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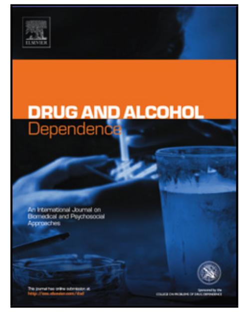

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The influence of groups and alcohol consumption on individual risk-taking

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Highlights

- Examined the effects of alcohol on risk-taking, in isolated or group contexts.
- Individuals are more likely to take risks when in groups.
- Alcohol consumption does not affect individual risk-taking.
- There is no difference in risk-taking between intoxicated and sober groups.

Abstract

Background: Research addressing the influence of alcohol and groups on risky behaviour has yielded contradictory findings regarding the extent to which intoxicated groups exaggerate or minimise risk-taking. Previous work has examined the effect of intoxication on risk-taking focusing on collective group decision-making, and to date the influence of alcohol consumption and groups on individual risk-taking has yet to be explored experimentally. The current study therefore examined the impact of intoxication and groups on individual risk-taking.

Methods: In a mixed design, 99 social drinkers (62 female) attended an experimental session individually (N = 48) or in groups of three (N = 51). Individuals completed the study in isolation while groups were tested in the same room. Participants completed two behavioural measures of risk-taking: Balloon Analogue Risk Task (BART) and Stoplight Task (SLT), both before and following consumption of an alcoholic (0.6g/kg males, 0.5g/kg females) or a placebo beverage.

Results: Those who participated in groups took significantly more risks in both tasks than those in isolation. Alcohol did not increase risk-taking on either risk-taking tasks. However, those who consumed placebo were significantly less risky on the SLT, compared to baseline. No interactions were found between context and beverage on risk-taking.

Conclusion: The findings do not support a combined effect of alcohol and groups on individual risk-taking. Rather, results indicate that risk-taking behaviour is influenced by peer presence regardless of alcohol consumption. Targeting the influence of groups (above those of alcohol) may hold promise for reducing risk-taking behaviours in drinking environments.

Keywords: alcohol, social, groups, context, risk-taking

1. Introduction

Alcohol is a social lubricant and forms the basis of a variety of social celebrations, cultural and religious events (Gordon et al., 2012). However, in addition to well-documented adverse impacts on health and well-being (World Health Organisation et al., 2014), research suggests that alcohol consumption can be associated with a variety of potentially harmful risky behaviours, including aggression (Ito et al., 1996), drunk-driving (Taylor et al., 2010), and sexual risk-taking (Rehm et al., 2012). Given that alcohol is frequently consumed in groups, it is noteworthy that much alcohol-related risk-taking research has been conducted on individuals in isolated contexts. While research into the impact of social contexts on alcohol-induced risk has begun to address this shortcoming, findings to date are inconsistent (Abrams et al., 2006; Sayette et al., 2012), and more research is needed to better understand how social contexts and alcohol consumption interact to shape risky behaviours. A fuller account of how the psychopharmacological effects of alcohol are shaped by different social settings to impact risk-taking behaviours may also be important for informing interventions that are sensitive to the different contexts in which people become intoxicated.

In a rare exception to the dearth of research examining alcohol-induced risk taking in social contexts, Sayette et al. (2012) found that intoxicated groups made riskier decisions than sober groups. However, they found that risky choices did not differ between sober and intoxicated individuals when the risk-taking decisions were made in isolation. This research therefore points to a negative impact of social influences on alcohol-induced risk-taking, whereby alcohol consumption may only enhance risk-taking behaviour within groups. In contrast, Abrams et al. (2006) and Hopthrow et al. (2014) found that the extent to which group members were attracted to risk appeared either not to differ (Abrams et al., 2006) or was lesser (Hopthrow et al., 2014) as a function of intoxication, whereas those in socially isolated contexts appeared more risk-taking following alcohol consumption. This work therefore suggests a protective effect of groups on risk-taking associated with alcohol consumption.

Addressing these inconsistent findings, it is worthwhile to consider methodological differences regarding the contexts in which beverages were consumed between studies. Sayette et al. (2012) consistently administered beverages in groups, subsequently extricating some group members for individual assessment of decision-making. On the other hand, Abrams et al. (2006) kept testing contexts consistent throughout the study, with participants who completed the risk task alone also consuming their beverages in isolation, compared to groups who both drank and completed the task with peers. The varied drinking contexts utilised in these studies may help explain the inconsistent findings, as participants may respond differently following social drinking (Sayette et al., 2012), compared to drinking in isolation (Abrams et al., 2006).

In addition to the methodological differences between these studies, it is also important to distinguish between collective group risk-taking and group influence on individual risk-taking. Both Abrams et al. (2006) and Sayette et al. (2012) examined group risk-taking as one collective decision within the group, as opposed to group member's personal decisions. Notably, Frings et al. (2008) found intoxication to increase vigilance errors in individuals, whereas errors made in groups (collectively and privately by group members) remained unaffected by alcohol consumption. However, vigilance errors did appear to differ depending on whether group members made their judgements privately, or collectively. Here, collective group decisions were found to be less erroneous. Moreover, risk preferences appear to be influenced by the presence of peers to a greater extent when tasks are discussed with the group, in contrast to when group members complete tasks independently (Centifanti et al., 2016). This highlights the necessity to distinguish between collective group decisions, and individual decisions within a group. To our knowledge, group influence on individual risk-taking has not yet been examined experimentally in intoxicated groups. The impact of social drinking on individual, as opposed to collective (group), risk-taking therefore remains unclear.

Theoretically, the impact of peer presence and alcohol on risk taking behaviours may be explained via cognitive and social influence frameworks such as the alcohol myopia model (AMM; Steele and Josephs, 1990) and perceived norms (Bosari and Carey, 2001). AMM postulates that the pharmacological effects of alcohol narrow an individual's attention to the most salient cues, thereby constricting individuals' focus. This is seen to impede attempts at evaluating systematically a given situation (Steele and Josephs, 1990), resulting in increases in risky behaviour (Lane et al., 2004; Rose et al., 2014). Furthermore, in social contexts the saliency of group membership may result in an alcohol-related focal narrowing of attention towards peers (Hopthrow et al., 2007), leading to subsequent behaviour to be driven by, and evaluated in light of, peer approval.

Beliefs regarding the alcohol consumption behaviours of one's social group may also be an important determinant of alcohol-related behaviours (Bosari and Carey, 2001). For instance, young adults and students in social groups often overestimate their peers' risky drinking behaviour (Martens et al., 2006). In turn, this (mis)perception has been suggested to predict behaviour as individuals attempt to match their conduct to the perceived norm (Crawford and Novak, 2010; Kenney et al., 2013; Martens et al., 2006). In social contexts, alcohol-related increases in attention to one's peers may thereby lead to norm-driven heightened risky drinking behaviour.

In summary, it may be suggested that the effects of alcohol are likely to enhance risky behaviour due to pharmacologically-driven myopia impairing systematic evaluation of consequences. In social contexts, a narrowed focus may be directed towards peers, influencing behaviour in line with perceived group norms, which may overestimate peer engagement in risky drinking behaviour (Kenney et al., 2013; Martens et al., 2006). The effect of alcohol consumption on individual risk-taking might therefore be expected to be exaggerated in the presence of peers.

The current study, therefore, aimed to investigate the influence of group context, specifically peer presence, and alcohol consumption on individual risk-taking behaviour. We examined risk-taking behaviour both before and after consumption of 0.5-0.6g/kg alcohol or a placebo, across two varying contexts (a group or an isolated context). The study investigated both the independent and combined effects of groups and alcohol consumption on individual risk-taking. It was expected that (a) alcohol and (b) group context will increase individual risk-taking behaviour. Additionally, we hypothesised that (c) the combination of both alcohol consumption and group context would elevate risk-taking behaviour further.

2. Method

2.1. Design

A 2 (context: group or isolation) x 2 (beverage: alcohol or placebo) mixed design was used. Risk-taking behaviour was a repeated variable, due to measurement before and following beverages.

2.2. Participants

A total of 99 social drinkers (62 female, *M* age = 20.71, *SD* = 4.34) were recruited by opportunity sampling at a UK University. Recruitment was facilitated by online and campus advertisements, as well as via an online participation pool (SONA). Participants signed up to the study either individually or as a group of three (to recruit natural friendship groups). The gender of group members was recorded due to the possibility of gender composition in group contexts impacting risk-taking behaviours (Hannagan and Larimer, 2010; Karakowsky and Elangovan, 2001). Six same sex groups (four female) and 11 mixed sex groups (six female-dominated) took part in this study. Participation requirements were that volunteers reported drinking alcohol with others at least once per month and were not pregnant, trying to reduce their alcohol use, or had any history of alcohol-related issues.

2.3. Materials and Measures

2.3.1. Beverage Administration. The methods utilised for beverage administration were adapted from previous studies (Abrams et al., 2006; Rose and Duka, 2006). Using a single blind procedure, participants were randomly assigned to one of two beverage conditions: alcohol or placebo. Prior to consumption, participants were asked to eat a strong-tasting lozenge (Fisherman's Friend) to mask the taste of the beverages. The alcoholic beverage contained 0.5g/kg (females) or 0.6g/kg (males) of alcohol (vodka), mixed with equal parts of orange juice and tonic water. For the placebo condition, participants were administered equal parts of orange juice and tonic water with a vodka mist sprayed over and on to the rim of the glasses. Beverages were divided between three glasses which participants consumed the contents within 10 minutes.

2.3.2. Self-Report Measures.

Medical Screening was conducted in line with the national institute on alcohol abuse and alcoholism (NIAAA) guidelines for alcohol administration. The screening assessed current health status and medications, risk of alcohol-related problems, and previous issues regarding alcohol intake.

Alcohol Use Disorder Identification Test (AUDIT) (Saunders et al., 1993) consists of 10 questions, which identifies harmful and hazardous alcohol use. The measure has high internal consistency (Cronbach's α = .82) (Shields et al., 2004)

RT-18 (de Haan et al., 2011) consists of 18 questions measuring risk-taking behaviour. The RT-18 shows high internal consistency when used in young adult social drinkers (Cronbach's α = .80) (de Haan et al., 2011). The RT-18 has been implicated in predicting alcohol consumption behaviours (de Haan et al., 2015; Stamates and Lau-Barraco, 2017) and it was therefore assessed to ascertain any group level differences in trait risk-taking.

Subjective Intoxication Visual Analogue Scales (SI VAS***)*** are 100mm long with anchors of 'not at all' (0mm) and 'extremely' (100mm). Questions included intoxicated and sober statements (subjective intoxication).

2.3.3. Behavioural Measures of Risk-Taking.

Balloon Analogue Risk Task (BART) (Lejuez et al., 2002) is a computerised task where participants are instructed to pump up a balloon to earn points, over one practice and 30 test trials. More points are awarded the more the balloon inflates. Participants are informed that the balloon may burst at any time resulting in the loss of points earned and they must therefore choose when to stop inflating the balloon and bank the points earned. In line with previous research (Fernie et al., 2010; Rose et al., 2014), the average number of pumps for successful trials were recorded, with more pumps indicating riskier behaviour. The BART has found to be sensitive to an alcohol dose of 0.6g/kg, 20 minutes post-consumption (Rose et al., 2014), and has been successfully utilised in a number of studies examining the impact of social context on risk-taking behaviour (McCoy and Natsuaki, 2011; Reniers et al., 2016).

Stoplight Task (SLT) (Chein et al., 2011) is a computerised driving task in which participants are given the goal of reaching a radio station in the quickest time possible, crossing 32 intersections. Participants are informed that at each intersection, they will see a stoplight turn from green to amber to red, and are required to make the decision to stop the car (incurring a three second wait), or to continue through the intersection (risking a collision which would result in a six second wait, whilst there would be no penalty incursion if a collision is avoided). Participants were required to view a demo of the task before commencing the full SLT, which talked them through instructions and provided examples of the actions they could choose, and possible outcomes. The timing of traffic signals and probability of a crash was varied, to ensure that participants cannot predict future intersections (as in Chein et al., 2011). Risky behaviour was measured by the proportion of times participants continue through, regardless of whether this results in success or a crash. To our knowledge, the SLT has not yet been used in alcohol administration studies. However, it has been successfully used as a measure of risk-taking, and has appeared to be sensitive to the presence of peers (Albert et al., 2013; Chein et al., 2011).

2.4. Procedure

Following ethical approval, potential participants were required to complete a screening (medical questionnaire and AUDIT) and supply written informed consent before participation. Following this, an experimental session was scheduled and participants were asked to refrain from eating for three hours and from consuming alcohol for 12 hours prior to participation. Testing took place Monday-Friday after 12pm and was carried out in individual or group testing laboratories (identical in terms of décor and noise), depending on context condition. Participants arrived at the session individually or with their natural friendship group and were breathalysed using the Lion Alcolmeter® 400, to ensure a BrAC of 0.00mg/l prior to testing. On commencement of the study, participants were asked to individually complete the RT-18 and SI VAS. Additionally, those who participated in groups were required to complete two questions confirming whether they were friends or acquaintances, and how often they drink alcohol with the other members of their group (never, occasionally or frequently). Participants then completed the BART and SLT (counterbalanced). In the group condition, participants were seated next to each other whilst performing these tasks individually to obtain their own individual risk-taking score. They were permitted to communicate with one another during the tasks to imitate a social environment, but were requested to not discuss the tasks or any element of the study.

Immediately after completion of the risk tasks, participants were asked to consume either alcoholic or placebo beverages. Following this, a 20-minute rest period was given to ensure testing took place on the ascending limb of the blood alcohol curve (Rose and Duka, 2006). Participants were then breathalysed before completing the SI VAS. A fake breathalyser score of between 0.35-0.40mg/l was recorded for those in the placebo condition. Such scores mimic those from previous research examining BrAC 20 minutes following consumption of 0.5-6g/kg of alcohol. (Rose et al., 2014; Veldstra et al., 2012) and were provided to strengthen the belief that alcohol had been consumed for those who were given a placebo. Participants then completed the BART and SLT for a second time. Finally, participants were debriefed and breathalysed. Participants with BrAC scores above 0.14mg/l were asked to stay within the laboratory. Those that expressed a need to leave were required to sign a disclaimer.

3. Results

3.1. Preliminary Analyses and Placebo Manipulation Checks

3.1.1 Participant Characteristics. Preliminary analyses revealed that participants did not differ in terms of age or gender between beverage or context conditions (p > .05). Participants did however, have significantly higher AUDIT scores in the alcohol beverage condition (M = 12.09, SD = 4.99), compared to placebo (M = 9.98, SD = 4.47), F (1,95) = 4.62, p = .03, η_p^2 = .04. RT-18 scores also differed significantly across conditions, as those tested within groups had significantly higher trait risk-taking scores (M = 10.18, SD = 3.66) compared to those tested in isolation (M = 8.40, SD = 3.88), F (1,95) = 5.29, p = .02, η_p^2 = .05. All participants tested in groups (N = 51) reported being friends, opposed to acquaintances, and confirmed that they engage in social drinking with their group members either occasionally (41%, N = 21) or regularly (59%, N = 30). For further descriptive statistics by condition, see Table 1.

3.1.1.1 Gender Composition and Risk-Taking: A 4 (gender: male, female, male mixed or female mixed) X 2 (beverage: alcohol or placebo) X 2 (time: pre- and post-beverage) repeated measures ANCOVA was conducted, controlling for AUDIT and RT-18 scores.

Analysis did not reveal a significant main effect of group gender composition on risk-taking behaviour via the BART, *F* (1,41) = 2.47, *p* = .076, η_p^2 = .16, or the SLT, *F* (1,41) = .83, *p* = .49, η_p^2 = .06. Further there was no interaction of group gender composition and beverage on the BART, *F* (1,41) = .36, *p* = .78, η_p^2 = .03, or the SLT, *F* (1,41) = 2.28, *p* = .09, η_p^2 = .14.

3.1.1.2 BrAC and Placebo Manipulation Checks: Participants were breathalysed 20 minutes following alcohol consumption, indicating a mean BrAC of .33mg/l (*SD* = .11). Subjective intoxication increased significantly from baseline for both participants that had consumed alcohol, *t* (49) = 11.76, *p* < .001, *d* = 2.31, and placebo, *t* (48) = 6.56, *p* < .001, *d* = 1.32. Further, participants who had consumed alcohol (*M* = 50.38, *SD* = 29.55) reported significantly higher intoxication 20 minutes' post-beverage than those who consumed placebo (*M* = 31.58, *SD* = 31.99), *t* (97) = 3.04, *p* = .003, *d* = .61.

3.2. Analytic Strategy: Main Analysis

A series of 2 (context: group or isolation) x 2 (beverage: alcohol or placebo) x 2 (time: pre- and post-beverage) mixed ANCOVAs were conducted, for BART and SLT, whilst controlling for condition variations identified with alcohol consumption (AUDIT) and trait risk-taking (RT-18). BART and SLT were measured twice: time one at baseline and time two at 20 minutes' post-beverage. Time was therefore the only repeated measure variable. To determine an effect of beverage, an interaction of time and beverage were examined. A further 2 (context) x 2 (beverage) x 3 (BART block: repeated variable) mixed ANCOVA analysis was conducted by splitting the post-beverage BART trials into 3 blocks: trials (1) 1-10, (2) 11-20, and (3) 21-30. The aim was to examine any change in risky behaviour during the task, based on beverage consumed (as found in Euser et al., 2011), and testing context.

3.2.1. Behavioural Risk-Taking: Context and Beverage.

3.2.1.1 BART: A significant main effect of context revealed that risk-taking behaviour was significantly higher when participants were tested within groups rather than in isolation, *F* (1,93) = 3.94, *p* = .05, η_p^2 = .04 (see Figure 1). No significant interactions were found ($p \geq .24$). Additionally, no differences were revealed based on block (*p* = .31), and no interactions of context and/or beverage, and block were discovered ($p \geq .26$).

3.2.1.2 SLT: A significant main effect of context revealed that risk-taking was significantly higher among those tested within groups as opposed to those tested in isolation, *F* (1,93) = 7.69, *p* = .007, η_p^2 = .08 (see Figure 1). Further, an interaction between time and beverage on SLT performance was found, *F* (1,93) = 4.78, *p* = .03, η_p^2 = .05. Simple main effects revealed that participants were significantly less risky on the SLT after consuming a placebo beverage compared to baseline risk-taking, *F* (1,93) = 22.96, $p < .001$, η_p^2 = .20. However, there was no significant difference between time one and time two of SLT performance when alcohol was consumed, *F* (1,93) = 2.86, *p* = .09, η_p^2 = .03. No interaction between beverage and context were revealed, *p* = .49.

4. Discussion

Findings from the current study indicate that group contexts increase individual risk-taking behaviour, as predicted. However, against expectations, alcohol consumption and the combined effect of group contexts and alcohol did not appear to increase risk-taking.

Individuals who participated in groups appeared significantly more risk-taking than those who completed the study in isolation. These findings are consistent with previous work (c.f., Chein et al., 2011; Gardner and Steinberg, 2005; Reynolds et al., 2013), which indicates that the mere presence of peers increases an individual's risky decisions. It is postulated that the influence of peers on individual risk-taking dissipates with age as young people transition into adulthood (Blakemore and Mills, 2014). However, the current study suggests that the presence of peers can also influence risk-taking behaviour in young adults. This research thereby highlights the importance of considering peer influences when designing interventions to reduce dangerous risky behaviours. To this end, researchers should take caution when generalising lab-based findings in isolated contexts to real-world (social) environments where people may partake in risky behaviours (e.g., night time environments).

In contrast to predictions, the results did not reveal an increase in risk-taking behaviour following alcohol consumption. This contradicts previous research which found an increase in risk-taking following moderate doses of alcohol (Lane et al., 2004; Rose et al., 2014), whilst supporting similar studies suggesting no effect of alcohol (Breslin et al., 1999; Corazzini et al., 2015). The absence of alcohol-induced risk-taking may be explained by the chosen dose of alcohol administered within the current study. For example, Lane et al. (2004) revealed dose-dependent effects of alcohol on risky gambling choices across dosages of 0.2, 0.4 and 0.8g/kg. A higher dose of 0.8g/kg may therefore be required to observe pharmacological effects of alcohol on risky behaviours, although other research has found alcohol effects on risk-taking at comparable doses (e.g., 0.6g/kg; Rose et al., 2014).

An alternative suggestion for the absence of alcohol-elevated risk-taking in the current study could lie with the risk-taking measurements used. No effect of alcohol consumption on risk-taking behaviour was found via the BART (supporting findings from Peacock et al., 2013; Reynolds et al., 2006), whereas risk-taking via the SLT decreased following only placebo compared to baseline. The SLT findings may suggest compensatory responding within the placebo condition, whereby participants may seek to offset any anticipated alcohol-related declines in performance, therefore positing a psychological (expectancy) effect of perceived alcohol consumption (via placebo). The absence of any change in risk-taking in the alcohol condition may further offer some support towards AMM (Steele and Josephs, 1990) in that, pharmacologically-induced deficits impeding systematic evaluation of behaviour reduces the likelihood of considering anticipated alcohol effects the varied outcomes of the BART and SLT could also relate to the extent to which the perception of risk may be socially and morally defined within a given society (Arnoldi, 2009; Green, 1997). From this perspective, risky driving (SLT) may be perceived as dangerous and immoral in comparison to inflating a balloon (BART), which may have led to compensatory responding on the SLT following placebo.

The inconsistencies between the two tasks highlight the importance of attending to specific types of alcohol-induced risky behaviour, both when examining behaviour and when developing protective strategies for alcohol-related risk-taking. However, it is important to note that to our knowledge, the impact of acute intoxication on the SLT has not been investigated to date. Moreover, although previous research has found intoxication effects on the BART (Rose et al., 2014), other null findings in this area could indicate that the BART may lack the sensitivity to detect any effects of acute alcohol consumption (Euser et al., 2011; Peacock et al., 2013; Reed et al., 2012). The current findings should therefore be interpreted with a degree of caution as the absence of alcohol-induced risk-taking could be a result of the limitations of the task itself. The expansion of the current research to incorporate additional types of risk taking measures is consequently advised.

Finally, against expectations, intoxicated groups did not appear to increase risk-taking above that observed in sober groups, or those tested in isolation. As no interactions between beverage and context were revealed, findings are not in line with previous research, stipulating either a protective (Abrams et al., 2006; Hopthrow et al., 2014), or a negative influence (Sayette et al., 2012, 2004) of intoxicated groups on risk-taking. However, previous investigations of intoxication effects have been based on collective group decisions following discussion, rather than on individual decisions in the presence of others (as in the current study). Importantly, decisions made privately in the presence of peers appear to differ from those made collectively as a group both when sober (Centifanti et al., 2016) and intoxicated (Frings et al., 2008).

Therefore, these differences may, in part, explain the contrasting findings between the present study and previous work (c.f., Abrams et al., 2006; Hopthrow et al., 2014; Sayette et al., 2012). In the current study, it was requested that participants refrain from discussing the task, however, it is important to note that researchers were not always present to monitor this. For this reason, it is necessary to acknowledge the possibility of task discussion as a limitation of the study. Future research would therefore benefit from comparing collective and individual decisions in group contexts as in Frings et al. (2008), whilst monitoring group communication.

The absence of a combined influence of groups and alcohol on risk-taking potentially offers insight into the dominant factors driving risky behaviours in social drinking environments (e.g., the night time economy; Finney, 2004; Measham and Brain, 2005). Specifically, in support of qualitative work on violence in the night time economy (Levine et al., 2012), the current findings also highlight group contexts as being a potentially important factor influencing risky behaviours over and above solely considering the effects of alcohol consumption. Further, as no combined effect of groups and alcohol was revealed, the results suggest that the influence of groups on risky behaviours may not be dependent on alcohol consumption *per se*. These findings therefore highlight the potential importance of considering factors other than alcohol in attempts to reduce risk taking. In other words, interventions may target fruitfully the influence of group contexts (above that of alcohol consumption) to reduce risky behaviours in social drinking settings. Nonetheless, future research would benefit from the exploration of potential interactions between group contexts and alcohol consumption utilising a broader range of risk-taking measures.

It is necessary to note potential methodological limitations in the current study. First, the present investigation utilised only a placebo and an alcohol condition. As such, it may be that findings from the current placebo condition are reflective of alcohol expectancies (Martin and Sayette, 1993). Indeed, the mere presence of alcohol-related olfactory cues (as would be the case in the current placebo condition) has been shown to hinder participants' ability to inhibit their behaviour (Monk et al., 2016). Future research may therefore benefit from the additional inclusion of a pure control group (for example, the use of a soft drink where there is no suggestion of alcohol consumption). Nonetheless, previous research (c.f., Abrams et al., 2006) found that alcohol increases risk-taking, relative to a placebo. Furthermore, the present paradigm included a repeated element to examine baseline (sober) measures of risk-taking, which allowed risk-taking comparison between sober, intoxicated (alcohol) and perceived intoxication (placebo). The current findings should therefore be viewed a first step, informing future investigation in this area.

Second, the original BART (Lejuez et al., 2002) measures 'adjusted average pumps' and analyses therefore exclude trials when the balloon explodes. This is due to the inability to infer how risky a participant would have been on those trials, if the balloon had not exploded. Future research may therefore benefit from utilising the automated version of the BART, which records participants' intended number of pumps and is able to provide data on risk-taking behaviour across all trials. Furthermore, both risk-taking tasks in the current study offered no real incentives (e.g., monetary rewards) for task completion. As previous research suggests that participants will evidence stronger loss aversion (less risk) when there are monetary versus hypothetical incentives (Xu et al., 2016), future studies should consider the inclusion of more ecological rewards.

Finally, the current study examined risk-taking behaviour on the ascending limb of the blood alcohol curve (BAC), similar to many previous studies (Berthelon and Gineyt, 2014; Lane et al., 2004; Rose et al., 2014). However, as research points to a higher propensity for risk-taking on the descending limb of the BAC (Bidwell et al., 2013), future research could benefit from examining social and alcohol influences on risk-taking across both the ascending and descending BAC limbs.

5. Conclusion

Through examining the influence of social contexts and alcohol consumption on individual risk-taking, the study found that group contexts increased risk-taking behaviour regardless of alcohol consumption. Current findings suggest that targeting the influence of groups (above that of alcohol), could be a way of inducing positive outcomes when addressing risky behaviour in social drinking contexts. Moving forward, expanding investigations into different types of risk-taking (using varying behavioural measures) and group influence (measuring collective and individual members risk-taking) may aid in the development of more targeted interventions.

Author Disclosures

Contributors

All authors contributed significantly in the study design and manuscript preparation. The final version was approved by all authors.

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Conflict of Interest

No conflict declared by all authors.

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Figure Legend

Figure 1: The effect of context on behavioural risk-taking

Note. Mean obtained by averaging pre and post-beverage scores. Error bars: ± 2 SE

Figure 1

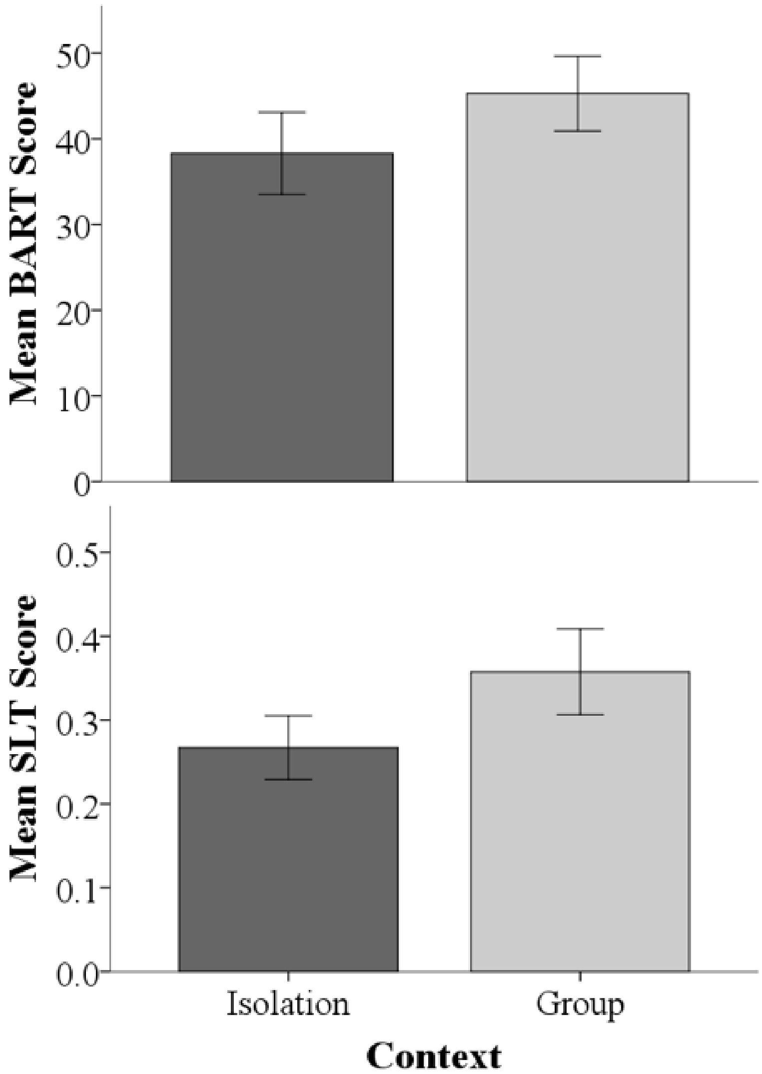

Table 1: Descriptive statistics by context and beverage (means and standard deviations)

	Individual			Group			Overall
	Alcohol (*N* = 23)	Placebo (*N* = 25)	Overall (*N* = 48)	Alcohol (*N* = 27)	Placebo (*N* = 24)	Overall (*N* = 51)	(*N* = 99)
Variables		*M(SD)*			*M(SD)*		*M(SD)*
Age	20.78 (5.29)	20.48 (3.29)	20.63 (4.32)	22.15 (5.61)	19.25 (1.39)	20.78 (4.41)	20.71 (4.34)
AUDIT	11.70 (4.68)	9.96 (5.11)	10.79 (4.94)	12.41 (5.31)	10.00 (3.80)	11.27 (4.77)	11.04 (4.84)
RT-18	8.61 (4.20)	8.20 (3.64)	8.40 (3.88)	10.38 (3.51)	9.95 (3.88)	10.18 (3.66)	9.30 (3.85)
BrAC	.34 (.13)	-	-	.33 (.10)	-	-	.33 (.11)**
BART (t1)*	35.92 (17.18)	36.05 (18.12)	35.99 (17.49)	38.86 (19.72)	45.22 (12.80)	41.85 (16.97)	39.01 (17.39)
BART (t2)*	39.59 (17.23)	41.52 (17.90)	40.60 (17.42)	47.35 (19.11)	50.26 (12.64)	48.72 (16.30)	44.78 (17.26)
SLT (t1)*	.27 (.13)	.33 (.14)	.30 (.14)	.34 (.19)	.45 (.17)	.39 (.19)	.35 (.17)
SLT (t2)*	.24 (.15)	.22 (.16)	.23 (.15)	.29 (.24)	.36 (.18)	.32 (.22)	.28 (.19)

Note. *t1 = baseline, t2 = 20 minutes after beverage consumption. ** *N* = 50