

# **‘Here’s to a night of drunken mistakes’: Exploring experiences, regrets and optimism in young adult drinkers**

**AUTHORS: Emma L. Davies & Mary S. Joshi**

## **ABSTRACT**

**Background:** Studies exploring ‘anticipated regret’ concerning alcohol rarely consider the broader consequences of excessive drinking that might be regretted. Even if specific regrettable experiences are identified, interventions targeting them may not succeed because individuals are often optimistic about their risk susceptibility.

**Objectives:** This study examined the consequences young adult drinkers reported, and the extent to which these were regretted. It then explored whether consequences and regrets differentiated between high risk, low risk and light drinkers, and whether regret was related to optimism.

**Methods:** A cross-sectional on-line questionnaire measured drinking behaviour, consequences (frequency) and regrets (extent of likely regret) and risk perceptions (in general, and compared to others).

**Results:** 273 participants were recruited (light (30%), low-risk (40%), and high-risk drinkers (30%). PCA detected three types of experience (common – e.g. vomiting; after-effects – e.g. being depressed; and ‘serious’ – e.g. drunk-driving), and three types of regret (‘serious’ – e.g. being aggressive; ‘common’ – e.g. wasting time; and ‘risky behaviour regrets’ – e.g. drugs).

Multinomial regression found the high-risk drink group more likely to be male, had more experiences but regretted these experiences less than other groups. Regrets and optimism interacted, so that higher scores on common regrets were associated with greater optimism. The high-risk group was particularly characterised by optimism.

Conclusions: High-risk drinkers may be unresponsive to anticipated regret manipulations as they do not regret post-alcohol 'bad' experiences, and some regrets were associated with comparative optimism. Interventions may need to focus less on regret and aim to change risk perceptions.

# **'Here's to a night of drunken mistakes': Exploring experiences, regrets and optimism in young adult drinkers**

## **INTRODUCTION**

It is well recognised that over-consumption of alcohol can have harmful consequences serious both in the short term (e.g. drink-driving accidents) and the longer term (e.g. liver damage) (WHO, 2014). In the UK excessive drinking makes up 10% of the burden of disease and death, and is the fifth leading risk factor for poor health (Public Health England, 2016). Young people – particularly university students – are very much at risk and tend to drink at hazardous levels (Craigs, Bewick, Gill, O'May, & Radley, 2012; Davoren, Demant, Shiely, & Perry, 2016). Over consumption of alcohol is hazardous for the drinker – but also for others, since it is associated with anti-social behaviour (such as aggression) and also dangerous behaviour (such as driving a motor vehicle while over the limit) (Laslett et al., 2010; Public Health England, 2016).

A variety of models in health psychology have drawn attention to the components thought to influence the intention to perform health and risk behaviours. For example, the Theory of Planned Behaviour focusses on beliefs about the consequences of the behaviour, the influence of the views of others, and the extent to which the behaviour in question is thought to be under the person's control (Ajzen, 1991). This model has been widely applied to understanding excessive alcohol consumption (Cooke, Dahdah, Norman, & French, 2016). French and Cooke (2012) suggest changing beliefs about the ease and acceptability of binge drinking might be an appropriate focus for interventions.

By no means all theory-based interventions have been successful in changing health behaviours, and there is often a gap between what people intend to do and their actual behavior (Sheeran, 2002; Vlaev & Dolan, 2009). Indeed traditional health campaigns intended to provide education about the harmful long term consequences of drinking (e.g. liver disease) have been shown to be largely ineffective (Logan, Kilmer, King, & Larimer, 2015). In addition, recent studies have

shown that unit based advice about drinking is also not perceived as relevant to young drinkers (De Visser & Birch, 2012) highlighting the need for novel approaches to reduce harms. It has been hoped that new additions to the main health belief models will pave the way for more successful interventions. One such addition has been the notion of ‘anticipated regret’ – that is to say, the extent to which people may be influenced by the cognitions and emotions they may experience if they contemplate not changing their behaviour (Richard, van der Pligt, & de Vries, 1995; van der Pligt, 1998). Anticipated regret has been shown to add to the prediction of intention in a variety of health domains (Brewer, DeFrank, & Gilkey, 2016) including binge drinking (Cooke, Sniehotta, & Schuz, 2007). In considering the merits of the construct anticipated regret, Brewer et al (2016) encourage that it be measured in a standard fashion to include the specification of ‘the negative consequence of the action or inaction’ (p 1271). Thus, participants are typically asked the extent to which they will regret getting drunk. In the different domain of ‘missed exercise’, Rhodes and Mistry (2016) have highlighted the diversity of reasons for anticipated regret. These include missed opportunities, personal shame and external pressures. However, as far as we are aware, studies in the alcohol domain rarely consider the broader consequences of excessive drinking that might actually be regretted. One purpose of the current study will therefore be to examine participants’ experience and also their evaluation of the various negative consequences of excess consumption of alcohol.

Even if we are able to identify what specific experiences are likely to lead individuals to feel regret, this does not mean that targeting these within interventions will be successful. In considering why informing people of health risks does not always lead to behaviour change, psychologists have drawn attention to various socio-cognitive biases which may militate against change. Research on the phenomena of ‘unrealistic optimism’ has noted that individuals tend to be overly optimistic about their personal susceptibility to different health outcomes in comparison to other people’s (Shepperd, Klein, Waters, & Weinstein, 2013). For example in the domain of smoking, McKenna, Warbuton and Winwood (1993) showed that although smokers recognised that they were more at risk of smoking-related diseases than non-smokers, they

nevertheless considered their own risk to be less than that of other smokers, demonstrating the power of optimistic bias. Since biases such as the failure to recognise the commonness of a 'hazard' (Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1978) and unrealistic optimism concerning personal vulnerability may operate to lower people's hazard awareness and thus make the reduction of risky behaviour patterns less likely (Weinstein, 2000). For example unrealistic optimism was associated with a greater number of negative alcohol related events occurring 6 months later, one year later and 1.5 years later in college students (Dillard, Midboe, & Klein, 2009). We included a measure of comparative optimism about the likelihood of suffering negative health outcomes order to explore whether comparative optimism interacts with regret.

### **Aims:**

This study aimed to explore drinking related regrets and comparative optimism in a sample of young adult drinkers. Specifically we first aimed to explore the experiences that most commonly occurred as a result of drinking and those most likely to be regretted. Further we then aimed to explore whether these experiences and regrets differentiated between high risk, low risk and light drinkers, and to determine whether regret was related to comparative optimism about health risks.

## **METHODS**

### ***Participants and procedure***

Participants were recruited into this online study by two research assistants who used email to contact students at one university, and Facebook posts to sample more widely. No paid advertising channels were used. The participant information sheet described that the study was about attitudes towards alcohol and health behaviors. In total 434 respondents gave their consent and started to complete the measures. Of these, 273 (62.3%) reached the end of the

survey and submitted their answers. There were 181 females (66.3%) and 92 males (33.7%) and 97% of the sample identified as white. One hundred and sixty five respondents were students (69.6% female) and 111 were non-students (61.3% female; 97% self-identified as being of White ethnicity). The mean age of the sample was 21 years (range = 18-30, SD = 2.18 years) and this did not differ by gender or by alcohol consumed. The study received approval from the Oxford Brookes Psychology Department Research Ethics Committee.

### **Measures**

*Alcohol consumption* was measured using two items. Participants were shown pictures of drinks alongside the number of UK units that each drink contained. They were asked to state how many units they consumed in a typical week. They were then asked how frequently they consumed alcohol in the last month from 1 = none in the last month to 6 = every day. The unit measure was used because in the UK, current government guidance is that individuals should not regularly exceed more than 14 units of alcohol per week to keep health risks from drinking at a low level (Department of Health, 2016).<sup>1</sup>

*Drinking motives* were measured using the adult version of the three factor Drinking Motives Questionnaire (DMQ) (Cooper, Russell, Skinner, & Windle, 1992). This measure has three subscales; social, coping, and enhancement, each has five items. Respondents are asked to 'think now of all the reasons you drink' and then to rate 15 items from 1 (almost never/never to 4 (almost always). Items include 'how often do you drink as a way to celebrate?' (social motives); 'how often do you drink to relax?' (coping motives) and how often do you drink to get high (enhancement motives).

A pilot study was undertaken with 20 students to determine common consequences that occurred after drinking. They were asked to list as many consequences of drinking as they could think of. *Drinking experiences* were measured using a list of 21 items generated during

---

<sup>1</sup> In order to clarify that this was a reliable means of assessing alcohol consumption, we asked 21 students (13 females and 8 males) to complete the single item measure and AUDIT-C. Presentation of the scales was counterbalanced. The two scales were highly correlated  $r = .853$ ,  $N=21$ ,  $p<.001$ .

these discussions. Participants were asked to indicate for each item if they had experienced it within the last 12 months while they had been under the influence of alcohol, or soon after drinking alcohol, on a four point scale (never, once, twice, three or more times).

*Anticipated regret* was measured using two items; 'In the next week, 'I would feel regret if I had a heavy drinking session' and 'I would regret it if I got drunk (from 1 = no regret at all – 10 = extreme regret). The two items were summed to create an anticipated regret score (2 items;  $\alpha = 0.82$ ).

*Regrettable experiences* were measured using a list of 21 items similar to those measured for experiences, but re-worded to reflect that they were asked to indicate on a scale from 0 = no regret to 10 = extreme regret to what extent they would regret the items happening to them either during or after a period of heavy drinking.

*Perceived risk* was measured using two sets of items. The first set asked participants to rate the risks of long term heavy drinking leading to four health outcomes, chosen due to liver disease, heart disease, stroke and dementia from 0 (0% probability) to 10 (100% probability) (Stahre, Roeber, Kanny, Brewer, & Zhang, 2014). These items were averaged to form a general alcohol risk perception scale (4 items;  $\alpha = 0.860$ ).

*Comparative optimism* was measured using the same four items. Participants rated their own chances, compared to others of the same age and gender of contracting each of the four outcomes from 1 (much less than average) to 7 (much more than average) (Weinstein, 2000) and the items were averaged (4 items;  $\alpha = 0.929$ ). Furthermore, participants were asked 'do you think that you drink more than is good for your health' and answered either 'not at all', 'slightly more', 'much more' or 'don't know'.

Participants were also asked to provide demographic information including their age, gender, ethnicity and occupation.

## ***Analysis***

Following de Visser et al's (2014) suggestion that it is useful to classify drinkers by degree of risk, respondents were categorised as high risk, according to UK government guidelines (i.e. those who reported consuming 15 units or more each week in the last month; N=81), low risk drinkers (4-14 units; N= 110) and light drinkers (who in some weeks may not drink at all, or if they do only one or two drinks; 0-3 units; N= 82). Principal component analysis was employed to detect underlying factors within the experiences and regrets scales. Multinomial regression was used to explore differences between these groups on the main study measures. ANOVAs were employed to explore these differences in detail, with Z-scores calculated for the risk perception measures for these analyses to allow comparison.

## **RESULTS**

### *Differences between high risk, low risk and light drinkers*

Gender related strongly to amount drunk ( $\chi^2 = 16.35, p < .001, \phi = .245$ ), with 44% of males and only 23% of females being high risk drinkers. In addition to quantity, 16% of high risk, 4.5% of low risk and 1.2% of light drinkers reported consuming alcohol on 5 or more days a week in the last month ( $\chi^2(2) = 15.498, p < .001$ ). There were significant differences between respondents classified as light, low risk and heavy drinkers on all the main study measures, other than comparative optimism, taking into account multiple comparisons and adjusting the alpha level accordingly (0.008) (Table 1). For comparative optimism light and low risk drinkers scored similarly, but high risk drinkers scored significantly higher indicating lower levels of comparative optimism than the other two groups. It is important to note however, that the mean scores for comparative optimism were in the middle of the original 1-7 scale (light drinkers  $M = 3.12$ ; low risk drinkers  $M = 3.41$ ; high risk drinkers  $M = 4.01$ ; Table 1). Thus, high risk drinkers' ratings still reflect optimism about their relative risks from harm as an average score of 4 indicates that this group rate their personal risk as no greater than average. Only 17% of the high risk drinkers think they are at above average risk.



Perceptions of quantity drunk and whether it was good for health varied by drinker type ( $\chi^2=101.88, p<.001, \phi= .611$ ). Only 32% of high risk drinkers stated that they drank ‘much more’ than is good for their health. Fifty-seven per cent of high risk drinkers stated that they drank ‘slightly more’ than is good for their health. In neither case did these figures vary by gender. The comparable figures for the other two groups were drank ‘much more’ than is good for health (light drinkers: 1.2%; low risk: 8.2%) and ‘slightly more’ than is good for health (light drinkers: 17.1%; low risk: 53.6%). In the case of low risk drinkers these figures did not vary by gender, but in the case of the light drinkers, to regard amount drunk as risky for health was more common among females (where 10.8% of females compared to 2.8% of males stated that they drank much more than was good for their health, and 59.5% of females compared to 41.7% of males stated that they drank ‘slightly more’ than was good for their health ( $\chi^2= 8.22, df 3, p=.042, \phi= .273$ )).

[Insert Table 1]

### *Drinking experiences*

Exploratory factor analysis was used to determine whether the individual drinking experiences could be combined into subscales. Principal component analysis (PCA) was conducted on the 21 items with an orthogonal rotation (varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO =.886 which means that factor analysis should produce distinct and reliable factors (Field, 2009). Bartlett’s test of sphericity ( $\chi^2(210)=1541.66, p<.001$ ), indicated that the correlations between items were sufficiently large for PCA.

An initial analysis was conducted to obtain eigenvalues for each component and this revealed five components which explained 53.11% of the variance. The five factor solution was retained as the scree plot showed that this is where the curve began to plateau.

Individual items were associated with a distinct factor where loadings were higher than .4. Items that cluster on the five components are shown in Table 1. The item 'missed work' did not have factor loadings high enough on any of the factors to be included. These subscales were named to reflect their composition and used in subsequent analysis. In order to name the factors in a way that made sense to relevant age group, we undertook an exercise within a first year psychology lecture attended by 100 students. Students were given a handout listing each item in the factors and asked to discuss in groups how they would describe that collection of items. The names were very similar, and we selected the most common answers for the factor labels.

Item one consisted of vomited, hungover, memory loss, separated from friends, unprotected sex, sexually provocative, spent too much money, smoked and wasted time (9 items;  $\alpha = .810$ ). These items reflected short term and commonplace social consequences of drinking and the students named this factor 'common experiences'. The most frequent consequence on this factor was hungover ( $M=3.57, SD= 0.86$ ) and the least frequent was unprotected sex ( $M=2.04, SD=1.29$ ). Item two consisted of injured, depressed, embarrassed, missed classes/lectures and felt vulnerable (5 items;  $\alpha = .755$ ). These items tended to reflect feeling physically or mentally hurt, other than missing classes, but the common thread appeared to be that these were felt the day following a drinking occasion and the students named this 'after effects'. The most frequent consequence on this factor was embarrassed ( $M=2.75, SD=1.14$ ) and the least frequent was felt vulnerable ( $M= 1.71, SD= 1.04$ ). Item three consisted of verbal aggression, physical aggression, driving over the limit and taking drugs (4 items;  $\alpha = .622$ ). These items reflected more serious and perhaps long term effects of drinking, which may involve breaking the law, or potentially trouble with the police and the students named this 'serious consequences'. The most frequent consequence on this factor was 'verbally aggressive' ( $M=1.97, SD= 1.09$ ) and the least frequent was 'driven over the limit' ( $M= 1.27, SD= 0.73$ ). Items four and five consisted of single items. Item four was about unprotected sex leading to pregnancy and five about unprotected sex leading to STI. Thus their names were retained.

[Insert Table 2& 3]

### *Regrets*

Exploratory factor analysis was used to determine whether the potentially regrettable experiences could be combined into subscales. Principal component analysis (PCA) was conducted on the 21 items with an orthogonal rotation (varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis (KMO=.923) which means that factor analysis should produce distinct and reliable factors (Field, 2009). Bartlett's test of sphericity  $\chi^2(210) = 2521.02, p < .001$ , indicated that the correlations between items were sufficiently large for PCA. An initial analysis was conducted to obtain eigenvalues for each component and this revealed three components which explained 53.78% of the variance. The three factor solution was retained as other criteria were met. Individual items were associated with a distinct factor where loadings were higher than .4, and all 21 items were associated with one of the three components. Items that cluster on the components are shown in Table 2. These subscales were also named in consultation with the same group of students as outlined above.

Item one consisted of verbal aggression, physical aggression, injury, drink driving, STI, pregnancy and missing work (7 items;  $\alpha = .844$ ). These items were named 'serious regrets' by the students. The most regretted item on this factor was 'pregnancy' ( $M = 8.12, SD = 3.59$ ) and the least regretted was 'injury' ( $M = 5.84, SD = 3.03$ ). Item two consisted of feeling vulnerable, vomiting, hungover, mood changes, memory loss, being embarrassed, getting separated from friends, missing classes, spending money and wasting time (10 items;  $\alpha = .850$ ). These items were named 'common regrets by the students. The most regretted item on this factor was 'spending money' ( $M = 5.99, SD = 2.66$ ) and the least regretted was 'getting separated from friends' ( $M = 4.19, SD = 2.84$ ). Item three consisted of regretting sex, being sexually provocative, taking drugs and smoking (4 items  $\alpha = .760$ ). These items were named 'risky behaviour regrets' by the students. The most regretted item on this factor was 'taking drugs' ( $M = 6.84, SD = 3.64$ ) and the least regretted was 'being sexually provocative' ( $M = 4.63, SD = 3.39$ ). Despite their

overall lower regret profile, high risk drinkers did show signs of regretting a few of the consequences of over-consumption of alcohol – viz. unprotected sex and driving over the limit (although in the latter case only 55% of high risk drinkers, as compared to 72% of medium and low risk drinkers, gave the highest regret ratings of 9 and 10 out of 10) ( $\chi^2=8.236$ ,  $df$  3,  $p=.04$ ). (Also see Supplementary Material for full details of each experience and regret items.)

We calculated Z scores for the general risk and comparative optimism scales in order to compare light, low risk and heavy risk drinkers on these scales using a 2x2 mixed ANOVA. There was no main effect of a difference between ratings of general risk and comparative optimism. There was also no main effect for the three types of drinkers. However, there was a significant interaction between risk type and drinker type ( $F(2,270) = 12.65$ ,  $p<.001$ , partial eta squared = .086).

Light drinkers rated general risks slightly higher than did the other groups but rated their own chances of suffering these consequences as lower than did the other groups (i.e. score of 3.12,  $sd$  1.27 on the original 7-point scale). Low risk drinkers assessed in absolute terms the chance that long-term heavy drinking would lead to poor health outcome as around 50%, and thought that their own chance was slightly less than average (i.e. score of 3.41,  $SD=1.22$ ). In contrast, high risk drinkers rated general risks as lower than did the light drinkers, and the same as the low risk drinkers but their comparative optimism was relatively higher – i.e. on the original scale they averaged at 4.01,  $SD=1.14$ . It should be noted however that in absolute terms, the high risk drinkers were on average optimistic as 22% thought they were at below average risk of long term ill health, and as many as 61% regarded their risk as average compared to those of their age.

[Insert Figure 1]

We compared the three drinker groups on the three types of regret. There was a significant main effect for regret type ( $F(2, 538)=119.13$ ,  $p<.001$  partial eta squared = .307). Post hoc tests

revealed that all three regrets were rated significantly differently from each other, with serious regrets the most highly regretted, followed by risky behaviour regrets and common regrets the lowest rated. There was also a significant main effect for drinker type ( $F(2, 269) = 8.88, p < .001$  partial eta squared = .062). Post hoc tests revealed that light and low risk drinkers had similar levels of regret, but high risk drinkers had significantly lower levels of overall regret than both the light and low risk groups. There was also a significant interaction between regrets and drinker type ( $F(2, 538) = 3.91, p = .004$  partial eta squared = .028). Higher risk drinkers rated common and risky behaviour regrets similarly, in contrast to the other two groups, who rated risky behaviour regrets more highly than common regrets (Figure 2).

[Insert Figure 2]

Multinomial regression was conducted to predict which of the study measures would predict drinker category and to see whether there was an interaction between comparative optimism and regret (Table 4). Light drinkers were used as the reference category. The resulting model was significant and correctly classified 61.8% of cases  $\chi^2(26) = 143.28, p < .001$ . Compared to light drinkers, low risk drinkers were more likely to be male (OR= 0.37), experienced more after effects (OR=2.21) and had lower levels anticipated regret (OR=.82). There was a significant interaction between common regrets and comparative optimism (OR=0.82), suggesting that as levels of common regrets increase, comparative optimism decreases. There was also a significant interaction between risky regret and comparative optimism (OR=1.22), suggesting that as risky behaviour regrets increase, comparative optimism also increase.

[Insert Table 4]

Compared to light drinkers, high risk drinkers were more likely to be male (OR=0.12), reported more common experiences (OR=2.43), after effects (OR= 3.34) and serious consequences (OR=2.90). High risk drinkers also had lower levels of anticipated regret than light drinkers (OR= .78). There was a significant interaction between common regret and comparative

optimism (OR=.71), suggesting that levels of regret for common regrets increases, comparative optimism decreases.

## **DISCUSSION**

This study aimed to explore the extent to which young people experience certain events after drinking alcohol, and the extent to which these experiences are regretted. Further we then aimed to explore whether these experiences and regrets differentiated between high risk, low risk and light drinkers, and to determine whether regret was related to comparative optimism.

Light, low risk and heavy drinkers were differentiated on all three drinking motives, with scores increasing in line with amount consumed, confirming the usefulness of treating drinkers as distinct groups rather than as a continuum (de Visser et al., 2014). This is particularly marked in social and enhancement motives, emphasising that high risk drinkers especially enjoy the 'fun' aspects of alcohol consumption (de Visser et al., 2014; Guise & Gill, 2007).

Higher levels of alcohol consumption were associated with higher scores on all three of the scales created from the experiences. Participants who reported a greater number of common alcohol related consequences and a greater number of serious consequences had lower levels of regret as measured by the factor scales, and lower levels of anticipated regret. After effects were not associated with experiences or anticipated regret.

High risk drinkers were distinct from light drinkers in experiencing a greater number of consequences from their drinking yet lower levels of anticipated regret. Although high risk drinkers rated comparative optimism lower than the other groups, the mean score for the higher risk group was only at the centre of the scale – that is to say, indicating comparative optimism regarding their own health. Furthermore, high risk drinkers had lower regrets overall, and appeared to not differentiate between common and risky behaviour regrets.

Many studies measure anticipated regret using a single measure, which does not specify or elaborate upon what the regrets might be (e.g. Cooke, Sniehotta & Schuz, 2007). In our study we have distinguished between different experiences and regrets, and using Factor Analysis have organised them both into three types. This has enabled us to show that experiences and regrets are not of one type, and furthermore the experiences and the regrets – and the relationship between experiences and regrets - are reported upon differently according to drinker type. High risk drinkers also had lower levels of anticipated regret on the standard non-specific measure.

All three drinker groups assessed the chances that heavy drinking would lead to the four specified diseases (liver, heart, stroke and dementia) as around 60%. Comparative optimism was high. Even in the higher risk group of drinkers only 17% regarded themselves as having an above average risk of contracting alcohol related diseases in the future. In comparison, 8.5% of the light drinkers and 9% of low risk drinkers regarded themselves as having an above average chance of contracting alcohol related diseases in the future.

Previous studies have demonstrated that optimism is associated with experiencing a greater number of alcohol related problems (Dillard et al., 2009). However our results show a relationship between experiencing negative outcomes after drinking and lower levels of optimism. In particular there was an interaction between comparative optimism and regrets when comparing the drinker groups. For light versus low risk drinkers, higher levels of risky behaviour regrets were associated with less optimism. However when looking at common regrets, high levels were associated with increased optimism for both low and high risk drinkers compared to light drinkers. Thus, more regrets about less serious consequences of drinking, such vomiting and hangovers, increased optimism about the long term health impacts. As little is known about the longer term impacts of comparative optimism (Shepperd et al., 2013) this finding should be explored in further research.

The study has a number of limitations. The sample is self-selected and two-thirds are female. Sixty per cent self-describe as students, however in UK it is the case that as many as 48% of school leavers (53% females, 43% males) progress to higher education (Department for Education, 2016). It is possible that respondents under-reported the amount of alcohol consumed. However, it has been suggested that since alcohol consumption is the norm/desired outcome for this age group, young respondents experience 'no barriers to reporting drinking' (Lintonen, Ahlström, & Metso, 2004) page 367). Also, our use of fixed scales (in the case of days per week) is likely to be associated with more rather than less reliability (Lintonen et al., 2004). Further, the frequency of bad experiences reported also could indicate accurate reporting.

The study has a number of limitations. The sample is self-selected and two-thirds are female (perhaps reflecting the higher use that females make of Facebook (Thompson & Lougheed, 2012)), and predominantly of 'white' ethnicity. Since the questionnaire was only answered by those who report that they consumed alcohol, certain groups - such as Muslims of Pakistani and Bangladeshi ethnicity - will be under-represented due to low rates of alcohol consumption and/or unwillingness to admit to alcohol consumption (Denscombe & Drucquer, 2000; Hurcombe, Bayley, & Goodman, 2010). Sixty per cent self-describe as students, however in UK it is the case that as many as 48% of school leavers (53% females, 43% males) progress to higher education (Department for Education, 2016). It is possible that respondents under-reported the amount of alcohol consumed. However, it has been suggested that since alcohol consumption is the norm/desired outcome for this age group, young respondents experience 'no barriers to reporting drinking' (Lintonen, Ahlström, & Metso, 2004) page 367). Also, our use of fixed scales (in the case of days per week) is likely to be associated with more rather than less reliability (Lintonen et al., 2004). Further, the frequency of bad experiences reported also could indicate accurate reporting. Careful thought was given to the division of respondents into three groups (high risk, low risk and light drinkers) with reference to current UK guidelines. However if other criteria were used to create the groups then there may be differences in the findings. For example, risky drinking status has been calculated differently for males and females using different AUDIT score cut offs in other research (Foxcroft, Smith, Thomas, & Howcutt, 2015). It is also important to acknowledge that guidelines vary between different



countries (Furtwaengler & de Visser, 2013). However, here we chose to focus on UK guidelines given that this information is regularly communicated to the public.

In recent years, much attention has been focussed on the increase in drinking (and binge drinking) by young females (Guise & Gill, 2007; Slade et al., 2016). In this study's sample, males were over-represented among heavy drinkers, and heavy drinkers were characterised by a lower level of regret concerning post-alcohol experiences and by a low appreciation of the personal relevance of long-term health risks of drinking – i.e. the majority of this group believing that they were at below or average risk of a bad outcome.

Although, in comparison to the other groups, high risk drinkers are motivated by social and enhancement motives, they experience more 'negative' consequences from their drinking. However since they also have comparatively fewer regrets it is likely that it is their risk perceptions which need targeting. Given that driving over the limit is a serious problem, especially in young drivers (Department for Transport, 2016), it is possible that alcohol education should focus on some particular consequences. Further, focussing on immediate consequences (i.e. car crash and possible injury to self and others) may be more persuasive than focussing on long-term health consequences, which our data suggest are subject to unrealistic optimism, especially for heavy drinkers in that despite being relatively heavy drinkers this group only regard their health risk as average, and appear to especially value the social and fun aspects of drinking alcohol.

## REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organ Behav Hum Decis Process*, 50. doi:10.1016/0749-5978(91)90020-T
- Brewer, N. T., DeFrank, J. T., & Gilkey, M. B. (2016). Anticipated Regret and Health Behavior: A Meta-Analysis. *Health Psychology*, 35(11), 1264-1275. doi:10.1037/hea0000294
- Cooke, R., Dahdah, M., Norman, P., & French, D. P. (2016). How well does the theory of planned behaviour predict alcohol consumption? A systematic review and meta-analysis. *Health Psychology Review*, 10(2), 148-167. doi:10.1080/17437199.2014.947547
- Cooke, R., Sniehotta, F., & Schuz, B. (2007). Predicting binge-drinking behaviour using an extended TPB: Examining the impact of anticipated regret and descriptive norms. *Alcohol and Alcoholism*, 42(2), 84-91. doi:10.1093/alcalc/agl115
- Cooper, M. L., Russell, M., Skinner, J. B., & Windle, M. (1992). Development and validation of a three-dimensional measure of drinking motives. *Psychological Assessment*, 4, 123-132.
- Craigs, C. L., Bewick, B. M., Gill, J., O'May, F., & Radley, D. (2012). UK student alcohol consumption: A cluster analysis of drinking behaviour typologies. *Health Education Journal*, 71(4), 516-526. doi:10.1177/0017896911406967
- Davoren, M. P., Demant, J., Shiely, F., & Perry, I. J. (2016). Alcohol consumption among university students in Ireland and the United Kingdom from 2002 to 2014: a systematic review. *BMC Public Health*, 16(1), 1-13. doi:10.1186/s12889-016-2843-1
- De Visser, R. O., & Birch, J. D. (2012). My cup runneth over: Young people's lack of knowledge of low-risk drinking guidelines. *Drug and Alcohol Review*, 31(2), 206-212. doi:10.1111/j.1465-3362.2011.00371.x
- de Visser, R. O., Hart, A., Abraham, C., Graber, R., Scanlon, T., & Memon, A. (2014). How alike are young non-drinkers, former-drinkers, low-risk drinkers, and hazardous drinkers? *Addictive Behaviors*, 39(8), 1258-1264. doi:<http://dx.doi.org/10.1016/j.addbeh.2014.04.008>
- Denscombe, M., & Drucquer, N. (2000). Diversity within ethnic groups: alcohol and tobacco consumption by young people in the East Midlands. *Health Education Journal*, 59(4), 340-350. doi:10.1177/001789690005900407
- Department for Education. (2016). *Participation Rates in Higher Education: Academic Years 2006/07 - 2015/15 (Provisional)*. London: Department for Education / National Statistics.
- Department of Health. (2016). *UK Chief Medical Officers' Low Risk Drinking Guidelines 2016*. Retrieved from London: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/545937/UK\\_CMOs\\_report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/545937/UK_CMOs_report.pdf)
- Dillard, A. J., Midboe, A. M., & Klein, W. M. P. (2009). The Dark Side of Optimism: Unrealistic Optimism About Problems With Alcohol Predicts Subsequent Negative Event Experiences. *Personality and Social Psychology Bulletin*, 35(11), 1540-1550. doi:10.1177/0146167209343124
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London: Sage.
- Foxcroft, D. R., Smith, L. A., Thomas, H., & Howcutt, S. (2015). Accuracy of Alcohol Use Disorders Identification Test for Detecting Problem Drinking in 18-35 Year-Olds in England: Method Comparison Study. *Alcohol and Alcoholism*, 50(2), 244-250.
- French, D. P., & Cooke, R. (2012). Using the theory of planned behaviour to understand binge drinking: The importance of beliefs for developing interventions. *British Journal of Health Psychology*, 17, 1-17. doi:10.1111/j.2044-8287.2010.02010.x
- Furtwaengler, N. A. F. F., & de Visser, R. O. (2013). Lack of international consensus in low-risk drinking guidelines. *Drug and Alcohol Review*, 32(1), 11-18. doi:10.1111/j.1465-3362.2012.00475.x

- Guise, J. M., & Gill, J. S. (2007). 'Binge drinking? It's good, it's harmless fun': a discourse analysis of accounts of female undergraduate drinking in Scotland. *Health Educ Res*, 22(6), 895-906. doi:10.1093/her/cym034
- Hurcombe, R., Bayley, M., & Goodman, A. (2010). *Ethnicity and Alcohol: A Review of the UK Literature. Project Report*. Retrieved from York:
- Laslett, A. M., Catalano, P., Chikritzhs, T., Dale, C., Doran, C., Ferris, J., . . . Matthews, S. (2010). *The range and magnitude of alcohol's harm to others*. Retrieved from Fitzroy, Victoria: <http://www.fare.org.au/wp-content/uploads/research/The-Range-and-Magnitude-of-Alcohols-Harm-to-Others.pdf>
- Lichtenstein, S., Slovic, P., Fischhoff, B., Layman, M., & Combs, B. (1978). Judged frequency of lethal events. *Journal of Experimental Psychology: Human Learning and Memory*, 4(6), 551-578. doi:10.1037/0278-7393.4.6.551
- Lintonen, T., Ahlström, S., & Metso, L. (2004). THE RELIABILITY OF SELF-REPORTED DRINKING IN ADOLESCENCE. *Alcohol and Alcoholism*, 39(4), 362-368. doi:10.1093/alcalc/agh071
- Logan, D. E., Kilmer, J. R., King, K. M., & Larimer, M. E. (2015). Alcohol interventions for mandated students: behavioral outcomes from a randomized controlled pilot study. *Journal of studies on alcohol and drugs*, 76(1), 31-37.
- McKenna, F. P. (1993). It won't happen to me - unrealistic optimism or illusion of control. *British Journal of Psychology*, 84, 39-50.
- Nicholls, J. (2009). Young people, alcohol and the news: preliminary findings. In (Vol. Alcohol insight 67): Alcohol Research UK.
- Public Health England. (2016). *The Public Health Burden of Alcohol and the Effectiveness and Cost-Effectiveness of Alcohol Control Policies: An evidence review*. In. London: Public Health England.
- Rhodes, R. E., & Mistry, C. D. (2016). Understanding the Reasons behind Anticipated Regret for Missing Regular Physical Activity. *Frontiers in Psychology*, 7, 700. doi:10.3389/fpsyg.2016.00700
- Richard, R., van der Pligt, J., & de Vries, N. (1995). Anticipated affective reactions and prevention of AIDS. *British Journal of Social Psychology*, 34(1), 9-21. doi:10.1111/j.2044-8309.1995.tb01045.x
- Sheeran, P. (2002). Intention-behavior relations: A conceptual and empirical review. In M. Hewstone & W. Stroebe (Eds.), *European Review of Social Psychology* (Vol. 12, pp. 1-36). Chichester, UK: John Wiley & Sons.
- Shepperd, J. A., Klein, W. M. P., Waters, E. A., & Weinstein, N. D. (2013). Taking Stock of Unrealistic Optimism. *Perspectives on psychological science : a journal of the Association for Psychological Science*, 8(4), 395-411. doi:10.1177/1745691613485247
- Slade, T., Chapman, C., Swift, W., Keyes, K., Tonks, Z., & Teesson, M. (2016). Birth cohort trends in the global epidemiology of alcohol use and alcohol-related harms in men and women: systematic review and metaregression. *BMJ Open*, 6(10).
- Stahre, M., Roeber, J., Kanny, D., Brewer, R. D., & Zhang, X. (2014). Contribution of excessive alcohol consumption to deaths and years of potential life lost in the United States. *Prev Chronic Dis*, 11, E109. doi:10.5888/pcd11.130293
- Thompson, S. H., & Lougheed, E. (2012). Frazzled by Facebook? An exploratory study of gender differences in social network communication among undergraduate men and women *College Student Journal*, 46(1), 88-99.
- van der Pligt, J. (1998). Perceived risk and vulnerability as predictors of precautionary behaviour. *British Journal of Health Psychology*, 3, 1-14.
- Vlaev, I., & Dolan, P. (2009). From changing cognitions to changing the context: a dual route model of behaviour change. In. London: Imperial College Business School.
- Weinstein, N. D. (2000). Perceived probability, perceived severity, and health-protective behavior. *Health Psychology*, 19(1), 65-74. doi:10.1037/0278-6133.19.1.65
- WHO. (2014). *Global Status Report on Alcohol and Health, 2014*. In. Geneva, Switzerland: World Health Organisation.



## TABLES AND FIGURES

**Table 1:** Means and standard deviations for drinking motives, anticipated regret and alcohol risks for light, low risk and high risk drinkers

(shared superscript indicates no significant difference between means)

M(SD)	Light drinkers	Low risk drinkers	High risk drinkers	<i>F</i>	<i>p</i>	$\eta^2$
Social Motives	2.44 <sup>a</sup> (0.65)	2.98 <sup>b</sup> (0.58)	3.29 <sup>c</sup> (0.54)	43.72	<i>p</i> <.001	0.24
Coping Motives	1.39 <sup>a</sup> (0.50)	1.66 <sup>b</sup> (0.54)	1.87 <sup>c</sup> (0.73)	13.67	<i>p</i> <.001	0.09
Enhancement Motives	1.78 <sup>a</sup> (0.56)	2.27 <sup>b</sup> (0.61)	2.67 <sup>c</sup> (0.55)	48.82	<i>p</i> <.001	0.26
Anticipated regret	5.37 <sup>a</sup> (2.45)	4.18 <sup>b</sup> (2.15)	3.43 <sup>c</sup> (2.36)	14.61	<i>p</i> <.001	0.10
Alcohol risk perception	6.81 (2.04)	6.27 (1.57)	6.29 (1.85)	2.53	<i>p</i> =.081	0.02
Comparative optimism	3.12 <sup>a</sup> (1.27)	3.41 <sup>a</sup> (1.22)	4.01 <sup>b</sup> (1.14)	11.55	<i>p</i> <.001	0.08

**Table 2** Summary of exploratory factor analysis results for items that participants reported that they had already experienced in the last 12 months as a result of drinking alcohol

Item	Rotated Factor Loadings				
	Common experiences	After effects	Serious consequences	Pregnancy	STI
Verbally aggressive			.668		
Physically aggressive			.763		
Vomited	.586				
Hungover	.781				
Injured		.530			
Depressed/ upset		.774			
Memory loss	.536				
Embarrassed		.570			
Driven over limit					
Separated from friends	.502		.661		
Unprotected sex	.501				
Sexually provocative	.510				
Missed lectures/class		.462			
Missed work *					
Spent too much money	.680				
Taken drugs			.434		
Smoked	.400				
Wasted time	.725				
Caught STI					.855
Felt vulnerable		.781			
Pregnancy				.836	
Eigenvalues	6.01	1.55	1.36	1.20	1.04
% of Variance	18.34%	12.94%	9.91%	6.06%	5.86%
$\alpha$	.810	.755	.622		

\*Note: 'missed work' was not included in the scales and reliability analyses due to low factor loadings

**Table 3** Summary of exploratory factor analysis results for items that participants would regret experiencing as a result of drinking

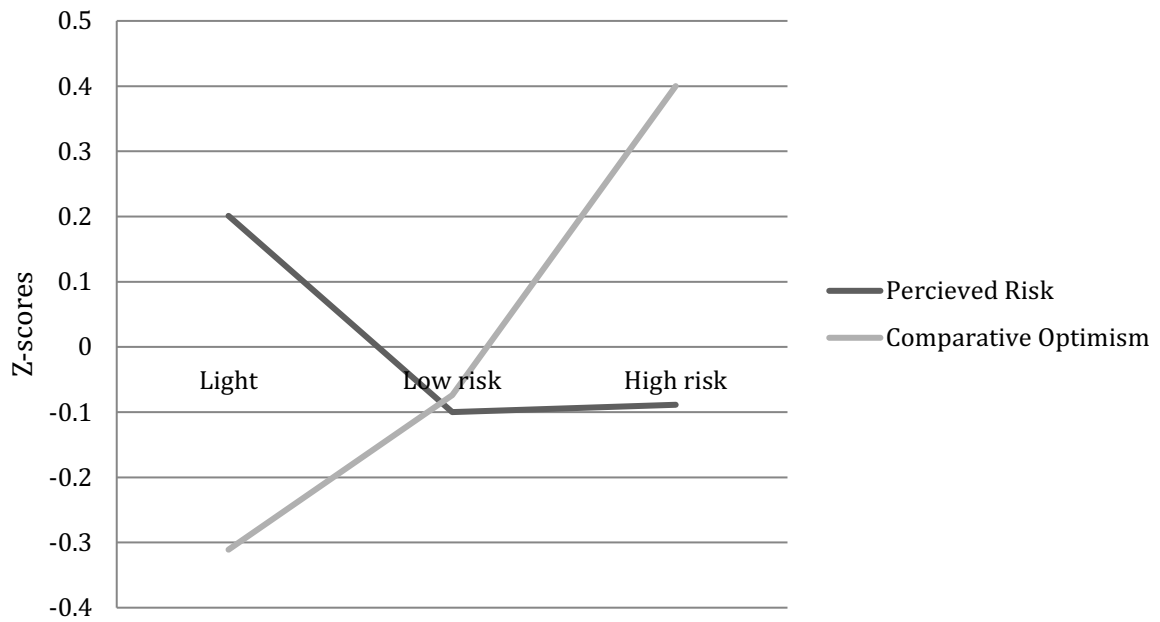
Item	Rotated Factor Loadings		
	Serious regrets	Common regrets	Risky behaviour regrets
Verbal aggression	.710		
Physical aggression	.747		
Feeling vulnerable		.489	
Vomiting		.602	
Feeling hungover		.646	
Acquiring injury	.547		
Mood changes		.663	
Memory loss		.528	
Feeling embarrassed		.542	
Driving over limit	.774		
Separated from friends		.663	
STI3	.703		
Pregnancy	.775		
Regret sex			.628
Sexually provocative			.602
Missing classes		.513	
Missing work	.705		
Spending money		.639	
Taking drugs			.617
Smoking			.672
Wasting time		.695	
Eigenvalues	7.85	2.36	1.08
% of Variance	37.37%	11.25%	5.16%
$\alpha$	.844	.850	.760

**Table 4:** Multinomial logistic regression model predicting drinker category from experiences, regrets, risk perception and anticipated regret

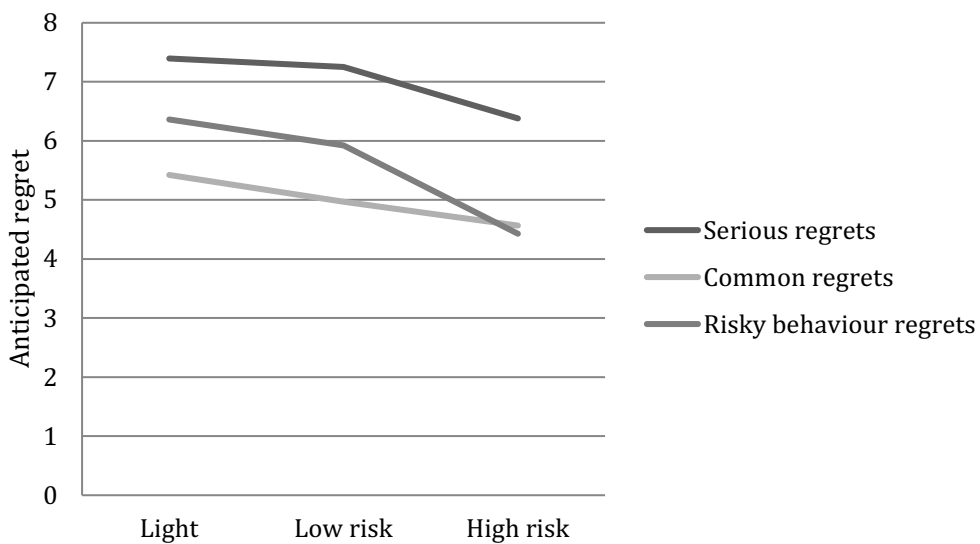
Alcohol group N	Low risk drinkers (using Light drinkers as reference group) 110				Heavy drinkers (using Light drinkers as reference group) 81			
	$\beta$	Wald (df 1)	<i>p</i>	Odds ratio (95% CI)	$\beta$	Wald (df 1)	<i>p</i>	Odds ratio (95% CI)
Common experiences	.330	1.094	.296	1.391 (0.75 – 2.58)	.887	5.098	.024	2.429 (1.12 – 5.25)
After effects	.794	6.685	.010	2.213 (1.21 – 4.04)	1.207	11.219	.001	3.344 (1.65 – 6.78)
Serious consequences	.485	1.149	.284	1.624 (0.67 – 3.94)	1.063	4.783	.029	2.895 (1.12 – 7.50)
Serious regret	.045	.228	.633	1.046 (0.87 – 1.26)	.029	.070	.791	1.029 (0.83 – 1.27)
Common regret	-.075	.331	.565	.928 (0.72 – 1.20)	.075	.218	.641	1.078 (0.79 – 1.48)
Risky behaviour regret	.082	.755	.385	1.085 (0.90 – 1.31)	-.078	.482	.488	0.925 (0.74 – 1.15)
Alcohol risk perception	-.113	1.374	.241	0.893 (0.74 – 1.08)	-.104	.752	.386	0.901 (0.71 – 1.14)
Risk susceptibility	.019	.016	.898	1.020 (0.76 – 1.37)	.283	2.326	.127	1.33 (0.92 – 1.91)
Anticipated regret	-.201	5.530	.019	0.818 (0.69 – 0.97)	-.252	5.939	.015	0.78 (0.63 – 0.95)
Serious regret X comparative optimism	-.011	.023	.881	.989 (0.86- 1.14)	.096	1.175	.278	1.101 (0.93 – 1.31)
Common regret X comparative optimism	-.197	4.323	.038	0.821 (0.68 – 0.99)	-.340	7.546	.006	0.712 (0.56 – 0.91)
Risky behaviour regret X comparative optimism	.199	6.816	.009	1.221 (1.05 – 1.42)	.125	1.864	.172	1.133 (0.95 -1.36)
Gender	-1.005	5.988	.014	0.366 (0.16- 0.82)	-2.112	17.937	.000	0.121 (0.05 – 0.32)

Note: Reference category for gender = Male





**Figure 1:** Interaction between drinker type and risk v optimism, where a high score indicates a high probability that drinking will lead liver disease, heart disease, stroke and dementia and a lower level of comparative optimism.



**Figure 2:** Interaction between drinker type and regret type, where a high score indicates more anticipated regret for each of the three regret types.

### Supplementary materials: Experiences and Regrets by Alcohol Group

Alcohol group	Experiences					Regrets				
	Light M (sd)	Low risk M (sd)	High risk M (sd)	F	p	Light M (sd)	Low risk M (sd)	High risk M (sd)	F	p
N	82	110	81			82	110	81		
Vomit	2.28 <sup>a</sup> (1.16)	2.57 <sup>ab</sup> (1.21)	2.90 <sup>b</sup> (1.17)	5.63	.004	5.70 <sup>a</sup> (2.90)	5.11 <sup>ab</sup> (2.94)	4.30 <sup>b</sup> (3.03)	4.60	.011
Hung over	3.24 <sup>a</sup> (1.03)	3.61 <sup>b</sup> (0.84)	3.85 <sup>b</sup> (0.57)	11.03	<.001	4.74 (2.91)	4.48 (2.70)	4.62 (2.71)	0.21	NS
Memory loss	2.07 <sup>a</sup> (1.17)	2.65 <sup>b</sup> (1.27)	3.30 <sup>c</sup> (1.05)	21.83	<.001	5.28 (2.87)	5.13 (3.07)	4.57 (2.76)	1.37	NS
Separated from friends	1.94 <sup>a</sup> (1.08)	2.50 <sup>b</sup> (1.24)	2.78 <sup>b</sup> (1.28)	10.34	<.001	4.78 <sup>a</sup> (2.94)	4.20 <sup>ab</sup> (2.81)	3.59 <sup>b</sup> (2.68)	3.63	.028
Unprotected sex	1.50 <sup>a</sup> (1.02)	1.89 <sup>b</sup> (1.24)	2.78 <sup>c</sup> (1.29)	24.82	<.001	7.88 (3.90)	8.15 (3.33)	7.17 (3.85)	1.71	.182
Sexually provocative	1.70 <sup>a</sup> (1.06)	2.29 <sup>b</sup> (1.33)	2.85 <sup>c</sup> (1.31)	17.44	<.001	5.56 <sup>a</sup> (3.52)	4.52 <sup>b</sup> (3.28)	3.83 <sup>b</sup> (3.19)	5.54	.004
Spent too much money	2.52 <sup>a</sup> (1.24)	3.13 <sup>b</sup> (1.07)	3.64 <sup>c</sup> (0.80)	23.02	<.001	6.35 (2.65)	5.96 (2.66)	5.65 (2.66)	1.42	NS
Smoked	1.83 <sup>a</sup> (1.20)	2.07 <sup>a</sup> (1.30)	2.49 <sup>b</sup> (1.40)	5.46	.005	6.22 <sup>a</sup> (3.69)	5.25 <sup>a</sup> (3.49)	3.69 <sup>b</sup> (3.31)	10.84	<.001
Wasted time	2.77 <sup>a</sup> (1.18)	3.37 <sup>b</sup> (0.99)	3.70 <sup>c</sup> (0.75)	18.94	<.001	5.59 (2.96)	4.84 (2.66)	4.90 (2.54)	2.03	NS
Injured	1.49 <sup>a</sup> (0.88)	1.80 <sup>b</sup> (1.06)	2.07 <sup>b</sup> (1.07)	6.87	.001	6.41 <sup>a</sup> (3.17)	5.75 <sup>ab</sup> (2.93)	5.02 <sup>b</sup> (2.89)	4.39	.013
Depressed/upset	1.79 <sup>a</sup> (1.05)	2.23 <sup>b</sup> (1.56)	2.37 <sup>b</sup> (1.26)	5.61	.004	4.91 <sup>a</sup> (3.05)	4.40 <sup>ab</sup> (2.49)	3.93 <sup>b</sup> (2.50)	2.79	.063
Embarrassed	2.17 <sup>a</sup> (1.13)	2.82 <sup>b</sup> (1.08)	3.27 <sup>b</sup> (0.98)	22.08	<.001	5.77 (3.06)	5.51 (2.65)	5.63 (2.79)	0.20	NS
Missed lectures/classes	1.59 <sup>a</sup> (0.96)	2.05 <sup>b</sup> (1.24)	2.72 <sup>c</sup> (1.24)	19.62	<.001	5.40 <sup>a</sup> (3.25)	4.84 <sup>ab</sup> (2.97)	4.27 <sup>b</sup> (2.94)	2.81	.062
Felt vulnerable	1.52 <sup>a</sup> (0.91)	1.70 <sup>ab</sup> (1.00)	1.90 <sup>b</sup> (1.04)	2.69	.070	5.71 <sup>a</sup> (3.32)	5.21 <sup>a</sup> (3.03)	4.14 <sup>b</sup> (3.13)	5.33	.005
Verbally aggressive	1.54 <sup>a</sup> (0.82)	1.85 <sup>b</sup> (1.08)	2.57 <sup>c</sup> (1.11)	22.32	<.001	6.60 <sup>a</sup> (3.05)	6.05 <sup>ab</sup> (2.91)	5.40 <sup>b</sup> (2.74)	3.50	.032
Physically aggressive	1.16 <sup>a</sup> (0.53)	1.21 <sup>ab</sup> (0.59)	1.60 <sup>b</sup> (0.83)	11.64	<.001	7.82 <sup>a</sup> (3.31)	7.44 <sup>a</sup> (3.27)	6.31 <sup>b</sup> (3.42)	4.62	.011
Driven over limit	1.12 <sup>a</sup> (0.40)	1.25 <sup>a</sup> (0.72)	1.47 <sup>b</sup> (0.94)	4.91	.008	8.16 (3.32)	8.05 (3.39)	7.23 (3.61)	1.83	.163
Taken drugs	1.11 <sup>a</sup> (0.47)	1.39 <sup>b</sup> (0.79)	1.83 <sup>c</sup> (1.16)	14.87	<.001	7.59 <sup>a</sup> (3.51)	7.40 <sup>a</sup> (3.23)	5.35 <sup>b</sup> (3.88)	10.56	<.001

Mean Values (shared superscript indicates no significant difference between means)

Experiences (1-4: where 1= never; 2= once; 3=twice; 4 = 3+ times - in the last 12 months):

Regrets (0-10: scored 0-10 where 0 = no regret and 10 = extreme regret)