‘Understanding the Association Between Relative Sociability Prototypes and University Students’ Drinking Intention’

Background. Evaluations of ‘the prototypical non-drinker’ and of ‘the prototypical regular drinker’ have been demonstrated to hold associations with more harmful drinking behavior, yet the extent to which the relative evaluation of these prototypes is associated with drinking intention remains to be tested. **Objectives.** To explore whether relatively unfavorable non-drinker prototypes are associated with increased drinking intention and whether this relationship is moderated by personality variables. **Methods.** Among a student sample (*n* = 543), alcohol-related sociability prototype measures were used to compute an index of the perceived sociability of regular drinkers relative to non-drinkers (‘relative sociability prototypes’). Measures of drinking intention, conscientiousness, extraversion and sensation seeking impulsivity were also taken. **Results.** Most students perceived the prototypical non-drinker unfavourably relative to the prototypical regular drinker (91%, n = 493). Simple slopes analyses indicated that extraversion moderated the strength of the relationship between relative sociability prototypes and drinking intention such that relatively negative evaluations of non-drinkers were only associated with increased intention to get drunk among more extraverted students. **Conclusions/Importance.** Prospective data and behavioral measures are needed to substantiate these findings, which suggest links between relative evaluations of non-drinkers, harmful drinking intention and personality traits. Evidence suggests that by challenging prejudicial beliefs concerning non-drinkers (as ‘unsociable’) and by targeting more extraverted students, safer drinking plans might be encouraged.

INTRODUCTION

Excessive alcohol consumption is an ingrained aspect of university student culture in the U.K. (Gill, 2002; Plant & Plant, 2006). High levels of student alcohol consumption are linked to varied concerns including poor academic performance and increased risk of injury in addition to the long-term health risks of drinking to excess (Cherpitel, Bond, Ye, Borges, MacDonald, & Giesbrecht, 2003; Drinkaware, 2016; Thombs, Olds, Bondy, Winchell, Baliunas, & Rehm, 2009).

In this context, links have been found between student perceptions of 'the typical non-drinker' and personal drinking behavior, with evidence that unfavorable perceptions of non-drinkers are associated with higher levels of alcohol consumption (Regan & Morrison, 2013; Zimmermann & Sieverding, 2010). For example, Prototype Willingness Model (PWM) studies have demonstrated how unfavorable evaluations of prototypical non-drinkers (e.g., as 'uncool' or 'unsociable') predict greater willingness to take health-related risks and increased likelihood to drink alcohol more heavily (Gerrard, Gibbons, Reis-Bergan, Trudeau, Vande Lune, & Buunk, 2002; Rivis, Sheeran, & Armitage, 2006). Recent PWM research has suggested that alcohol prototypes may be understood as distinct 'sociability' and 'responsibility' factors, with regression analyses indicating that ratings for prototypical non-drinkers as 'unsociable' predict harmful alcohol consumption (Zimmermann & Sieverding, 2011). Other research, testing an Attitudes Toward Non-drinkers (RANDS) measure, has demonstrated that more negative attitudes held toward non-drinkers predict higher levels of alcohol consumption; a finding that may reflect student motivation to 'fit in' with same-age peers (Regan & Morrison, 2011; 2013).

The present study extends previous research by exploring students' relative preference for regular drinker/non-drinker prototypes, focusing on those prototypes known to predict drinking behavior (i.e., sociability prototypes). In particular, the study will assess whether sociability ratings for student drinkers are evaluated equally to sociability ratings for student non-drinkers, and if these 'relative sociability prototypes' (hereafter) are associated with university students' drinking plans.

Harmful drinking among university students has also been linked to personality factors such as lower levels of conscientiousness (de Visser, Hart, Abraham, Graber, Scanlon, & Memon, 2014; Kashdan, Vetter, & Collins, 2005; Vollrath & Torgersen, 2002), and higher levels of extraversion (de Visser et al., 2014; Prescott, Neale, Corey, & Kendler, 1997; Ruch, 1994) and sensation seeking impulsivity (de Visser et al., 2014; LaBrie, Kenney, Napper, & Miller, 2014; Yanovitsky, 2006). Previous research conducted among UK university students has demonstrated associations between alcohol prototypes, personality traits and AUDIT scores (Atwell, Abraham, & Duka, 2011). It has also been demonstrated that stronger descriptive norms mediate the influence of increased sensation seeking and hopelessness over more harmful alcohol use among U.S. college students (Pearson & Hustad, 2014). As well as having direct and indirect links with high risk drinking, personality traits may also moderate the relationship between relative sociability prototypes and student drinking intention. Focusing on the relative evaluation of drinker to non-drinker prototypes, we sought to explore the moderating influence of personality traits in the relationship between sociability prototypes and student drinking intention in this study.

It was hypothesised that relative sociability prototypes would be positively correlated with increased intention to get drunk and negatively correlated with intention to heed

government drinking recommendations. In addition, it was hypothesized that stronger associations between relative sociability prototypes and intentions to get drunk and heed government drinking recommendations would be found among individuals who are (a) less conscientious, (b) more extraverted, and/or (c) more sensation seeking/ impulsive.

METHOD

Participants and procedure

Ethical approval was granted by the host institution. A convenience sampling approach was adopted: administrators at 138 departments across 75 English universities were emailed a request to forward to their students an invitation to complete an online lifestyles questionnaire hosted on a secure server to their students. In total, 36 departments (i.e., 26.1% of those contacted) agreed to forward the link. In total, 543 English university students aged 18-25 ($M._{Age}$ = 20.5 years, 80.3% female) completed the entire survey. The ethnic profile of the sample reflected the broader English undergraduate student body: 84% were white, 10% were Asian, 3% were of mixed ethnicity, and 3% were black (Connor, Tyers, Modood, & Hillage 2004). Respondents who abandoned the survey part-way through (n = 273) were removed from the dataset. Acceptable levels of missing data for study variables (≤ 1.8%) and individual cases (≤ 3.4%) were demonstrated. Missing data were estimated using the expectation-maximisation algorithm: a maximum likelihood technique suited to the large sample size (Schafer & Graham, 2002). Power analyses demonstrated sufficient control of Type II errors: for between-subjects and regression model analyses, approximately 90% power to detect medium effect sizes (i.e., r = .30) was available (Cohen, 1992; Faul, Erdfelder, Lang, & Buchner, 2007).

Measures

Responses were made on Likert-type scales using the bipolar items "1=strongly disagree, 7=strongly agree" unless otherwise stated. Drinking intention was measured using two items including "In the next month I intend to drink within government recommended alcohol consumption levels" (high scores = less risky, maxima defined as 3-4 and 2-3 units for men and women respectively: National Health Service, 2014) and "In the next month I intend to get drunk" (high scores = more risky). The medium sized correlation between these items (r = -.39, p < .001) warranted their assessment as separate variables.

The perceived prototypical sociability of regular drinkers was measured using five adjective pairs (open-reserved; sociable-unsociable; easy-uptight; willing to take risks-unwilling to take risks; popular-unpopular). A stem statement (i.e., "For each pair of words, indicate which best describes your image of the person your age who regularly drinks alcohol") was followed by semantic differential adjective pairs (e.g., 1=extremely open; 7=extremely reserved). An identical process was followed for sociability perceptions of prototypical non-drinkers so that, in total, ten adjective pairs were completed. Acceptable reliability levels were demonstrated for both regular drinker sociability prototypes (α = .77) and non-drinker sociability prototypes (α = .83).

Three personality variables were measured: an eight item extraversion scale (Costa & McCrae, 1992, e.g., "typically, I keep in the background"; α = .88); a nine item conscientiousness scale (Costa & McCrae, 1992, e.g., "typically, I make plans and stick to them; α = .84); and a 19-item sensation seeking impulsivity scale (Zuckerman & Kuhlman, 2000; e.g., "I usually think about what I am going to do before doing it"; α = .90). Higher scores indicated greater extraversion, conscientiousness, and sensation seeking impulsivity.

RESULTS

Participant ratings for drinker sociability prototypes and non-drinker sociability prototypes were assessed. Paired samples t-tests revealed that, compared to prototypical non-drinkers (M = 3.41, SD = 0.94), participants rated prototypical regular drinkers (M = 5.29, SD = 0.86), as significantly more sociable, t = 29.79, p < .001, d = 2.09. Relative sociability prototypes were computed by subtracting non-drinker prototypes from regular drinker prototypes, following similar approaches adopted in applied psychological research (e.g., Authors, 2015; de Visser & McDonnell, 2012). This computed scale was coded such that scores above zero indicated more sociable evaluations for non-drinker prototypes relative to drinker prototypes, while scores below zero indicated more sociable evaluations for drinker prototypes relative to non-drinker prototypes. Descriptive statistics revealed that the great majority of participants (90.8%) viewed non-drinker prototypes as relatively unsociable (M = -1.88, SD = 1.47, Range -6.00, 3.20).

Bivariate correlations between relative sociability prototypes and the two intention variables were very similar to associations between the individual drinker and non-drinker prototype variables and the two drinking intention variables (see Table 1). Higher relative sociability prototype scores, reflecting preferential evaluations for drinker prototypes relative to non-drinker prototypes, were significantly associated with an increased likelihood of intending to get drunk in the following month, r = .20, p < .001, and with a decreased likelihood of intending to heed government drinking recommendations in the following month, r = -.10, p = .03. Significant correlations were demonstrated between intending to get drunk in the following month and conscientiousness (r = -.22, p < .01), extraversion (r = .15, p < .01) and sensation seeking impulsivity (r = .26, p < .01). Significant correlations were also found between weaker intentions to heed government drinking recommendations in

the following month and conscientiousness (r = .19, p < .01), and sensation seeking impulsivity (r = .15, p < .01).

<INSERT TABLE 1 ABOUT HERE>

Moderation analysis

The moderating influence of personality traits on the relationship between relative sociability prototypes and drinking intention was investigated next. The PROCESS software was used for all moderation analysis (Hayes, 2012). Regression models including relative sociability prototypes alongside each personality moderator (conscientiousness, extraversion or sensation seeking impulsivity) and each relevant interaction term were run for each criterion variable (intention to get drunk, intention to heed drinking recommendations) as presented in Table 2. Of the six interaction terms assessed, the relative sociability prototypes × extraversion term was significant for intention to get drunk, B = 0.12, 95% CI [0.017, 0.220], t = 2.31, p = .02. To visually inspect this interaction, extraversion values were converted into Z-scores to distinguish between individuals with high (+1 SD or greater) medium (Mean) and low (-1 SD or less) extraversion scores and results were plotted (see Figure 1). Intention to get drunk regressed on relative sociability prototypes at high (B = 3.38, t(84) = -4.09, p < .001) and mean (B = 3.45, t(363) = -3.71, p < .001) extraversion levels but not at low extraversion levels (B = 3.43, t(89) = 0.15, p = .88). This interaction suggested that relative sociability prototypes, reflecting relatively less favourable evaluations of prototypical non-drinkers, predicted increased intention to get drunk in the following month only among students with average or high levels of extraversion.

<INSERT TABLE 2 ABOUT HERE>

<INSERT FIGURE 1 ABOUT HERE>

DISCUSSION

This study was designed to explore links between relative sociability prototypes and drinking intention, and to establish whether these links, where present, were moderated by personality traits. Relatively unfavourable non-drinker evaluations were associated with stronger intentions to get drunk and weaker intentions to heed drinking recommendations, supporting hypothesised correlations. Though not formally hypothesised, a striking feature of our study was that relatively negative evaluations of non-drinkers were reported by the great majority of the sample (91%, n = 493). Our study data demonstrated robust associations between stronger intentions to get drunk and lower conscientiousness, higher extraversion and higher sensation seeking impulsivity. There were also robust associations between weaker intentions to heed government drinking recommendations and lower conscientiousness and higher sensation seeking impulsivity. These findings reflect previous links demonstrated between increased risk of harmful drinking among students with higher levels of sensation seeking impulsivity (Loxton, Bunker, Dingle, & Wong, 2015; LaBrie et al., 2014); higher levels of extraversion (Hakulinen, Elovainio, Batty, Virtanen, Kivimäki, & Jokela, 2015; Martsh & Miller, 1997) and lower levels of conscientiousness (Ham & Hope, 2003; Kashdan et al., 2005). Contrary to hypothesised effects, personality was not typically supported as a moderator of the relationship between relative sociability prototypes and drinking intention, yet some evidence was found to support the role of extraversion as a moderator of the relationship between relative sociability prototypes and intention to get drunk. Previous tests of moderator effects of trait extraversion have revealed a protective

effect of introversion in the context of the relationship between physical activity and mental health (Wilson, Das, Evans, & Dishman, 2016) and an equivocal effect in the relationship between stress and health behavior (Korotkov, 2008). Our study presents tentative evidence that extraversion may moderate the relationship between alcohol prototypes and drinking plans such that extraverts are at greater risk of harmful behavior. This relationship accords with trait personality theory: extroverts' tendency toward higher levels of arousal and lower levels of self-restraint might make them more susceptible to comply with norm-congruent prototype perceptions of non-drinkers as relatively unsociable which, accordingly, might also be expected to be associated with higher risk drinking plans/ behavior (Eysenck, 1967). Taken together, study findings suggest that relatively negative perceptions of non-drinkers are associated with intentions to engage in heavy episodic drinking (i.e. to get drunk), especially among more extraverted students.

Links between the presence of negative perceptions of non-drinkers and more harmful drinking intention among young people demonstrated in our study help substantiate a similar pattern found by other authors (Regan & Morrison, 2013). Longitudinal research is now needed to understand how and when this preferential bias translates into risky behavior. However, the presence of relatively negative evaluations among most of our sample suggests that interventions specifically designed to address this preferential bias against 'prototypical non-drinkers' might provide an effective way of reducing alcohol consumption among UK university students. Theoretically, there might be several explanations for the trend to evaluate non-drinkers relatively negatively. For example, it may reflect motivations to hold derogatory views of non-drinkers as a salient out-group, so as to feel included by peer group members. This notion extends from Social

Identity Theory and might explain derogatory views of non-drinkers as a way of sharpening boundaries between socially valued in-groups (i.e., regular drinkers) and socially excluded out-groups (i.e., non-drinkers) among students (Turner, Brown, & Tajfel, 1979). Alternatively, this mechanism may reflect the need to buffer against potential threats to how personal drinking behavior might hold latent threats to self-esteem or the integrity of self in keeping with the predictions of classical Self-affirmation Theory (Steele & Liu, 1983). Future experimental research might usefully test these rival theoretical positions. Recent research suggests that personality-based risk factors for varied risky substance use behaviors may peak in middle adolescence (Collado, Felton, MacPherson, & Lejuez, 2014; Malmberg, Kleinjan, Overbeek, Vermulst, Lammers, & Engels, 2013). The current findings suggest that, among students at least, the association between prototype perceptions and drinking intention may remain conditional on dispositional factors (extraversion in this case) among young adults.

Study limitations and strengths

First, given the number of moderation tests conducted, it is possible that the significant interaction between extraversion and relative sociability prototypes could be the result of a type 1 error. Further research is needed to replicate this finding. Second, given the cross-sectional design, causal associations cannot be drawn between prototypes and drinking intention. Third, the study only assessed drinking intentions, not drinking behavior. However, behavioral intentions has been defended theoretically as an important 'forward looking' proxy for behavior itself for exploratory research purposes (Fishbein & Ajzen, 2010). Moreover, a strong intention ($r = .54$) between drinking intention and drinking behavior has been reported in a recent meta-analysis of alcohol studies (Cooke, Dahdah, Norman, &

French, 2014). Fourth, the use of single measure items for intention carries the disadvantage of limiting scale reliability (e.g., Armitage & Conner, 2001; Emons, Sijtsma, & Meijer, 2007). This recognized, we emphasize that we were keen to restrict questionnaire length in a way that privileged prototype survey items and maximized the response rate. Fifth, our design concerned prototype evaluation measures exclusively rather than prototype similarity measures. Previous research based on UK University student drinking behavior has demonstrated that prototype similarity emerges as the strongest psychological predictor of binge drinking at follow-up (Norman, Armitage, & Quigley, 2007). However, as noted above, omitting additional items had the advantage of restricting questionnaire length which may have helped improve our response rate.

Future research extensions

Future research is needed to establish whether the influence of holding relatively negative evaluations of non-drinkers on drinking plans is intensified or reduced in different social contexts (e.g., differences in group size; male-female ratios). Recent research has demonstrated how factors such as time and location may influence response patterns in the context of student drinking behavior; for example subjective norms were more predictive of drinking intentions when measured in a student bar environment at night-time (Cooke & French, 2011). Exploring whether context also influences self-reported prototype perceptions of drinkers and non-drinkers would be an important extension of the current study. Future research could also approach and interview survey respondents who gave the most and least relatively favorable (sociable) evaluations of non-drinkers to generate further understanding of why and when non-drinkers may be viewed positively or negatively, drawing on sampling approaches adopted elsewhere (e.g., de Visser & McDonnell, 2012).

Finally, future research could apply the relative sociability prototypes variable to other prototype formulations. For example, discrepancies between non-drinker prototypes and alcohol prototypes defined by volume consumed ('moderate' vs. 'heavy') or by behavioral state ('tipsy' vs. 'drunk') as recently reported in the PWM literature (van Lettow, Vermunt, de Vries, Burdorf, & Empelen, 2012; van Lettow, de Vries, Burdorf, Norman, & van Empelen, 2013) might also be assessed in relation to personal drinking plans/ behavior.

Health promotion implications

The current findings have a number of applied implications. Challenging stereotypical and unappealing notions of the prototypical non-drinker and/or relatively positive evaluations of regular drinkers might help to promote greater tolerance and awareness of a wider range of consumption preferences. Such interventions might usefully target specific student groups among whom pro-drinking norms and negative perceptions of non-drinkers have been demonstrated as particularly entrenched including recreational sports groups (e.g., Lorente, Peretti-Watel, Griffet, & Grélot, 2003; Ward & Gryczynski, 2007). Screening to identify highly extraverted individuals might also help target such interventions more effectively (de Visser et al., 2014). In addition to individual-level interventions, it would be important to ensure that relevant environmental changes are addressed such as offering a wider range of opportunities for students to socialize in ways that don't involve alcohol. These measures would be important in and of themselves, but their very presence on university campuses would be likely to go some way toward counteracting prejudicial beliefs, demonstrated broadly in our sample, that non-drinkers are typically less sociable.

CONCLUSIONS

This study explored the links between prototype perceptions, personality traits and drinking intention. Revealingly, the majority of the sample held relatively negative evaluations of the prototypical non-drinker, which in turn were associated with drinking intentions, especially among those high in extraversion.

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Running header: Unfavourable Relative Evaluations of Non-drinkers

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Table 1. Correlations between drinking intention, drinker prototypes and relative sociability prototypes

		M	SD	1	2	3	4	5	6	7	8
1	Intention to get drunk	3.96	2.15	-							
2	Intention to heed recommendations	4.08	1.88	-.39**	-						
3	Drinker prototypes	5.29	0.86	.10*	-.05	-					
4	Non-drinker prototypes	3.41	0.94	-.22**	.10*	-.33**	-				
5	Relative sociability prototypes	1.88	1.47	.20**	-.10*	.80**	-.83**	-			
6	Conscientiousness	4.34	1.06	-.22**	.19**	-.02	.15***	-.11*	-		
7	Extraversion	4.42	1.15	.15**	-.08	-.04	.00	-.02	.08	-	
8	Sensation seeking impulsiveness	4.07	0.98	.26**	-.15**	-.02	-.09*	.05	-.37***	.30***	-

Note $n = 543$ * $p < .05$ ** $p < .01$ *** $p < .001$

Table 2. Regression of intention on relative sociability prototypes and personality variables

	Drinking intention					
	To get drunk			To heed recommendations		
Variables entered	B	R^2	Model F	B	R^2	Model F
		.08	15.34***		.04	6.86***
Conscientiousness	-.41***			.32***		
Relative sociability prototypes	.25***			-.10		
Relative sociability prototypes × conscientiousness	.01			.03		
		.07	15.75***		.02	3.02*
Extraversion	.28***			-.12		
Relative sociability prototypes	.29***			-.12*		
Relative sociability prototypes × extraversion	.12*			-.06		
		.10	20.74***		.03	5.10**
Sensation seeking impulsivity	.57***			-.29**		
Relative sociability prototypes	.27***			-.11*		
Relative sociability prototypes × sensation seeking impulsivity	-.05			.04		

Note Unstandardised B values reported. *P = < 0.05 **P = < 0.01 *** P = < 0.001

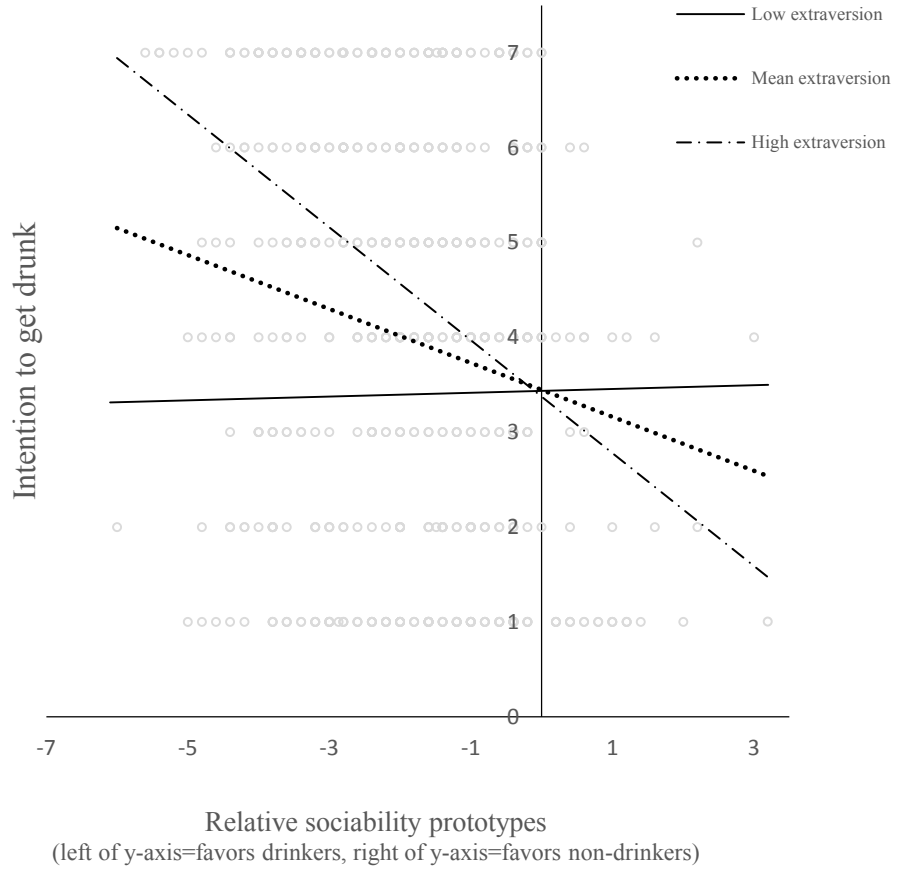

Figure 1. Significant interaction between relative sociability prototypes and extraversion on drinking intention