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Sharma, B., Kotey, B., Koomson, I., & Reinhard, K. (2020). An Empirical Investigation of the Relationships between Alcohol Expectancies, Protective Drinking Behaviour, Consequences and Self-esteem. *Journal of New Business Ideas and Trends*, 18(2), 1–21.

<https://research.usc.edu.au/esploro/outputs/journalArticle/An-Empirical-Investigation-of-the-Relationships/99488508802621>

Document Type: Published Version

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An Empirical Investigation of the Relationships between Alcohol Expectancies, Protective Drinking Behaviour, Consequences and Self-esteem

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Abstract

Purpose: The purpose of this study is to examine key beliefs (alcohol expectancies) that university students have about the effect of drinking alcohol and investigates the relationships among various dimensions of alcohol expectancies and protective drinking behaviour, consequences from drinking alcohol, and their effects on the students' self-esteem.

Design/methodology/approach: Data for this study was obtained from a survey of students ($n=275$, female = 197, male = 75, unidentified = 3) at the University of Baden-Württemberg Cooperative State University Ravensburg, a regional university in Germany.

Findings: The key alcohol expectancies identified relate to social expressiveness 'feel less shy', social and physical pleasure 'nice way to celebrate', and cognitive and physical impairment 'unable to think and act quickly making less efficient'. The study also found significant associations between some of the dimensions of alcohol expectancy and protective drinking behaviour, academic and safety/precautionary alcohol consequence, and self-esteem. A significant negative association was found between students' academic outcomes and their self-esteem.

Keywords: Alcohol expectancies; drinking behaviour; consequences; and self-esteem.

JEL Classifications: M41

PsycINFO Classifications: 2990; 3920

For Codes: 1504; 1505; 1608

ERA Journal ID #: 40840

Introduction

Alcohol consumption is considered one of the top priority areas in public health as it is the third highest risk factor for disease and mortality in Europe, after tobacco and high blood pressure (Jessor et al., 2017; Anderson et al., 2012). Compared with non-university students, university students have been found to be heavy alcohol drinkers and exposed to a range of alcohol related risks (Tyler et al., 2017; Burns et al., 2015; Morawska & Oei, 2005). Drinking alcohol is seen as an essential part of lifestyle among teenagers and young adults (age range of 18-24 year), particularly during week-ends and at parties. Alcohol drinking is considered a dominant risk factor for people in this age group (Burns et al., 2015; van Lettow et al., 2014, Richter et al., 2013). Excessive alcohol consumption, can lead to impaired health, health-compromising behaviours, academic problems, and the risk of becoming an economic and social burden.

Given the health risks associated with alcohol consumption, extensive research has been carried out on the causes and impact of alcohol use. For example, alcohol expectancy dimensions of increased confidence, and tension reduction were found to mediate the relationship between coping strategies and drinking behaviour based on a study using data from a metropolitan Australian university with 200 undergraduate psychology student participants (Hasking et al., 2016). Another study found direct associations between ADHD symptoms and drinking-related problems and indirect effects of the ADHD dimensions on drinking-related problems, particularly related to positive alcohol expectancies (Elmore et al., 2018). The data for the Elmore et al. (2018) study was collected from two public universities in the United States.

Kenney et al. (2015) investigated the effect of depressive symptoms at the start of college education on alcohol expectancies, coping motives and alcohol outcomes, using data from three 4-year universities / colleges in Northeastern USA with a total sample comprising 59% females. They found that 'college women are more susceptible than men to risky alcohol outcomes due to drinking to cope with negative affective states' (Kenney et al., 2015, p. 1893). Another study found a strong positive association between commencement of drinking in adolescents and positive alcohol expectancies (Janssen et al., 2018).

Past studies suggest that there is an association between low level of self-esteem and high level of alcohol consumption and vice-versa among university students in the age group of 18-21 years (Collison et al., 2016). According to Tyler et al. (2017) the amount of alcohol consumed by peers also has an association with alcohol expectancies, which in turn determines student's drinking behaviour. Furthermore, heavy drinking can lead to sexual assault, risky sexual behaviour (Kilwein & Looby, 2018) and aggression (Zeigler-Hill et al., 2017). Other dimensions of alcohol use have been examined in the literature and cover mental well-being, self-esteem and general self-efficacy (Blank et al., 2016), alcohol use and sexting (Dir et al., 2018), alcohol expectancies and alcohol use (Iwamoto et al., 2014). In general, the literature indicates that several factors affect drinking behaviour, including alcohol expectancies and the coping strategies that drinkers use (e.g. protective drinking strategies). However, the effect of alcohol drinking on self-esteem still remains unclear (Blank et al., 2016). Past studies dealing with self-reported drinking behaviour and levels of self-esteem are non-conclusive (Glindermann et al., 1999). Tyler et al. (2017) have called for more research to examine the multiple pathways in these relationships. Further

investigation is therefore warranted for better understanding of the relationships among alcohol expectancies, drinking behaviour, and alcohol-related outcomes, especially as they relate to university students (Hasking et al., 2016). Therefore, this study investigates these relationships using data from a regional university in Germany, one of the heaviest alcohol drinking countries in the European region.

Literature Review

Alcohol consumption: a brief background

Alcohol drinking can lead to substantial social and interpersonal benefits such as happiness, greater life satisfaction, enhanced mood or positive effect, increased sociability and social integration, and stress reduction among moderate drinkers. Advocates of the social learning theory suggest that reliance on alcohol to cope with stress and negative emotions can lead to heavy drinking and alcohol abuse (Blank et al., 2016; Cooper et al., 1988). Alcohol abuse in turn is the ‘third leading cause of ill health and premature death globally, after low birth weight and unsafe sex’ (WHO, 2012, p. V). The World Health Organization (WHO) reveals that the European region has the highest level of alcohol consumption in the world and Germany, Luxembourg, Hungary, Czech Republic and Ireland are among the top countries with respect to per capita alcohol consumption (Ryan, 2006). Harmful levels of alcohol consumption is a major public health concern as it is considered to contribute to several diseases and various intentional and unintentional injuries (Lange et al., 2017; Lange et al., 2016; WHO, 2012). Lange et al. (2016) noted that 13.1% of women and 18.5% of men in Germany consume alcohol in harmful quantities. For women, 10-12 grams of pure alcohol consumption daily and for men 20-24 grams of pure alcohol consumption daily are considered risky (Lange et al., 2017).

In Germany, alcohol consumption in public is both common and legal. In price terms the price of beer is almost the same as that of water and in terms of availability, alcohol can be purchased from most retail outlets and consumed in parks, cafes, restaurants and other public places (Ryan, 2006). Lange et al. (2017) noted that per capita alcohol consumption in Germany is higher than the average for countries in the European Union and it is costing the German economy around EUR 40 billion annually. The “Reduce alcohol consumption” campaign (Respect your limits – enjoy responsibly and stay below the limit) introduced by the German government is based on a policy mix of behavioural and situational preventive measures (Lange et al., 2016). Alcohol use is generally high among teenagers and young adults but starts to drop as people begin to assume adult roles such as employment and parenthood (Wong et al., 2008; Maggs & Schullenberg, 2004/2005). Price promotions, venue, and place of residence have also been linked with excessive alcohol consumption (Raciti et al., 2013).

In the following paragraphs, we present a brief review of alcohol expectancies, protective drinking behaviour, alcohol outcomes and self-esteem and based on these the research questions are developed. These are the variables identified in the literature as influencing alcohol consumption.

Alcohol expectancies

Alcohol expectancies play an important role in understanding university students’ alcohol use behaviour (Geisner et al., 2017) as they are considered to influence individual level of alcohol consumption (Cooper et al., 1988). Alcohol expectancies are the beliefs that drinkers (in this case university students) hold about the effects of drinking alcohol (Dunne et al., 2013; George et al., 1995). Beliefs that drinking alcohol will lead to desirable outcomes

such as feeling happy, energetic, improved sociability, ability to stand up for personal rights in a calm and positive way, improved sexual performance, bold and courageous feeling, and reduced stress/anxiety are some of the positive alcohol expectancies. The beliefs that drinking alcohol will lead to negative self-perception, enhanced aggression, and cognitive/behavioural impairment are negative expectancies (Brown et al., 2016; Cooper et al., 2016; Spillane et al., 2012; Zamboanga & Ham, 2008; Bot et al., 2005). Using a 40-item Alcohol Expectancy Questionnaire, George et al. (1995) identified the following eight dimensions of alcohol expectancy 1) global positive, 2) social and physical pleasure, 3) social expressiveness, 4) sexual enhancement, 5) power and aggression, 6) tension reduction and relaxation, 7) cognitive and physical impairment, and 8) careless unconcern.

Positive alcohol related expectancies tend to result in excessive alcohol use leading to negative outcomes (Obasi et al., 2016) while negative alcohol expectancies lead to reduced alcohol consumption (Hasking et al., 2011). Expectations of enhanced social engagement, stress reduction, and relaxation from drinking alcohol influence perceptions of pleasure from drinking (Treloar et al., 2015). The context (such as the pub, home, special occasion) can also drive positive or negative alcohol expectancies. These have implications for implementation of intervention strategies (Monk et al., 2016).

Alcohol use generally reaches its peak during emerging adulthood in most industrialised societies, although many people start drinking before they graduate from high school (Sharma et al., 2013; White & Jackson, 2004). The frequency and quantity of alcohol consumption have been noted to be high among college students so that they are likely to experience more negative effects compared with non-college students (Dunne et al., 2013). Previous studies indicate that pre-alcohol drinking expectancies of adolescents predict the likelihood of alcohol consumption levels when they start drinking (Bot et al., 2005). Using a sample of secondary students in Zimbabwe et al. (1996) and Eide et al. (1998) found that the level of alcohol use and cultural orientation are related, and especially that students with western orientation are associated with higher probability of alcohol consumption than those with Zimbabwean orientation. Consistent with this study, another study of high school students in China reported that western cultural orientation is positively related to positive alcohol expectancies, leading to high levels of alcohol consumption (Shell et al., 2010). Morawska and Oei (2005) examined the alcohol expectancy profile of binge drinking university students and investigated differences in alcohol expectancy profile between binge drinkers and social drinkers. Their study found that binge drinkers, generally, tend to have higher positive alcohol expectancies than social drinkers (Morawska & Oei, 2005).

Alcohol Drinking behaviour

Drinking behaviour is the outcome of a complex interaction of individual's coping strategies for stress and negative emotions, alcohol expectancies and the motives for drinking (Hasking et al., 2016). Generally, drinking motives such as relaxation/tension release, enjoyment and so on are considered to influence drinking behaviour. High levels of alcohol consumption is also attributed to level of spending money for students (Martin et al., 2009). Investigating the relationships among protective behaviours during drinking, alcohol use, and alcohol related consequences, Ray et al. (2009) reported a significant direct positive effect of protective behaviours on alcohol consequences. The protective behaviours examined include setting limits not to exceed a set number of drinks; pacing drinks '1 or fewer per hour'; diluting 'drinking water at the same time'; and social 'walking home with a friend or a group of friends'. There were several limitations to the study including the high-risk drinking environment in which it was carried out and the focus on 'freshmen'. A wider investigation into the relationships between protective drinking behaviours and possible alcohol outcomes/consequences is therefore required using a range of students with range

of issues and varying levels of self-esteem (Ray et al., 2009). This gap is addressed in this study.

Self-esteem and other alcohol-related consequences

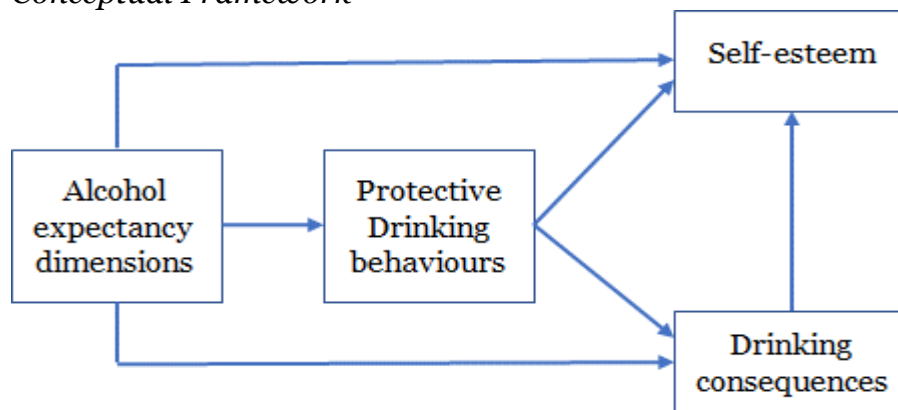
Levels of self-esteem varies among students and even for the same student, the level of self-esteem can fluctuate over time based on their aspirations and perceptions of success or failure (Heatherton & Polivy, 1991). Fluctuations in self-esteem depend on factors including the interpersonal context of social contacts and interactions (Rosenberg, 1986; Gray-Little et al., 1997). People with high self-esteem have self-respect and consider themselves as people of worth, while those with low self-esteem lack respect and consider themselves unworthy, inadequate, or otherwise seriously deficient (Rosenberg, 1979, p. 54). In other words, people with high self-esteem consider themselves in a relatively positive manner while those with low self-esteem view themselves in a negative way, confused or uncertain (Zeigler-Hill et al., 2017). Self-concept has two aspects: the first is personal identity which includes individual attributes such as competence, talent and sociability and the second is social identity which derives from group memberships such as gender, occupation and ethnic group (Luhtanen & Crocker, 1992, p. 302). Individuals or students with low self-esteem experiencing stress, anxiety or tension tend to use alcohol to release tension or cope with anxiety (Glindemann et al., 1999). Low self-esteem can lead to negative behaviours such as excessive alcohol consumption. The literature therefore suggests that there is an association between alcohol consumption and self-esteem. For example, high levels of alcohol consumption is associated with low self-esteem while the opposite holds for high self-esteem (Collison & Lusher, 2016). Nonetheless, individuals with high self-esteem could increase their alcohol consumption during interpersonal interactions (DeHart et al., 2009; Cooper et al., 1995). There is, therefore, a level of uncertainty concerning the direction of the relationship between alcohol drinking and self-esteem (Blank et al., 2016). This study seeks to address this gap in the literature.

Conceptual framework and research questions

Alcohol drinking is one of the top priorities in public health globally (Anderson et al., 2012). Alcohol consumption usually starts immediately after high school and escalates thereafter (Montes et al., 2017) and is influenced by an individual's alcohol expectancies. Alcohol expectancies are in turn determined by cultural orientation and environmental context. The above review of the literature suggests that alcohol expectancies have positive associations with drinking behaviours. For example, positive alcohol expectancies tend to result in excessive drinking with negative consequences (Obasi et al., 2016). However, the use of protective strategies plays an important role in weakening this relationship and lessening the outcomes of alcohol use (Grazioli et al., 2015). Also, excessive use of alcohol can lead to a variety of negative consequences including low self-esteem (Collison & Lusher, 2016), risky sexual behaviours (Kilwein & Looby, 2018; Wang et al., 2018; Su et al., 2015), poor academic performance, drink driving, and aggressive and anti-social behaviour (Sharma & Reinhard, 2016).

Despite the large number of studies dealing with university students' drinking behaviour, there is still little known about the key aspects of university students' alcohol expectancies and the relationships among the dimensions of alcohol expectancies, protective drinking behaviour, self-esteem and consequences of drinking. From the literature review, the following conceptual framework has been developed to guide the study and form the basis of the research questions below:

Figure 1:
Conceptual Framework



RQ1: What are the dominant alcohol expectancies of university students?

RQ2: Which alcohol expectancy dimensions are associated with university students' protective drinking behaviour, self-esteem, and consequences? And,

RQ3: Is there a relationship between university students' drinking consequences and their self-esteem?

These questions are addressed by the research method described below.

Method

Sampling procedure and data collection

To investigate the above research questions, data were collected from students of Baden-Württemberg Cooperative State University Ravensburg, a regional university in Germany, through a questionnaire survey. The questionnaire was administered to a random sample of students enrolled in various study programs within the university and in various years of study (Zikmund, 2003, p. 383). Prior to administering the questionnaire, the purpose of the survey was explained to students, they were advised that participation in the survey was voluntary and that there were no incentives for completing the survey or penalties for refusing to participate. Each student was provided a printed questionnaire in their classroom and advised to return the completed questionnaire to the lecturer for that class, who acted as the survey facilitator. This approach to data collection provided an opportunity to clarify questions about the survey and the questionnaire.

Measurement of variables

The questionnaire was short, simple and could be completed in less than 20 minutes. It comprised four sections: section A focused on protective drinking behaviour and self-esteem; section B dealt with the consequences of alcohol consumption; section C covered alcohol expectancies; and section D dealt with demographics of respondents, alcohol policy, and frequency and quantity of drinking.

Protective behaviour comprised four different strategies: 1) pacing drinks to 1 or fewer per hour, drinking slowly, and not trying to out-drink others); 2) setting limits (e.g.

keeping track of number of drinks, determining in advance the number of standard drinks to consume, having a friend to keep track of drinks); 3) diluting drinks (switching between alcoholic and non-alcoholic beverages, drinking an alcoholic look-alike drink, and drinking water); and 4) social, such as walking home with a friend or a group of friends. These were measured using a 5-point scale based on the work of Ray et al. (2009) with 1 being strongly disagree to 5 being strongly agree. There were altogether 16 items to capture information on these four different strategies of protective behaviour.

The self-esteem scale consisted of 12 items and were adopted from Glindemann et al. (1999). The same 5-point Likert type response scale for protective behaviour was used to measure the extent to which respondents evaluated themselves favourably or unfavourably (Glindemann et al., 1999, p. 63). Some of the items in the scale were reverse coded.

The consequences of alcohol consumption included missed classes and reduced academic performance; drink driving; unprotected or unwanted sex; fights, injuries and trouble with the police; sickness such as throwing up and black-outs and in extreme cases, fatalities (Dir et al., 2018; Sharma & Reinhard, 2014; Ray et al., 2009; Andreasson et al., 2006; Martens et al., 2004; Wilson et al., 2004; Benton et al., 2004). These consequences were grouped into three main sub-dimensions—health, academic and safety/precaution. The health alcoholic consequences covered vomiting, unprotected sex and unwanted sex while the academic alcoholic consequences included missed classes, academic problems and blackouts. The safety/precaution consequences comprised drink driving, injuries, fights, trouble with police, damaged property and fatalities. Students were asked to indicate the number of times per year that their alcohol consumption has resulted in these consequences.

The alcohol expectancy scale was adopted from George et al. (1994) and consisted of 40 items capturing the following 8 dimensions: Global positive, Social and physical pleasure, Social expressiveness, Sexual enhancement, Power and aggression, Tension reduction and relaxation, Cognitive and physical impairment, and Careless unconcern. The last section of the questionnaire, covered along with questions on demographics, questions on alcohol policy and frequency and quantity of drinking. An open-ended question was included to capture respondents' views on the critical alcohol related issues among University students.

Analytical methods

Statistical techniques including descriptive analysis, multiple correspondence analysis, principal component analysis, and multiple linear regression analysis were used to analyse the data. Altogether 275 completed surveys were analysed.

Approaches to creating composite variables include principal component analysis (PCA), factor analysis, and multiple correspondence analysis (MCA). PCA is suitable for continuous variables while MCA is appropriate for categorical variables (Stata, 2015). Both MCA and PCA were employed in this study. The MCA was used to generate composite variables for all eight alcohol expectancy variables, and the self-esteem and protective drinking behaviour variables since they were measured by Likert scales. Specifically, the Burt approach in MCA was applied, and principal normalization used to scale the coordinates by their principal inertias. For all the composite variables generated using the MCA, dimensions 1 and 2 were retained since they adequately explained variations in their respective composite variables. As an example, using the global positive dimension under alcohol expectancies, dimensions 1 and 2 jointly explain 68.87% of the variations in the global positive score (see Appendix 2). A similar approach has been used within the extant literature (Abdi & Valentin, 2007; Stata, 2015).

Since the alcohol consequences were captured as continuous variables, PCA was initially applied to generate their composite variables. However, some of the components such as component 1 only captured about 24.5 of the characteristics of the consequences combined, resulting in the loss of about 75.5 of the characteristics of the variables (see Appendix 3). Although the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was above the 0.5 threshold, the value of 0.5189 was considered inadequate (Williams et al., 2010; Stata, 2015). Based on this outcome, average scores were generated for each of the sub-dimensions of health, academic and safety/precaution.

To examine the relationship between alcohol expectancies and self-esteem, a linear regression analysis was carried out using the eight dimensions of alcohol expectancies as independent variables and self-esteem as dependent variable. Each of the composite variables that represent the eight dimensions of alcohol expectancies as well as the composite score for self-esteem were generated using MCA. The relationship was modelled by controlling for protective drinking behaviour, consequences of alcohol consumption and other demographic variables as shown in the framework presented in Figure 1. Similar regression analyses were carried out to investigate the other relationships in the framework and address the remaining research questions. The variance inflation factor (VIF) for the multi-collinearity test was 1.45 for the alcohol expectancy variables, which is below the threshold of 10. This implies there was no inherent multi-collinearity problem among the dimensions of alcohol expectancy. This was similar for all other regression analyses presented in Table 4.

Results

This section begins with a description of the sample profile and scores on the various variables followed by the results for the research questions.

Respondents' profile

Altogether 275 students from different classes participated in the survey of which 272 students responded to the question on age. The majority of students (93%) were 18-24 years of age and 197 (72.4%) were female. Students who had their first alcoholic drink when they were 13 years comprised 22.6% of the sample, while 62.6% had their first alcoholic drink at 14-15 years. The remaining 40 students were more than 15 years when they had their first alcoholic drink.

One hundred and fifty one students (56.6%) lived with their parents, spouse and /or children. Most of the friends of the majority of students (52.2%) consumed alcohol, while for 37.4% of the students all of their friends consumed alcohol. The remaining had some but not all of their friends consume alcohol. There was no alcohol policy in the place of residence for 74.5% of students, alcohol was also not prohibited where they lived.

In terms of academic performance, 13.5% had a grade point average of up to 1.5 (the lower the score better the performance), 84.1% had 1.51 to 3 points grade point average, and 1.8% had a grade point average of more than 3. One hundred and thirteen students (56.5%) were enrolled in 6 to 10 courses, 31 (15.5%) in up to 5 courses, and 56 students (28%) in more than 10 courses. One hundred and sixty-one students (61.2%) spent up to 20 hours per week on their studies, 73 students (27.8%) studied for more than 35 hours a week, and 29 students (11%) spent 21 to 35 hours per week on their studies. Most of the students (79.5%) were involved in religious meetings and services; 37 students (14.3%) met for up to 1 hour per week, and only 16 students (6.2%) met more than 1 hour per week for religious meetings and services. In terms of time in athletic activities, 126 students (47%) spent up to

3 hours per week, 105 students (39.2%) 4 to 7 hours per week, and 37 students (13.8%) spent more than 7 hours per week.

One hundred and thirty-three students (49.8%) and 172 students (64.4%) described their father and their mother respectively as infrequent alcohol drinkers. In terms of frequency of drinking, nearly 20% of the respondents had alcoholic drinks twice a week, 30% once a week and 4% every alternate day. Most respondents drank on Fridays, Saturdays and on special days e.g. birthdays, sporting events and holidays. In terms of frequency of binge drinking (5 drinks for men and 4 drinks for women), 43.9% had no such drinks in the two weeks prior to the survey, 26% had drunk on one occasion, 15.6% reported two occasions and 14.5% a few times. On a typical occasion, it was reported that the average number of drinks consumed was 3.35 (median being 3 drinks) with a standard deviation of 2.7 drinks. In terms of consequences of drinking alcohol, having unprotected sex was ranked number one followed by black-outs, missed classes, vomiting, and injuries.

Alcohol expectancy dimensions and alpha reliability

The composite scores and Cronbach alpha values are reported in Table 1 for the eight dimensions of alcohol expectancy and they range from 0.699 to 0.804. According to Robinson et al. (1991), an alpha value of 0.80 or higher is considered exemplary, values between 0.70 and 0.79 are extensive, values between 0.60 and 0.69 are moderate, and values less than 0.60 are minimal. Therefore, the eight dimensions of alcohol expectancies considered in the study have high internal reliability. Based on the mean scores, alcohol expectancy dimension 'cognitive and physical impairment' is dominant followed by 'social and physical pleasure', 'social expressiveness', 'careless unconcern', 'tension reduction and relaxation', 'sexual enhancement', 'power aggression', and finally 'global positive' in that order (see Table 1).

Table 1:
Alcohol expectancy dimensions and alpha reliability

	N	Mean	Std. Dev.
Global positive (Cronbach alpha = 0.739, Composite mean score = 2.19)			
AE8 Drinking makes the future seem brighter to me	267	2.30	.934
AE17 Alcohol seems like magic to me	269	1.85	.985
AE22 If I am feeling tied down or frustrated a few drinks makes me feel better	268	2.45	.995
AE29 I feel more physically coordinated after I drink	267	2.19	.815
AE40 Alcohol makes me more interesting	267	2.22	.887
Social and physical pleasure (Cronbach alpha = 0.774, Composite mean score = 3.15)			
AE13 Drinking makes me feel good	266	3.04	.916
AE15 Some alcohol has a pleasant cleansing tingly taste to me	263	2.97	.871
AE21 Drinking adds a certain warmth and friendliness to social occasions for me	262	2.98	.930
AE24 Having a few drinks is a nice way for me to celebrate special occasions	267	3.61	.933
AE27 Drinking is pleasurable because it is enjoyable for me to join with people who are enjoying themselves	259	3.15	.870
Social expressiveness (Cronbach alpha = 0.804, Composite mean score = 3.14)			
AE3 A few drinks make me feel less shy	265	3.62	.889

AE20 When I am drinking it is easier to open up and express my feelings	269	3.10	1.030
AE35 Drinking gives me more confidence in myself	265	2.75	.995
AE38 A few drinks make it easier for me to talk to people	267	3.30	.992
AE39 If I have a couple of drinks it is easier to express my feelings	266	2.92	1.007
Sexual enhancement (Cronbach alpha = 0.776, Composite mean score = 2.62)			
AE7 I am more romantic when I drink	270	2.65	1.030
AE12 I often feel sexier after I have had a few drinks	269	2.49	.953
AE19 I am a better lover after a few drinks	265	2.56	1.054
AE28 After a few drinks I am more sexually responsive ie more in the mood for sex	265	2.93	1.049
AE31 I enjoy having sex more if I have had some alcohol	261	2.47	1.036
Power and aggression (Cronbach alpha = 0.700, Composite mean score = 2.44)			
AE1 Drinking makes me feel warm and flushed	268	3.17	.943
AE5 I feel powerful when I drink as if I can really make other people do as I want	267	2.13	.871
AE9 If I have had a couple of drinks it is easier for me to tell someone off	265	2.85	.944
AE16 Drinking makes me more aggressive	268	1.91	.921
AE32 I am more likely to get into an argument if I have had some alcohol	266	2.61	1.001
AE37 After a few drinks it is easier for me to pick a fight	265	2.02	.971
Tension reduction and relaxation (Cronbach alpha = 0.699, Composite mean score = 2.70)			
AE2 Alcohol lowers muscle tension in my body	268	2.96	.898
AE4 Alcohol helps me to fall asleep more easily	269	2.73	1.128
AE11 Alcohol can act as an anaesthetic for me that is it can stop pain	263	2.37	.983
AE25 Alcohol makes me worry less	267	2.92	.976
AE34 Alcohol helps me sleep better	267	2.54	1.131
Cognitive and physical impairment (Cronbach alpha = 0.760, Composite mean score = 3.27)			
AE6 I am more clumsy after a few drinks	261	3.13	.883
AE10 I cannot act as quickly when I have been drinking	269	3.41	.870
AE18 Alcohol makes it hard for me to concentrate	268	3.14	.999
AE23 I cannot think as quickly after I drink	268	3.34	.961
AE26 Drinking makes me less efficient	268	3.35	.873
Careless unconcern (Cronbach alpha = 0.709, Composite mean score = 2.85)			
AE14 Alcohol makes me careless about my actions	269	2.82	.988
AE30 I am more likely to say embarrassing things after drinking	265	3.08	.993
AE33 Alcohol makes me less worried about doing things well	266	2.82	.949
AE36 Alcohol makes me more irresponsible	263	2.70	.920

Note: Above scales and sub-scales were adopted from George et al. (1994).

Responses to research questions

Response to RQ1: What are the dominant alcohol expectancies of university students?

Using descriptive statistics, the mean and standard deviation were calculated for each item in the alcohol expectancy instrument. Based on the mean scores, the top five, middle five and bottom five alcohol expectancy items are presented in table 2. The top 5

items ranked by their mean scores include ‘feel less shy’, ‘nice way to celebrate special occasions’, ‘cannot act as quickly’, ‘less effective’, and ‘cannot think as quickly’. The middle 5 items include ‘easier to express feelings’, ‘less worried’, ‘easier to tell someone off’, ‘less worried about doing things well’, ‘careless about own action’. The bottom 5 items are ‘feel more physically coordinated’, ‘feel more powerful’, ‘easier to pick a fight’, ‘aggressive’, and ‘seems like magic’. These findings suggests that although ‘cognitive and physical impairment’ is dominant alcohol expectancy dimension, ‘social expressiveness’ related item ‘feel less shy’ is the dominant alcohol expectancy item followed by ‘social and physical pleasure’ related item ‘nice way to celebrate’, and ‘cognitive and physical impairment’ related items ‘unable to think and act quickly making less effective’.. The items with the lowest means relate to ‘global positive’ and ‘power and aggression’.

Table 2:

Key alcohol expectancy items: top 5, middle 5 and bottom 5 items

Top 5 alcohol expectancy items	Middle 5 alcohol expectancy items	Bottom 5 alcohol expectancy items
AE3 A few drinks make me feel less shy ‘social expressiveness’ (3.62-265-0.89) *	AE39 If I have a couple of drinks it is easier to express my feelings ‘social expressiveness’ (2.92-266-1.00)	AE29 I feel more physically coordinated after I drink ‘global positive’ (2.19-267-0.81)
AE24 Having a few drinks is a nice way for me to celebrate special occasions ‘social and physical pleasure’ (3.61-267-0.93)	AE25 Alcohol makes me worry less ‘tension reduction & relaxation’ (2.92-267-0.98)	AE5 I feel powerful when I drink as if I can really make other people do as I want ‘power and aggression’ (2.13-267-0.87)
AE10 I cannot act as quickly when I have been drinking ‘cognitive and physical impairment’ (3.41-269-0.87)	AE9 If I have had a couple of drinks it is easier for me to tell someone off ‘power & aggression’ (2.85-265-0.94)	AE37 After a few drinks it is easier for me to pick a fight ‘power and aggression’ (2.02-265-0.97)
AE26 Drinking makes me less efficient ‘cognitive and physical impairment’ (3.35-268-0.87)	AE33 Alcohol makes me less worried about doing things well ‘careless unconcern’ (2.82-266-0.95)	AE16 Drinking makes me more aggressive ‘power and aggression’ (1.91-268-0.92)
AE23 I cannot think as quickly after I drink ‘cognitive and physical impairment’ (3.34-268-0.96)	AE14 Alcohol makes me careless about my actions ‘careless unconcern’ (2.82-269-0.99)	AE17 Alcohol seems like magic to me ‘global positive’ (1.85-269-0.98)

Note: The figures within parentheses represent mean score, sample size, and standard deviation (e.g. * mean=3.62, sample size=265, and standard deviation=0.89), where: 1= Strongly disagree, 3= Neutral and 5 = Strongly agree

Responses to RQ2: Which alcohol expectancy dimensions are associated with university students’ protective drinking behaviour, self-esteem, and consequences?

Using descriptive statistics, top 6 and bottom 6 self-esteem items have been identified (see table 3)

Table 3:
Top 6 and bottom 6 self-esteem items

Top 6 self-esteem items	Bottom 6 self-esteem items
SE11 All in all I am inclined to feel that I am a failure (4.16-262-0.90) *	SE10 I feel I have much to be proud of (3.67-274-0.77)
SE4 I often wish I were someone else (4.10-272-0.94)	SE6 I wish I could have more respect for myself (3.64-270-0.98)
SE7 On the whole I am satisfied with myself (4.01-272-0.76)	SE2 I am a lot of fun to be with (3.63-269-0.78)
SE12 I take a positive attitude toward myself (3.87-272-0.78)	SE9 I am often sorry for the things I do (3.60-274-0.92)
SE1 There are lots of things about myself I would change if I could (3.78-274-0.94)	SE5 I have a high opinion of myself (3.35-274-0.83)
SE8 I am able to do things as well as most other people (3.75-271-0.81)	SE3 It is pretty tough to be me (3.16-267-0.96)

Note: The figures within parentheses represent mean score, sample size, and standard deviation (e.g. * mean=4.16, sample size=262, and standard deviation=0.90), where: 1= Strongly disagree, 3= Neutral and 5 = Strongly agree

Using a composite score for protective drinking behaviour as dependent variable and dimensions of alcohol expectancies and other covariates as independent variables, the linear regression analysis resulted in a R^2 value of 0.1929 ($F=3.65$, $p<0.001$) (see table 4). This suggests that 19.29% of variability in protective drinking behaviour explained variations in alcohol expectancies and the other covariates. The results also show that ‘sexual enhancement’, ‘power and aggression’ and ‘tension reduction and relaxation’ each had significant positive association (at a p value of <0.10) with protective drinking behaviour.

The linear regression analysis carried out to address the association between the alcohol expectancy dimensions and university students’ self-esteem resulted in the coefficient of determination value (R^2) of 0.1762 ($F=4.47$, $p<0.001$) which suggests that 17.62% of the variability in university students’ self-esteem was explained by the variations in the dimensions of alcohol expectancy and the other covariates. It was also found that among the alcohol expectancy dimensions, ‘global positive’ had a significant positive association with self-esteem ($p<0.01$) while protective drinking behaviour had a significantly positive influence ($p<0.05$) on self-esteem, while male students had significantly higher self-esteem compared to their female counterparts ($p<0.05$).

Similar analyses were carried out using the sub-dimensions of health, academic and safety/precaution consequences as dependent variables. They were also modelled by controlling for protective drinking behaviour and some demographic variables as shown in Figure 1. None of the eight dimensions of alcohol expectancies had a statistically significant relationship with the ‘health consequence’ sub-dimension. Using academic consequences as dependent variables yielded an R^2 value of 0.2621 ($F = 5.68$, $p<0.001$), which suggests that 26.21% of variability in academic consequences was explained by the variability in alcohol expectancy dimensions and the other covariates. The results also show that ‘global positive’ had a significantly positive influence ($p<0.001$) on academic consequence. ‘Social and physical pleasure’ and ‘social expressiveness’ also had a significantly positive association ($p>0.05$ and $p>0.01$) with academic consequence. Students who reside in places with no alcohol policy and male students experience higher levels of academic consequences. With safety/precaution as a dependent variable, the resultant R^2 from the estimation was 0.3198 ($F=5.44$, $p<0.001$), indicating that 31.98% of the variations in safety/precaution consequence was explained by the variability in alcohol expectancy dimensions and the

other covariates. The analysis also showed that ‘global positive’ had a significant positive association ($p < 0.01$) with safety/precaution consequence and the association was also significant and positive for ‘social and physical pleasure’ ($p < 0.10$).

Table 4:

Relationships between the dimensions of alcohol expectancies with students’ self-esteem, consequences of drinking alcohol and protective drinking behaviour

	Self-Esteem index	Alcohol consequences			Protective Behaviour index
		Health	Academic	Safety	
Protective drinking behaviour index	0.1651* (0.0653)	-0.3793 (0.5831)	0.0907 (0.1320)	0.1267** (0.0399)	— —
Dimensions of alcohol expectancies					
Global positive	0.2211** (0.0808)	0.3810 (0.2636)	0.4960** (0.1653)	0.2050** (0.0669)	0.0456 (0.0757)
Social and physical pleasure	0.1218 (0.0787)	1.2126 (1.2262)	0.2182* (0.1030)	0.0984† (0.0568)	0.0339 (0.0898)
Social expressiveness	0.0182 (0.0665)	1.0211 (0.8849)	0.3900** (0.1181)	0.0548 (0.0502)	0.0627 (0.0795)
Sexual enhancement	-0.0597 (0.0821)	0.3881 (0.3492)	0.1839 (0.2383)	0.0773 (0.0706)	0.1301† (0.0698)
Power and aggression	0.0491 (0.0742)	0.4728 (0.6238)	0.1596 (0.1353)	-0.1268 (0.0804)	0.1477† (0.0865)
Tension reduction and relaxation	-0.0014 (0.0847)	0.0714 (0.4098)	0.0426 (0.1441)	0.0954 (0.0734)	0.1354† (0.0702)
Cognitive and physical impairment	0.0595 (0.0740)	-0.1212 (0.2027)	-0.2131 (0.1597)	-0.0121 (0.0494)	0.0681 (0.0618)
Careless unconcern	-0.0136 (0.0762)	-1.6233 (1.3398)	-0.0523 (0.1339)	-0.0882 (0.0608)	0.0225 (0.0738)
Male (0=female; 1=male)	0.2752 (0.1822)	3.2320 (2.2552)	1.6261*** (0.4122)	0.6225*** (0.1529)	0.3060* (0.1547)
Alcohol consequences					
Academic consequence	-0.0588* (0.0252)	—	—	—	—
Health consequence	0.0080* (0.0032)	—	—	—	—
safety consequence	0.0732 (0.0710)	—	—	—	—
Hours spent in studying weekly	0.0025 (0.0036)	-0.0103 (0.0155)	0.0023 (0.0106)	-0.0037 (0.0035)	0.0007 (0.0039)
No alcohol policy in place or residence (0=yes; 1=no)	0.2112 (0.1733)	-2.0243 (2.3551)	0.5384† (0.3154)	0.2399* (0.1033)	0.1460 (0.1513)
Live with parents (0=yes; 1=no)	0.0463 (0.1237)	-1.0046 (1.2346)	0.0331 (0.2795)	-0.0950 (0.0780)	-0.2029 (0.1264)
Constant	-0.5707 (0.3997)	5.6461 (5.7395)	-0.2798 (0.6944)	-0.0738 (0.2098)	-0.0564 (0.3526)
Observations	238	239	239	238	243
R-squared	0.1762	0.0772	0.2621	0.3198	0.1929
F-Statistic	4.47***	0.61	5.68***	5.44***	3.65***
Variance Inflation Factor (VIF)	1.45	1.41	1.41	1.41	1.41

Robust standard errors in parentheses

Note: † stands for $p < 0.10$, * stands for $p < 0.05$, ** stands for $p < 0.01$ and *** stands for $p < 0.001$.

Response to RQ3: Is there a relationship between university students’ drinking consequences and their self-esteem?

A linear regression analysis was carried out using self-esteem as dependent variable and the three sub-dimensions of alcohol consequences as independent variables, controlling

for alcohol expectancies and protective drinking behaviour (see column 1 of Table 4). This resulted in the coefficient of determination value (R^2) of 0.1762 ($F=4.47$, $p<0.001$), indicating that 17.62% of the variability in university students' self-esteem was explained by the variability in the three-dimensions of alcohol consequences and the other covariates. The results also indicate a significant negative association between students' academic consequence and self-esteem, implying that having academic problems due to drinking can reduce students' self-esteem significantly. The health consequence exhibited an almost negligible counter-intuitive association with self-esteem due to the size of the coefficient, which was almost close to zero. The results, however, did not indicate any evidence of impact on the students' self-esteem due to other negative consequences.

Discussion and conclusion

This study identified the dominant alcohol expectancies of university students and found that students are generally aware of the negative outcomes from drinking alcohol. For example, excessive alcohol drinking could lead to cognitive and physical impairment, restricting their ability to act and think quickly and limiting their effectiveness. However, they are motivated to drink for social and physical pleasure, especially when they are in social settings such as celebrating a special occasion or drinking with friends. Drinking is considered to make them socially expressive. It makes them less shy, and they open-up and express themselves more readily removing any inhibitions they may have in the social setting. Social expression, therefore, ranks third among the alcohol expectancy dimensions. These findings are consistent with the literature, which reports that students who expect social and physical pleasure (both positive alcohol expectancies), are likely to engage in frequent heavy drinking (Montes et al., 2017; Zamboanga, 2005). Perhaps students' desire to fit in overshadows any expectations of cognitive and physical impairments from drinking.

Some students drink to reduce tension and to relax, a dimension of alcohol expectancy which ranked fifth among the eight dimensions. These students note that alcohol allows them to reduce muscle tension and worries, and to sleep more easily. 'Sexual enhancement' such as being in the mood for sex and 'power and aggression', covering such items as feeling warm and flushed and being able to tell people off take sixth and seventh place respectively when the alcohol expectancies are ranked by their composite means. Global positive ranks last, with items in direct opposite to cognitive and physical impairment. For example, items such as alcohol seems like magic, enables physical coordination and makes me more interesting are among the lowest ranking alcohol expectancy items, all of which describe the global positive dimension.

Consistent with past studies, this study also found that an individual's belief in the effect of alcohol drinking plays an important role in shaping their drinking behaviour such as frequency and the amount of drinking (Monk et al., 2016; Grazioli et al., 2015). For example, students engage in protective drinking behaviour if the expectation is to enhance sexual performance and/or to reduce tension and to relax. These dimensions of alcohol expectancy have positive associations with protective drinking behaviour. Students recognise that unprotected drinking behaviour could result in excessive drinking and negative outcomes for both sexual encounter and tension reduction and relaxation. Therefore, they are likely to be careful when drinking. The findings are in contrast to the extant literature that report that positive alcohol expectancies, including sexual enhancement and relaxation tend to result in excessive alcohol use, leading to negative outcomes (Obasi et al., 2016). This study also revealed a positive association between power and aggression and protective drinking behaviour, a finding that is in tune with existing research. Hasking et al. (2011) noted that negative alcohol expectancies, including power and aggression lead to reduced alcohol consumption. Either students may be careful about the amount of drinks they take

to avoid aggressive behaviour or they recognise that excessive drinking may lead to loss of control and to defeat in a confrontation.

The study also found significant associations between some of the alcohol expectancy dimensions on the one hand, and self-esteem and alcohol consequences on the other. A significant positive association was found between self-esteem and 'global positive' covering the belief that drinking alcohol makes one's future look brighter or provide some kind of magical feeling, make one feel good when frustrated or down, or enhance physical coordination. The findings indicate that self-esteem improves when the expectation from drinking is to boost positive feelings and overcome negative feelings and is consistent with the extant literature (Collison et al., 2016; Glindemann et al., 1999). The study also shows that more males than females engage in drinking to enhance their self-esteem. Self-esteem is also positively associated with protective drinking behaviour, indicating that when the aim is to improve their outlook on life, students are more cautious about their drinking. These findings may derive from the traditional socialisation process where males are expected to take control of their negative feelings and portray a positive outlook. Responsible drinking helps them overcome negative feelings and accentuate positive feelings, ultimately enhancing self-esteem.

Associations were observed for the alcohol expectancies and the academic and safety/precaution dimensions of consequences but not the health dimension. Poor academic and safety consequences are positively associated with global positive and social and physical pleasure expectancies. Poor academic consequences are also positively linked with social expression. Consistent with the existing literature, positive beliefs about alcohol improving global outlook, enhancing social expression and social and physical pleasure may lead to excessive drinking and compromise academic and safety outcomes (Obasi et al., 2016). Male students are more likely than female students to experience negative academic and safety consequences from drinking since they are more prone to excessive drinking in social settings than female students (O'Malley & Johnston, 2002; Wilsnack et al., 2000). Similarly, restricting alcohol consumption in residences may induce excessive drinking in other settings resulting in poor academic and safety outcomes.

These findings have significant implications for social marketers when developing suitable strategic intervention programs such as alcohol education (Mattern & Neighbors, 2004), understanding of the causality of social problems (Wymer, 2011), upstream social marketing (Kennedy et al., 2018), communication programs or other awareness and information campaigns (Vicary & Karshin, 2002) focused on behavioural changes to correct the misperceptions/expectancies of drinking and thereby reduce the level of alcohol consumption among university students. Although there is no evidence of sustained changes in alcohol behaviour through intervention programs such as public education campaigns, and parenting and social marketing programs, including labelling and warning messages (Anderson et al., 2012, p. 38), such initiatives could be of value to maintain high self-esteem among students and possibly avoid potential negative consequences. Anderson et al. (2012, p. 38) observed that there is limited research on the effectiveness of social responsibility campaigns by the alcohol industry, but that such efforts can be counterproductive due to ambiguity and mixed messages.

In terms of limitations, information for this study was collected from the students of only one university in Germany. Therefore, it may not be possible to generalise the findings. The respondents were also not asked as to whether any social marketing campaigns were launched to reduce the effect of alcohol and whether those campaigns had any influence in their levels of drinking. This study could be extended further to incorporate these limitations and carry out comparative studies particularly in the OECD countries.

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Appendix 1: Summary Statistics of variables used in the regression analysis

Variable	Obs	Mean	Std. Dev.
Self-Esteem index	275	0.0093	1.0208
Protective drinking behaviour index	275	0.0143	1.0090
Dimensions of alcohol expectancies			
Global positive	270	0.0168	1.0121
Social and physical pleasure	270	0.0187	1.0339
Social expressiveness	270	-0.0132	1.0095
Sexual enhancement	270	0.0081	0.9957
Power and aggression	270	0.0165	0.9892
Tension reduction and relaxation	270	-0.0225	1.0017
Cognitive and physical impairment	270	-0.0236	0.9902
Careless unconcern	270	-0.0030	0.9991
Alcohol consequences			
Education consequence	270	1.2852	2.3608
Health consequence	269	1.2255	8.1473
safety consequence	268	0.3208	0.7802
Hours spent in studying weekly	263	20.7091	17.1045
Male (0=female; 1=male)	272	0.2757	0.4477
No alcohol policy in place or residence (0=yes; 1=no)	256	1.8008	0.4002
Live with parents (0=yes; 1=no)	267	1.4345	0.4966

Appendix 2:
Multiple correspondence analysis for global positive: Burt/adjusted inertias

Dimension	Principal inertia	Percent	Cumulative percent
Dim 1	0.1670	49.92	49.92
Dim 2	0.0634	18.96	68.87
Dim 3	0.0407	12.15	81.03
Dim 4	0.0131	3.93	84.96
Dim 5	0.0057	1.69	86.65
Dim 6	0.0017	0.52	87.16
Dim 7	1.58E-06	0	87.16

Appendix 3:
Eigen values from Principal Component Analysis (unrotated=principal) for overall alcohol consequence

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.947	1.538	0.246	0.246
Comp2	1.408	0.088	0.117	0.363
Comp3	1.321	0.176	0.110	0.473
Comp4	1.145	0.110	0.095	0.568
Comp5	1.035	0.108	0.086	0.655
Comp6	0.927	0.092	0.077	0.732
Comp7	0.835	0.095	0.070	0.802
Comp8	0.740	0.100	0.062	0.863
Comp9	0.640	0.112	0.053	0.917
Comp10	0.529	0.237	0.044	0.961
Comp11	0.292	0.110	0.024	0.985
Comp12	0.182	.	0.015	1.000
Kaiser-Meyer-Olkin (KMO)				0.5189