019). 'Isn't it mostly girls that do pre-drinks really?' Young men and women's accounts of pre-loading in the UK. *Drugs, 26*(1), 60–69.

Bachrach, R. L., Merrill, J. E., Bytschkow, K. M., & Read, J. P. (2012). Development and initial validation of a measure of motives for pregaming in college students. *Addictive Behaviors, 37*(9), 1038.

Barton, A., & Husk, K. (2014). "I don't really like the pub [...]": Reflections on young people and pre-loading alcohol. *Drugs and Alcohol Today, 14*(2), 58–66. https://doi.org/10.1108/DAT-12-2013-0055

Bresin, K., & Mekawi, Y. (2021). The "why" of drinking matters: A meta-analysis of the association between drinking motives and drinking outcomes. *Alcoholism: Clinical and Experimental Research, 45*(1), 38–50. https://doi.org/10.1111/acer.14518

Calafat, A., Juan, M., Becoña, E., Castillo, A., Fernández, C., Franco, M., Pereiro, C., & Ros, M. (2005). El consumo de alcohol en la lógica del botellón. *Adicciones, 17*(3), 193–202. https://doi.org/10.20882/adicciones.368

Caudwell, K. M., & Hagger, M. S. (2014). Pre-drinking and alcohol-related harm in undergraduates: The influence of explicit motives and implicit alcohol identity. *Journal of Behavioral Medicine, 37*(6), 1252–1262. https://doi.org/10.1007/s10865-014-9573-6

Cooper, M. L., Agocha, V. B., & Sheldon, M. S. (2000). A motivational perspective on risky behaviors: The role of personality and affect regulatory processes. *Journal of personality, 68*(6), 1059–1088. https://doi.org/10.1111/1467-6494.00126

Corp, I. B. M. (2017). *IBM SPSS Statistics for Windows, Version 25.0*. Armonk, NY: IBM Corp.

Curcio, A. L., & George, A. M. (2011). Selected impulsivity facets with alcohol use/problems: The mediating role of drinking motives. *Addictive Behaviors, 36*(10), 959–964. https://doi.org/10.1016/j.addbeh.2011.05.007

de Haan, L., Kuipers, E., Kuerten, Y., van Laar, M., Olivier, B., & Verster, J. C. (2011). The RT-18: A new screening tool to assess young adult risk-taking behavior. *International Journal of General Medicine, 4*, 575–584. https://doi.org/10.2147/IJGM.S23603

Erskine-Shaw, M., Monk, R. L., Qureshi, A. W., & Heim, D. (2017). The influence of groups and alcohol consumption on individual risk-taking. *Drug and Alcohol Dependence, 179*, 341–346. https://doi.org/10.1016/j.drugalcdep.2017.07.032

Erskine-Shaw, M., Monk, R. L., Qureshi, A. W., Richardson, M., Pearson, L., & Heim, D. (2022). The shuffleboard game: Investigating group drinking, mood, and risky behavior. *Group Dynamics: Theory, Research, and Practice*. https://doi.org/10.1037/gdn0000181

Espejo, B., Cortés, M. T., del Río, B. M., Giménez, J. A., & Gómez, C. (2012). Traits that define the different alcohol intensive consume type during the practice of "botellon". *The Spanish Journal of Psychology, 15*(1), 256–264.

Ferris, J., Puljević, C., Labhart, F., Winstock, A., & Kuntsche, E. (2019). The Role of Sex and Age on Pre-drinking: An Exploratory International Comparison of 27 Countries. *Alcohol and Alcoholism (Oxford, Oxfordshire), 54*(4), 378–385. https://doi.org/10.1093/alcalc/agz040

Foster, J. H., & Ferguson, C. (2014). Alcohol 'Pre-loading': A Review of the Literature. *Alcohol and Alcoholism, 49*, 213–226. https://doi.org/10.1093/alcalc/agt135

Gordon, R., Heim, D., & MacAskill, S. (2012). Rethinking drinking cultures: A review of drinking cultures and a reconstructed dimensional approach. *Public Health, 126*(1), 3–11. https://doi.org/10.1016/j.puhe.2011.09.014

Heim, D., Hunter, S. C., Ross, A. J., Bakshi, N., Davies, J. B., Flatley, K. J., & Meer, N. (2004). Alcohol consumption, perceptions of community responses and attitudes to service provision: Results from a survey of Indian, Chinese and Pakistani young people in Greater Glasgow, Scotland, UK. *Alcohol and Alcoholism, 39*(3), 220–226. https://doi.org/10.1093/alcalc/agh042

Heim, D., Monk, R. L., & Qureshi, A. W. (2021). An examination of the extent to which drinking motives and problem alcohol consumption vary as a function of deprivation, gender and age. *Drug and Alcohol Review, 40*(5), 817–825.

Hughes, K., Anderson, Z., Morleo, M., & Bellis, M. A. (2008). Alcohol, nightlife and violence: The relative contributions of drinking before and during nights out to negative health and criminal justice outcomes. *Addiction, 103*(1), 60–65. https://doi.org/10.1111/j.1360-0443.2007.02030.x

Ito, T. A., Miller, N., & Pollock, V. E. (1996). Alcohol and aggression: A meta-analysis on the moderating effects of inhibitory cues, triggering events, and self-focused attention. *Psychological Bulletin, 120*(1), 60–82.

Jones, K. A., Chryssanthakis, A., & Groom, M. J. (2014). Impulsivity and drinking motives predict problem behaviours relating to alcohol use in university students. *Addictive Behaviors, 39*(1), 289–296. https://doi.org/10.1016/j.addbeh.2013.10.024

Jackson, C., & Tinkler, P. (2007). 'Ladettes' and 'Modern Girls': 'troublesome' young femininities. *The Sociological Review, 55*(2), 251–272. https://doi.org/10.1111/j.1467-954X.2007.00704.x

Juan, M., van Hasselt, N., Hughes, K., Bellis, M., Quigg, Z., Voorham, L., … Calafat, A. (2011). Drinking behaviours and blood alcohol concentration in four European drinking environments: A cross-sectional study. *BMC Public Health, 11*(1), 1–11.

Kuntsche, E., Knibbe, R., Gmel, G., & Engels, R. (2006). Who drinks and why? A review of socio-demographic, personality, and contextual issues behind the drinking motives in young people. *Addictive Behaviors, 31*(10), 1844.

Kuntsche, E., Stewart, S. H., & Cooper, M. L. (2008). How stable is the motive-alcohol use link? A cross-national validation of the Drinking Motives Questionnaire Revised among adolescents from Switzerland, Canada, and the United States. *Journal of Studies on Alcohol and Drugs, 69*(3), 388–396.

Kuntsche, E., Wicki, M., Windlin, B., Roberts, C., Gabhainn, S. N., van der Sluijs, W., … Demetrovics, Z. (2015). Drinking motives mediate cultural differences but not gender differences in adolescent alcohol use. *The Journal of Adolescent Health, 56*(3), 323–329. https://doi.org/10.1016/j.jadohealth.2014.10.267

Labhart, F., Ferris, J., Winstock, A., & Kuntsche, E. (2017). The country-level effects of drinking, heavy drinking and drink prices on pre-drinking: An international comparison of 25 countries. *Drug and Alcohol Review, 36*(6), 742–750.

Labhart, F., Graham, K., Wells, S., & Kuntsche, E. (2013). Drinking before going to licensed premises: An event-level analysis of predrinking, alcohol consumption, and adverse outcomes. *Alcoholism, 37*(2), 284–291. https://doi.org/10.1111/j.1530-0277.2012.01872.x

Labhart, F., & Kuntsche, E. (2017). Development and validation of the predrinking motives questionnaire. *Journal of Applied Social Psychology, 47*(3), 136–147. https://doi.org/10.1111/jasp.12419

LaBrie, J. W., Hummer, J. F., Pedersen, E. R., Lac, A., & Chithambo, T. (2012). Measuring college students' motives behind prepartying drinking: Development and validation of the prepartying motivations inventory. *Addictive Behaviors, 37*(8), 962.

Leifman, H. K. (2001). Homogenisation in alcohol consumption in the European Union. *Nordic Studies on Alcohol and Drugs, 18*, 15–30. https://doi.org/10.1177/145507250101801S06

Levine, M., Lowe, R., Best, R., & Heim, D. (2012). 'We police it ourselves': Group processes in the escalation and regulation of violence in the night-time economy. *European Journal of Social Psychology, 42*(7), 924–932. https://doi.org/10.1002/ejsp.1905

Loxton, N. J., Bunker, R. J., Dingle, G. A., & Wong, V. (2015). Drinking not thinking: A prospective study of personality traits and drinking motives on alcohol consumption across the first year of university. *Personality and Individual Differences, 79*, 134–139. https://doi.org/10.1016/j.paid.2015.02.010

Miller, P., Droste, N., de Groot, F., Palmer, D., Tindall, J., Busija, L., … Wiggers, J. (2016). Correlates and motives of pre-drinking with intoxication and harm around licensed venues in two cities. *Drug and Alcohol Review, 35*(2), 177–186. https://doi.org/10.1111/dar.12274

Monk, R. L., Heim, D., Qureshi, A., & Price, A. (2015). "I have no clue what I drunk last night" using Smartphone technology to compare in-vivo and retrospective self-reports of alcohol consumption. *PloS One, 10*(5), e0126209.

Németh, Z. F., Kuntsche, E., Urbán, R. B., Farkas, J., & Demetrovics, Z. (2011). Why do festival goers drink? Assessment of drinking motives using the DMQ-R SF in a recreational setting. *Drug and Alcohol Review, 30*(1), 40–46. https://doi.org/10.1111/j.1465-3362.2010.00193.x

Niland, P., Lyons, A. C., Goodwin, I., & Hutton, F. (2013). "Everyone can loosen up and get a bit of a buzz on": Young adults, alcohol and friendship practices. *The International Journal on Drug Policy, 24*(6), 530. https://doi.org/10.1016/j.drugpo.2013.05.013

O'Rourke, S., Ferris, J., & Devaney, M. (2016). Beyond pre-loading: Understanding the associations between pre-, side- and back-loading drinking behavior and risky drinking. *Addictive Behaviors, 53*, 146–154. https://doi.org/10.1016/j.addbeh.2015.07.008

Ostergaard, J., & Andrade, S. B. (2014). Who are the young adult Danish pre-drinkers, and why do they pre-drink before a night out? *Scandinavian Journal of Public Health, 42*(4), 349–357. https://doi.org/10.1177/1403494814523344

Pedrero-García, E. N. (2018). Nightlife and Alcohol Consumption Among Youths: The Botellón Phenomenon in Spain. *SAGE Open, 8*(3). https://doi.org/10.1177/2158244018800903

Pilatti, A., & Read, J. P. (2018). Development and psychometric evaluation of a new measure to assess pregaming motives in Spanish-speaking young adults. *Addictive Behaviors, 81*, 134.

Rehm, J., Shield, K. D., Joharchi, N., & Shuper, P. A. (2012). Alcohol consumption and the intention to engage in unprotected sex: Systematic review and meta-analysis of experimental studies. *Addiction, 107*(1), 51–59.

Riordan, B. C., Conner, T. S., Flett, J. A. M., Droste, N., Cody, L., Brookie, K. L., … Scarf, D. (2018). An intercept study to measure the extent to which New Zealand university students pre-game. *Australian and New Zealand Journal of Public Health, 42*(1), 30–34.

Rodriguez-Martos, A. (2006). The Spanish "Botellón", A Particular Way of Bingeing. *Nordic Studies on Alcohol and Drugs, 23*(1_suppl), 137–142. https://doi.org/10.1177/145507250602301S15

Room, R., Babor, T., & Rehm, J. (2005). Alcohol and public health. *The Lancet, 365*(9458), 519–530. https://doi.org/10.1016/S0140-6736(05)17870-2

Room, R., & Makela, K. (2000). Typologies of the cultural position of drinking. *Journal of Studies on Alcohol, 61*(3), 475–483.

Santos, M. G., Paes, A. T., Sanudo, A., & Sanchez, Z. M. (2015). Factors associated with pre-drinking among nightclub patrons in the city of São Paulo. *Alcohol and Alcoholism (Oxford, Oxfordshire), 50*(1), 95–102. https://doi.org/10.1093/alcalc/agu055

Smit, K., Kuntsche, E., Anderson-Luxford, D., & Labhart, F. (2021). Fun/intoxication pre-drinking motives lead indirectly to more alcohol-related consequences via increased alcohol consumption on a given night. *Addictive Behaviors, 114*, Article 106749. https://doi.org/10.1016/j.addbeh.2020.106749

Sobell, L. C., Agrawal, S., Annis, H., Ayala-Velazquez, H., Echeverria, L., Leo, G. I., … Ziółkowski, M. (2001). Cross-cultural evaluation of two drinking assessment instruments: Alcohol timeline followback and inventory of drinking situations. *Substance Use & Misuse, 36*(3), 313–331.

Sobell, M. B., & Sobell, L. C. (1992). Timeline Followback: A technique for assessing self-reported alcohol consumption. In R. Z. Litten, & J. Allen (Eds.), *Measuring alcohol consumption: Psychosocial and biological methods* (pp. 41–72). Humana Press.

Stamates, A. L., & Lau-Barraco, C. (2017). Impulsivity and risk-taking as predictors of alcohol use patterns and alcohol related-problems. *Addiction Research & Theory, 25*(5), 390–396.

Szmigin, I., Griffin, C., Mistral, W., Bengry-Howell, A., Weale, L., & Hackley, C. (2008). Re-framing 'binge drinking' as calculated hedonism: Empirical evidence from the UK. *International Journal of Drug Policy, 19*(5), 359–366. https://doi.org/10.1016/j.drugpo.2007.08.009

Tabachnick, B. G., & Fidell, L. S. (2001). Principal components and factor analysis. *Using Multivariate Statistics, 4*(1), 582–633.

Taylor, B., Irving, H. M., Kanteres, F., Room, R., Borges, G., Cherpitel, C., … Rehm, J. (2010). The more you drink, the harder you fall: A systematic review and meta-analysis of how acute alcohol consumption and injury or collision risk increase together. *Drug and Alcohol Dependence, 110*(1–2), 108–116. https://doi.org/10.1016/j.drugalcdep.2010.02.011

Wahl, S., Sonntag, T., Roehrig, J., Kriston, L., & Berner, M. M. (2013). Characteristics of predrinking and associated risks: A survey in a sample of German high school students. *International Journal of Public Health, 58*(2), 197–205. https://doi.org/10.1007/s00038-012-0409-2

Wells, S., Dumas, T. M., Bernards, S., Kuntsche, E., Labhart, F., & Graham, K. (2015). Predrinking, alcohol use, and breath alcohol concentration: A study of young adult bargoers. *Psychology of Addictive Behaviors, 29*(3), 683–689. https://doi.org/10.1037/adb0000065

Wilson, J., Ogeil, R. P., Lam, T., Lenton, S., Lloyd, B., Burns, L., … Allsop, S. (2018). Re-thinking pre-drinking: Implications from a sample of teenagers who drink in private settings. *The International Journal on Drug Policy, 52*, 20.

Zamboanga, B. L., Borsari, B., Ham, L. S., Olthuis, J. V., Van Tyne, K., & Casner, H. G. (2011). Pregaming in high school students: Relevance to risky drinking practices, alcohol cognitions, and the social drinking context. *Psychology of addictive behaviors : Journal of the Society of Psychologists in Addictive Behaviors, 25*(2), 340–345. https://doi.org/10.1037/a0022252